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Description of document: Department of Agriculture (USDA) Risk Management Agency (RMA) Federal Crop Insurance Program R&D Request and Funding for Hemp Crop Insurance Research 2020-2021

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From: Saceda, Joneta - FPAC-BC, Washington, DC <joneta.saceda@usda.gov>
Sent: Wed, Aug 25, 2021 3:54 pm
Subject: Release in Full - FOIA No. 2021-RMA-04920-F
August 25, 2021

This is a final response letter to your FOIA request dated July 25, 2021, to the Department of Agriculture (USDA) Risk Management Agency (RMA). Your request was received in this office on July 26, 2021, and you requested the following:

A copy of the R&D request and also the completed research reports in 2020 or 2021 resulting from the following research funding approved by the Federal Crop Insurance Corporation: \$718,134 of remaining research and development expenses for Docket No. CI-Section 508(h) Submission Hemp - Research and Development Request 09-17-20 01, Exhibit 4640. I swear under penalty of perjury that this request is not for any commercial purpose.

Your request was assigned FOIA control number 2021-RMA-04920-F. Please refer to this number concerning any future inquiries you may have.

There are no fees or duplication costs associated with the processing of your request.

You may contact the FOIA Public Liaison at SM.FP.FOIA@usda.gov for any further assistance and to discuss any aspect of your request.

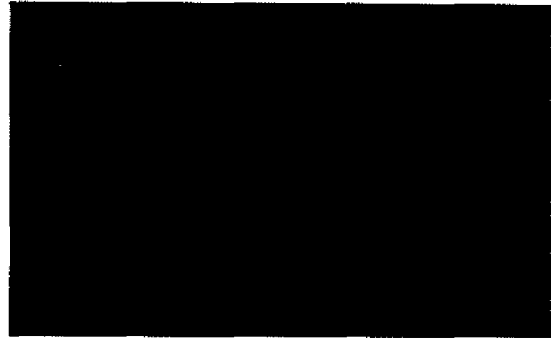
If you have any additional questions, please contact me at 202-720-2086 or via email at joneta.saceda@usda.gov.

Sincerely,

Joneta Saceda
FOIA Specialist

Enclosure:
Responsive Records

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INDUSTRIAL HEMP CROP INSURANCE PROGRAM 508(H) SUBMISSION

Section 522(b)



Prepared For:

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Industrial Hemp Crop Insurance Program 508(h) Submission

Confidential Submission – Not for Distribution

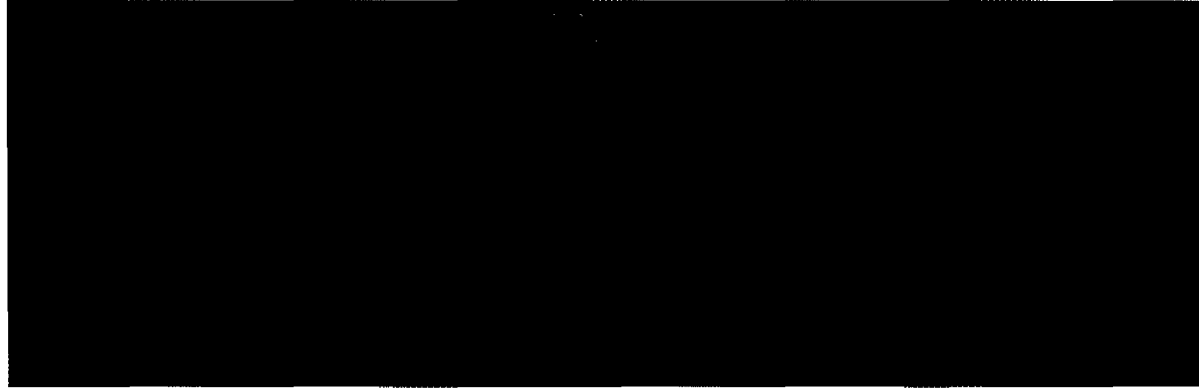
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SECTION ONE

400.705 (b) General Information

The applicant's name, address or primary business location, phone number, and e-mail address;

- Point of Contact – Contractor

[REDACTED]

The type of 508(h) submission (see CFR 7 §400.704) and a notation of whether or not the submission was approved by the Board as a concept proposal;

(i) A policy or plan of insurance not currently reinsured by FCIC;

The applicant is submitting to the Board in accordance with §400.705, a policy or plan of insurance not currently reinsured by FCIC. The Industrial Hemp Crop Insurance Program is a new submission and does not currently provide coverage to industrial hemp producers. [REDACTED]

A statement of whether the applicant is requesting:

(i) Reinsurance;

(ii) Risk subsidy;

(iii) A&O subsidy;

(iv) Reimbursement for research and development costs, as applicable and, if the 508(h) submission was previously submitted as a concept proposal, the amount of the advance payment for expected research and development costs; or

[REDACTED]

(v) Reimbursement for expected maintenance costs, if applicable.

The proposed agricultural commodities to be covered, including types, varieties, and practices covered by the submission;

- Commodity – Industrial Hemp
- Crop – Each type (e.g. fiber, grain, CBD) of the commodity
- Type and Variety – All insurable types and varieties will be covered
- Practices – Coverage will be provided for irrigated, non-irrigated, organic (transitional) irrigated, organic (transitional) non-irrigated, organic (certified) irrigated, organic (certified) non-irrigated

The crop or insurance year or reinsurance year in which the submission is proposed to be available for purchase by producers;

- Crop Year Available – 2020
- Reinsurance Year Available - 2020

The proposed sales closing date, if applicable, or the sales window or the earliest date the applicant expects to release the product to the public;

States	Sales Closing Date
California and North Carolina	February 28
Colorado, Illinois, Indiana, Kentucky, Minnesota, Montana, New York, North Dakota, Oregon, Pennsylvania, Tennessee, Virginia, and Wisconsin	March 15

The proposed state and counties where the plan of insurance is proposed to be offered;

The fifteen proposed program states contain the majority of U.S. hemp [REDACTED]. States with more minor acreages yet were adjacent or extensions of the same production regions of major producers were included proposed initial program offering. [REDACTED]

- States – California, Colorado, Illinois, Indiana, Kentucky, Minnesota, Montana, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Tennessee, Virginia, and Wisconsin
- Counties – All counties in the above states where significant spring crop acreage exists [REDACTED]

[REDACTED] but will limit the ultimate offering to those that are authorized by the regulatory authority to grow the crop as specified in the policy provisions. (Figure 1)

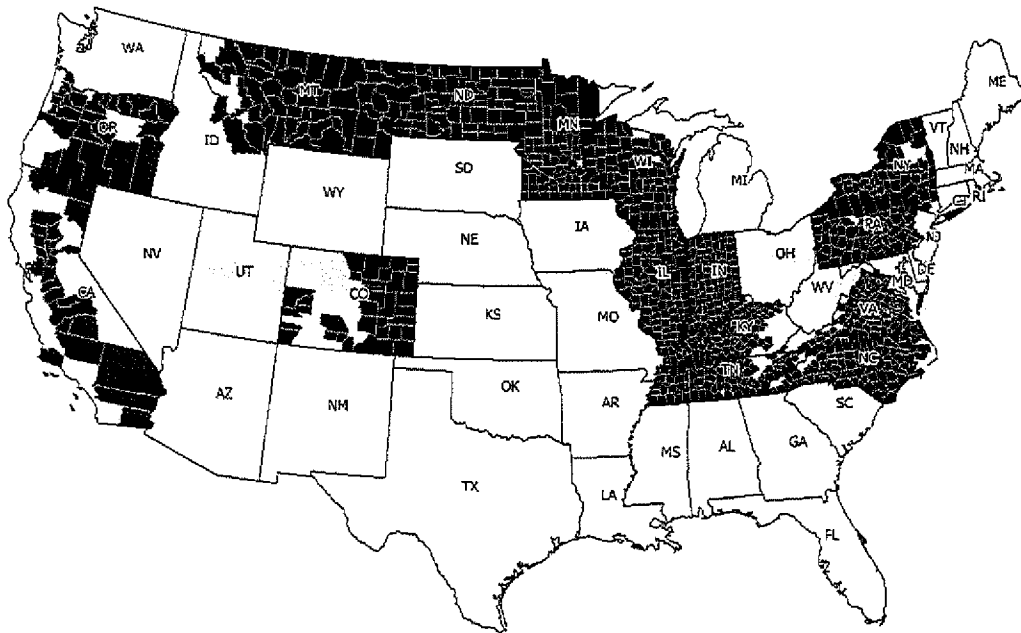


Figure 1: Proposed Hemp Counties

Any known or anticipated future expansion plans;

The Industrial Hemp Crop Insurance Program has been designed to cover the primary production areas in the country. [REDACTED]

Identification, including names, addresses, telephone numbers, and e-mail addresses, of the persons responsible for:

(i) Addressing questions regarding the policy, underwriting rules, loss adjustment procedures, rate and price methodologies, data processing and record-keeping requirements, and any other questions that may arise in implementing or administering the program after it is approved; and

- Point of Contact – Contractor

Age Group	Percentage
18-24	85%
25-34	75%
35-44	65%
45-54	55%
55-64	45%
65-74	35%
75-84	25%
85+	15%

(ii) Annual reviews to ensure compliance with all requirements of the Act, this subpart, and any agreements executed between the applicant and FCIC; and

- Point of Contact – Contractor

100

A statement of whether the submission will be filed with the applicable office responsible for regulating insurance in each state proposed for insurance coverage, and if not, reasons why the submission will not be filed for review.

The Industrial Hemp Crop Insurance Program is being submitted as a federally reinsured policy; thus, submissions to the applicable state offices regulating insurance are not necessary.

A statement of whether the submitter wants the 508(h) submission to remain confidential.

[REDACTED]

SECTION TWO

400.705 (c) Benefits of the plan, including, as applicable, a summary that includes:

How the submission offers coverage or other benefits not currently available from existing public or private programs;

The Industrial Hemp Crop Insurance Program [REDACTED] will provide insurance for industrial hemp similar to coverage currently provided for other Actual Production History (APH) yield-based programs. The initial program will be offered in those states where the majority of industrial hemp is being grown currently. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

How the submission meets public policy goals and objectives consistent with the Act and other laws, as well as policy goals supported by USDA and the Federal Government; and

[REDACTED]

A detailed description of the coverage provided by the submission and its applicability to all producers, including targeted producers.

The Industrial Hemp Crop Insurance Program will be an Actual Production History (APH) Program, with an established price election/contract price determined prior to sales closing date. No revenue protection will be provided. The program will cover fluctuations in the yield below the product of the producer-elected coverage level (e.g. 50% to 75%) and their approved yield. A yield-based crop insurance program would provide coverage for the standard perils available for most crop insurance programs and address the risks currently confronted by industrial hemp producers in the United States.

- (a) In accordance with the provisions of section 12 (Causes of Loss) of the Basic Provisions, insurance is provided only against the following causes of loss that occur during the insurance period:
- (1) Adverse weather conditions;
 - (2) Fire;
 - (3) Insects, but not damage allowed because of insufficient or improper application of pest control measures;
 - (4) Plant disease (except white mold disease), but not damage allowed because of insufficient or improper application of disease control measures;
 - (5) Wildlife;
 - (6) Earthquake;
 - (7) Volcanic eruption; and
 - (8) Failure of the water supply caused by an unavoidable, naturally occurring event that occurs during the insurance period.
- (b) In addition to the causes of loss excluded in section 12 (Causes of Loss) of the Basic Provisions, we will not insure against any loss of production that is due to:
- (1) Levels of THC in excess of 0.3 percent or more on a dry weight basis except as otherwise specified in the Special Provisions;
 - (2) The insured's failure to follow the requirements contained in the processor contract;
 - (3) Any mature harvested production infected by mold, yeast, fungus, or other microbial organisms after harvest except as specified in section 12 of the Crop Provisions; or
 - (4) Any damage or loss of production due to the inability to market the industrial hemp for any reason other than actual physical damage to the industrial hemp from an insurable cause specified in this section. For example, an insured will not be paid an indemnity if the insured is unable to market due to quarantine, boycott, or refusal of any person to accept production.
- [REDACTED]

[REDACTED]

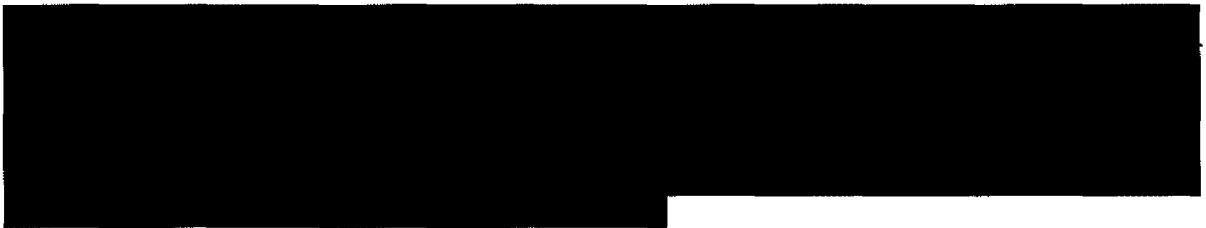
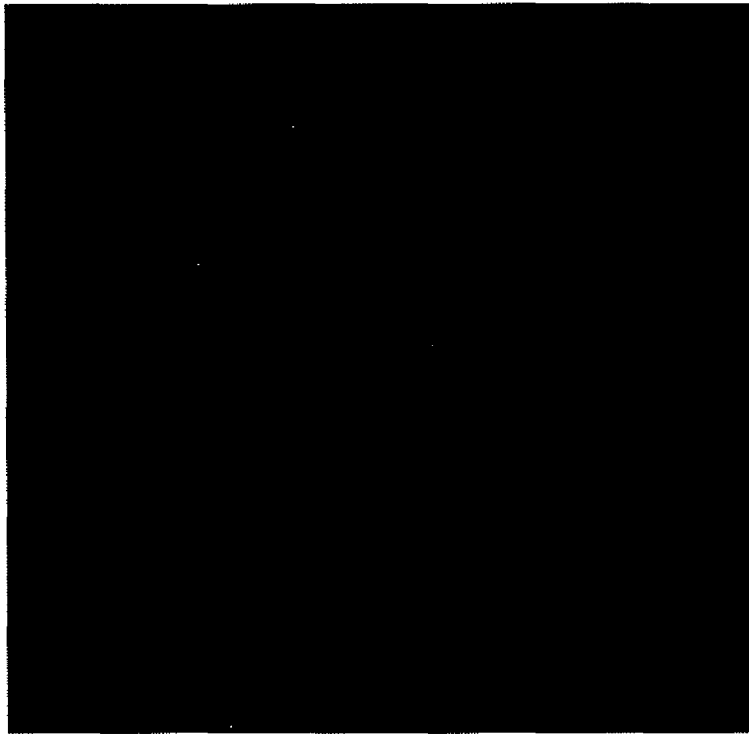
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Perils and Causes of Loss

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Adverse Weather

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

SECTION THREE

400.705 (d) The policy, that is clearly written in plain language and in accordance with the Plain Writing Act of 2010.

If the submission involves a new insurance policy or plan of insurance:

(i) All applicable policy provisions; and

A copy of the Industrial Hemp Crop Insurance Program Crop Provisions are provided in this section.

(ii) A list of any additional coverage that may be elected by the insured in conjunction with the submission such as applicable endorsements (including the description of such coverage and how such coverage may be obtained); and

[REDACTED]

[REDACTED]

[REDACTED]

If the submission involves a change to a previously approved policy, plan of insurance, or rates of premium, the proposed revisions, rationale for each change, data and analysis supporting each change, the impact of each change, and the impact of all changes in aggregate.

This is a new submission and thus no changes have been made.

SECTION FOUR

400.705 (e):

Potential impacts the submission may have on producers both where the new plan will and will not be available (include both positive and negative impacts) and if applicable the reasons why the submission is not being proposed for other areas producing the commodity.

[REDACTED]

[REDACTED]

[REDACTED]

The amount of commodity (acres, head, board feet, etc.), the amount of production, and the value of each agricultural commodity proposed to be covered in each proposed county and state;

[REDACTED]

[REDACTED]

The 2018 Farm Bill defines hemp as “the plant *Cannabis sativa* L. and any part of that plant, including the seeds thereof and all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis. Additional amendments to the Agricultural Marketing Act of 1946 include:

- *Hemp, as defined in section 297A of the Agricultural Marketing Act of 1946, is eligible for funding under the Critical Agricultural Materials Act. The Secretary shall conduct, sponsor, promote, and coordinate basic and applied research for the development of critical agricultural materials from agricultural crops having strategic and industrial importance, including for hemp.*
- *Allows States to regulate hemp production based on a state or tribal plan. The amendment requires that such plan includes information on locations of hemp production, testing for THC concentration, disposal of plants that are out of compliance, and negligence or other violations of the state or tribal plan. It requires the Secretary to establish a plan, in consultation with the U.S. Attorney General, for States and tribes without USDA approved plans to monitor and regulate hemp production. The section clarifies that nothing in this subtitle affects or modifies the Federal Food, Drug, and Cosmetic Act or authorities of the HHS Secretary and FDA Commissioner and clarifies that nothing in this title authorizes interference with the interstate commerce of hemp.*

Additionally, section 7606 of the Agricultural Act of 2014 is amended to require the Secretary to conduct a study on the hemp research pilot program that includes a review of the economic viability of the domestic production and sale of industrial hemp and hemp products, and to submit a report describing the study to Congress within 120 days. The provision also repeals the hemp research pilot programs one year after the Secretary publishes a final regulation allowing for full-scale commercial production of hemp as provided in section 297C of the Agricultural Marketing Act of 1946.

Finally, Section 518 of the Federal Crop Insurance Act (7 U.S.C. 1518) is amended by inserting “hemp” into the list of agricultural commodities. It is expected that in determining the insurability of hemp under the Act, and in providing insurance options to hemp producers, RMA will collaborate with the appropriate USDA, state, or tribal authorities as necessary to do so consistent with the regulations and guidelines established in subtitle G of the Agricultural Marketing Act of 1946. It is also noted that USDA or the appropriate state or tribal authority, and not AIPs, agents, or loss adjusters, bear the responsibility of determining that a crop grown as hemp complies with the applicable regulations and guidelines under Subtitle G. (115th Congress, 2018).

There are multiple varieties of industrial hemp and while some are specific to a purpose (grain, fiber, or CBD), others are considered dual or multi-purpose varieties. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

A reasonable estimate of the expected number of potential buyers, liability and premium for each proposed county and state; total expected liability and premium by crop year based on the detailed assessment of producer interest, including a description of the number of producers involved in the development of the product, their level of participation, their type of participation, how many producers have provided data to assist the submitter in the development of the product, and a comparison with other similar products including differences between the submission and the similar products that may make participation different.;

[REDACTED]

The Whole Farm Revenue Program (WFRP) is a risk management option that acts as a safety net for farmers without other Federal crop insurance options as well as those who are highly diversified, small, etc. WFRP does come with rules and qualifications (i.e., farm size, farm revenue, years of tax records, etc.) that may still eliminate many growers. WFRP will be available for hemp growers for the 2020 crop year.

[REDACTED]

[REDACTED]			
[REDACTED]			[REDACTED]
[REDACTED]			[REDACTED]
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[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

Comparison of Similar Products

There are no similar programs at this time.

If available, any insurance experience for each year and in each proposed county and state in which the policy has been previously offered for sale including an evaluation of the policy's performance and, if data are available, a comparison with other similar insurance policies reinsured under the Act;

The Industrial Hemp Crop Insurance Program has been developed as a new crop insurance program; therefore, no insurance experience is available. [REDACTED]

Market research studies;

- (i) *Focus group results (both positive and negative reactions) including the number of sessions held, where they were held, when they were held, number of attendees at each session, the attendees' affiliations, and specific feedback from attendees regarding levels of coverage the product should include to cover anticipated risks or perils encountered, the range of costs the producer is willing to pay, what coverages the producers are specifically looking for and an assessment of whether that coverage can be produced at the price the producers are willing to*

pay, what shortfall or gap in risk protection the product may address, tolerance of risk, perceptions of other similar products, policy features producers may desire, and quality issues.

- [REDACTED]
- (ii) Other evidence the proposed submission will be positively received by producers, agents, lending institutions, and other interested parties, including correspondence from producers, agents, grower organizations, or other stakeholders expressing the need for a certain risk management strategy desired coverage for perils faced and willingness to provide critical information for developing a product.*

- [REDACTED]
- (iii) An assessment of factors that could negatively or adversely affect the market and responses from a reasonable representative cross-section of producers or significant market segment to be affected by the policy or plan of insurance.*

- (iv) For submissions proposing products for specialty crops a consultation report must be provided that includes a summary and analysis of discussions with groups representing producers of those agricultural commodities to be served or potentially impacted either directly or indirectly and the expected impact of the submission on the general marketing and production of the crop from both a regional and national perspective including evidence that the submission will not create adverse market distortions;*

A marketability assessment from the applicant AIP who is a part of the applicant and from at least one other AIP, including:

- (i) An assessment of whether producers will buy the proposed submission;*
- (ii) An assessment of whether AIPs and their agents will want to sell and service the proposed submission;*
- (iii) An assessment of the risks associated with the submission and its likely effect under the SRA;*
- (iv) Estimated computer system impacts and costs;*
- (v) Estimated administrative and training requirements and costs;*
- (vi) An analysis of the complexity of the product; and*
- (vii) What, if any, efficiency will be gained or potential effects on the workload of AIPs or others participating in the program.*

A marketability assessment is included with this submission.

SECTION FIVE

400.705 (f) Information related to the underwriting and loss adjustment of the submission, including as applicable:

An underwriting guide that includes:

- (i) *A table of contents and introduction;*
- (ii) *A section containing abbreviations, acronyms, and definitions;*
- (iii) *Relevant dates, including as applicable, sales closing, cancellation, termination, earliest planting, final planting, acreage reporting, premium billing, and end of insurance;*
- (iv) *A section containing insurance contract information (insurability requirements; producer elections, Crop Provisions not applicable to Catastrophic Risk Protection, specific unit division guidelines, etc.);*
- (v) *Detailed rules for determining insurance eligibility, including all producer reporting requirements;*
- (vi) *All form standards needed for inspections and producer certifications, plus detailed instructions for their use and completion;*
- (vii) *Step-by-step examples of the data and calculations needed to establish the insurance guarantee (liability) and premium per acre or other unit of measure, including worksheets that provide the calculations in sufficient detail and in the same order as presented in the policy to allow verification that the premiums charged for the coverage are consistent with policy provisions;*
- (viii) *A section containing any special coverage information (i.e., replanting, tree replacement or rehabilitation, prevented planting, etc.), as applicable; and*
- (ix) *A section containing all applicable reference material (i.e., minimum sample requirements, row width factors, etc.).*

Any statements to be included in the actuarial documents including any intended Special Provisions statements that may change any underlying policy terms or conditions; and

The loss adjustment standards handbook for the policy or plan of insurance that includes:

- (i) *A table of contents and introduction;*
- (ii) *A section containing abbreviations, acronyms, and definitions;*
- (iii) *A section containing insurance contract information (insurability requirements; Crop Provisions not applicable to catastrophic risk protection; specific unit division guidelines, if applicable; notice of damage or loss provisions; quality adjustment provisions; etc.);*

- (iv) A detailed description of the causes of loss covered by the policy or plan of insurance and any causes of loss excluded;*
- (v) A section that thoroughly explains appraisal methods, if applicable;*
- (vi) Illustrative samples of all the applicable forms needed for insuring and adjusting losses in regards to the 508(h) submission in a format compatible with the Document and Supplemental Standards Handbook (FCIC 24040) located at <http://www.rma.usda.gov/handbooks/24000/index.html>, plus detailed instructions for their use and completion;*
- (vii) Instructions, step-by-step examples of calculations used to determine indemnity payments for all probable situations where a partial or total loss may occur, and loss adjustment procedures that are necessary to establish the amounts of coverage and loss;*
- (viii) A section containing any special coverage information (i.e., replanting, tree replacement or rehabilitation, prevented planting, etc.), as applicable; and*
- (ix) A section containing all applicable reference material (i.e., minimum sample requirements, row width factors, etc.).*

The procedures and instructions for coverage and loss determination are contained in the following program materials, which are guided by the Basic Provisions, Special Provisions, and actuarial documents, including the Special Provisions and FCI-35 tables:

- Crop Insurance Handbook (CIH)
- Loss Adjustment Manual (LAM)
- Industrial Hemp Crop Insurance Standards Handbook (CISH)
- Industrial Hemp Loss Adjustment Standards Handbook (LASH)

All specific Industrial Hemp Crop Insurance Program materials are included with this submission

SECTION SIX

400.705 (g) Prices and rates of premium, including, as applicable:

A detailed description of the premium rating and pricing methodologies proposed to be used and the basis for selection of the rating methodology;

A list of all assumptions made in the premium rating and commodity pricing methodologies, and the basis for these assumptions;

A detailed description of the pricing and rating methodologies, including:

- (i) *Supporting documentation needed for the rate methodology;*
- (ii) *All the mathematical formulas and equations;*
- (iii) *Data and data sources used in determining rates and prices and a detailed assessment of the data (including availability, access, long term reliability, and the percentage of the total commercial production that the data represents) and how it supports the proposed rates and prices;*
- (iv) *A detailed explanation of how the rates account for each of the risks covered by the policy;*
- (v) *A detailed explanation of how the prices are applicable to the policy;*

An example of both a rate calculation and a price calculation;

A discussion of the applicant's objective evaluation of the accuracy of the data, the short- and long-term availability of the data, and how the data will be obtained (if the data source is confidential or proprietary explain the cost of obtaining the data); and



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

An analysis of the results of simulations or modeling showing the performance of proposed rates and commodity prices, as applicable, based on one or more of the following (Such simulations must use all years of experience available to the applicant and must reflect both partial losses and total losses):

- (i) *A recalculation of total premium and losses compared to a similar or comparable insurance plan offered under the authority of the Act with modifications, as needed, to represent the components of the submission;*
 - (ii) *A simulation that shows liability, premium, indemnity, and loss ratios for the proposed insurance product based on the probability distributions used to develop the rates and commodity prices, as applicable, including sensitivity tests that demonstrate price or yield extremes, and the impact of inappropriate assumptions; or*
 - (iii) *Any other comparable simulation that provides results indicating both aggregate and individual performance of the submission including expected liability, premium, indemnity, and loss ratios for the proposed insurance product, under various scenarios depicting good and poor actuarial experience.*
-

SECTION SEVEN

400.705 (h):

A statement certifying that the submitter and any approved insurance provider or its affiliates will not solicit or market the submission until after all policy materials are released to the public by RMA, unless otherwise specified by the Board;

[REDACTED]

An explanation of any provision of the policy not authorized under the Act and identification of the portion of the rate of premium due to these provisions; and

[REDACTED]

Agent and loss adjuster training plans, except the submission proposing only changes to rates of premium to an existing policy.

[REDACTED]

[REDACTED]

SECTION EIGHT

400.705 (i): The eighth section must contain:

A statement from the submitter that, if the submission is approved, the submitter will work with RMA and its computer programmers as needed to assure an effective and efficient implementation process;

[REDACTED]

A description of any expected implementation or administration issues. (The applicant must consult with RMA prior to providing the 508(h) submission to determine whether or not the 508(h) submission can be effectively and efficiently implemented and administered through the current information technology systems and that all reporting requirements, terminology, and dates conform to USDA standards and initiatives);

[REDACTED]

- (i) *If FCIC approves the 508(h) submission and determines that its information technology systems have the capacity to implement and administer the 508(h) submission, the applicant must provide a document detailing acceptable computer processing requirements consistent with those used by RMA as shown on the RMA Web site in the Appendix III/M- 13 Handbook. This information details the acceptable computer processing requirements in a manner consistent with that used by RMA to facilitate the acceptance of producer applications and related data; and*

Included with this submission is a list of the M-13 requirements that will be necessary during the implementation of this program.

- (ii) *Any computer systems, requirements, code and software must be consistent with that used by RMA and comply with the standards established in Appendix III/M-13 Handbook, or any successor document, of the SRA or other reinsurance agreement as specified by FCIC.*

[REDACTED]

[REDACTED]

SECTION NINE

400.705 (j) The ninth section must contain the following:

The following amounts, which may be limited to the amount originally estimated in the submission, unless the applicant can justify the additional costs:

- (i) *For new products, the amount received for an advance payment, and a detailed estimate of the total amount of reimbursement for research and development costs; or*
[REDACTED]

- (ii) *For products that are within the maintenance period, an estimate for maintenance costs for the year that the submission will be effective; and*

A detailed estimate of maintenance costs for future years of the maintenance period and the basis that such maintenance costs will be incurred, including, but not limited to:

- (i) *Any anticipated expansion;*
[REDACTED]

- (ii) *Anticipated changes or updates to policy materials;*

- (iii) *The generation of premium rates;*

- (iv) *The determination of prices; and*

- (v) *Any other costs that the applicant anticipates will be requested for reimbursement of maintenance costs or expenses.*
[REDACTED]
[REDACTED]
[REDACTED]

SECTION TEN

400.705 (k) The tenth section must contain executed (signed) certification statements in accordance with the following;

[REDACTED]

[REDACTED]

115th Congress of the United States of America. (Enacted — Signed by the President on Dec 20, 2018). Agriculture Improvement Act of 2018.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[illegible]

[REDACTED]
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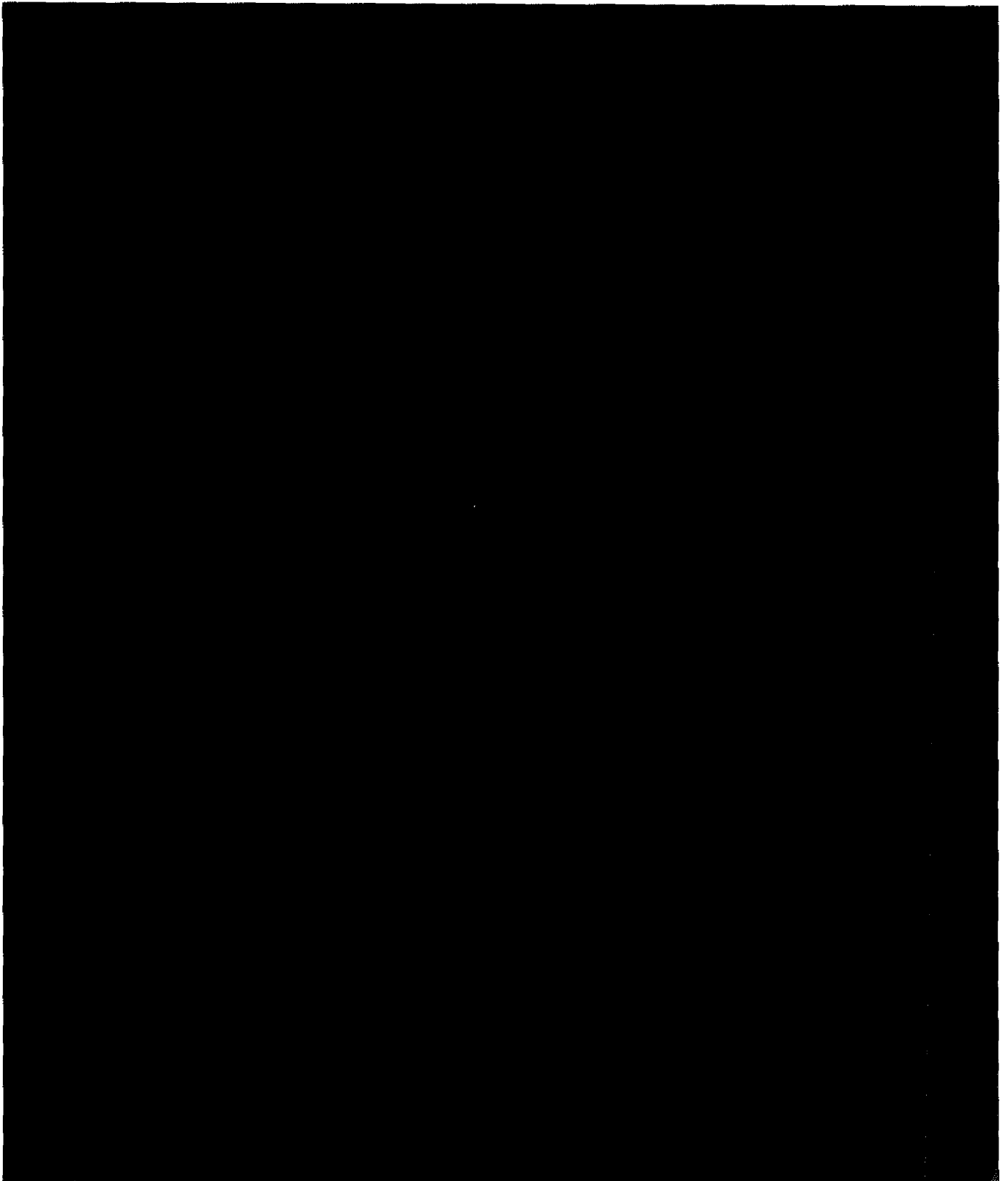
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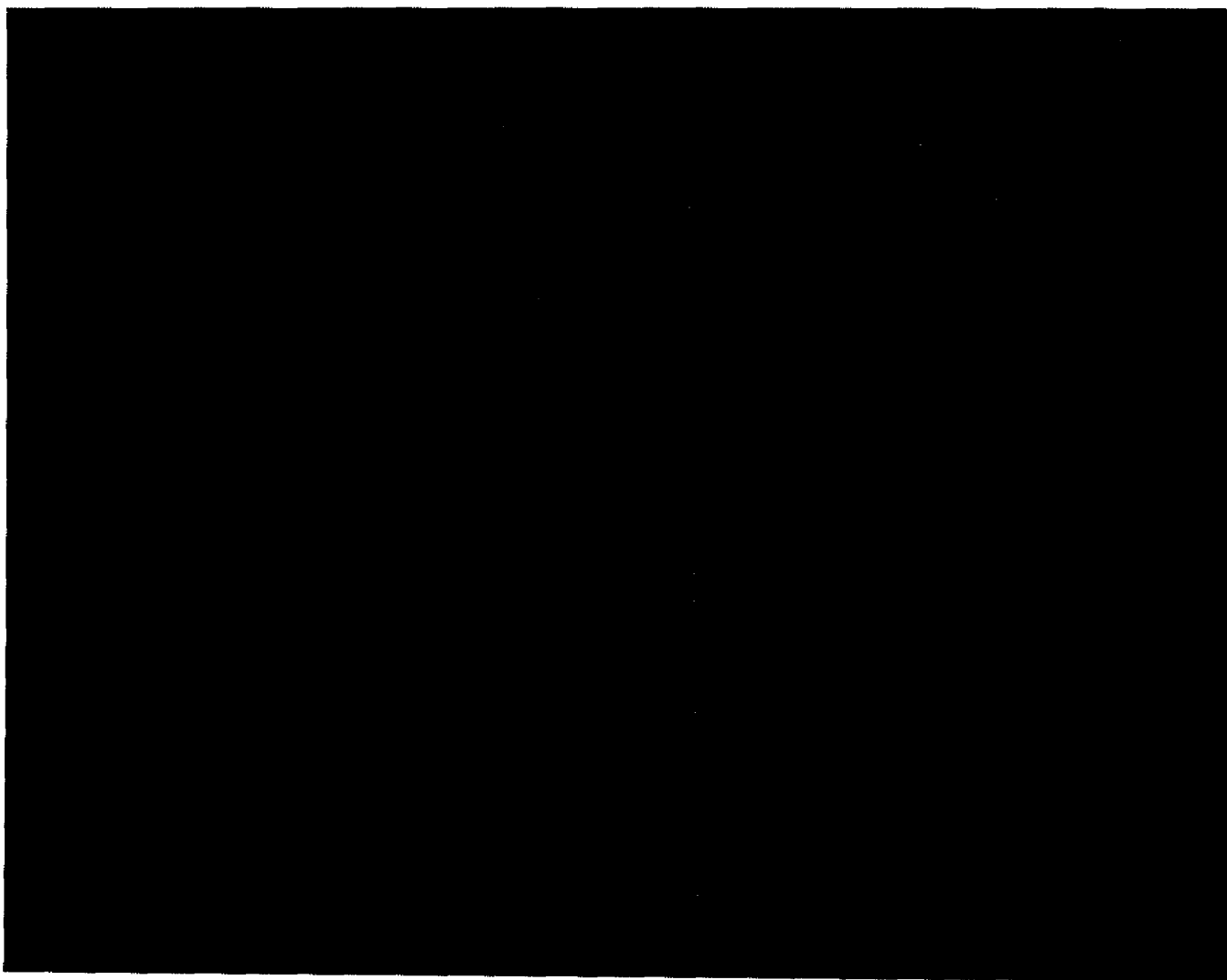
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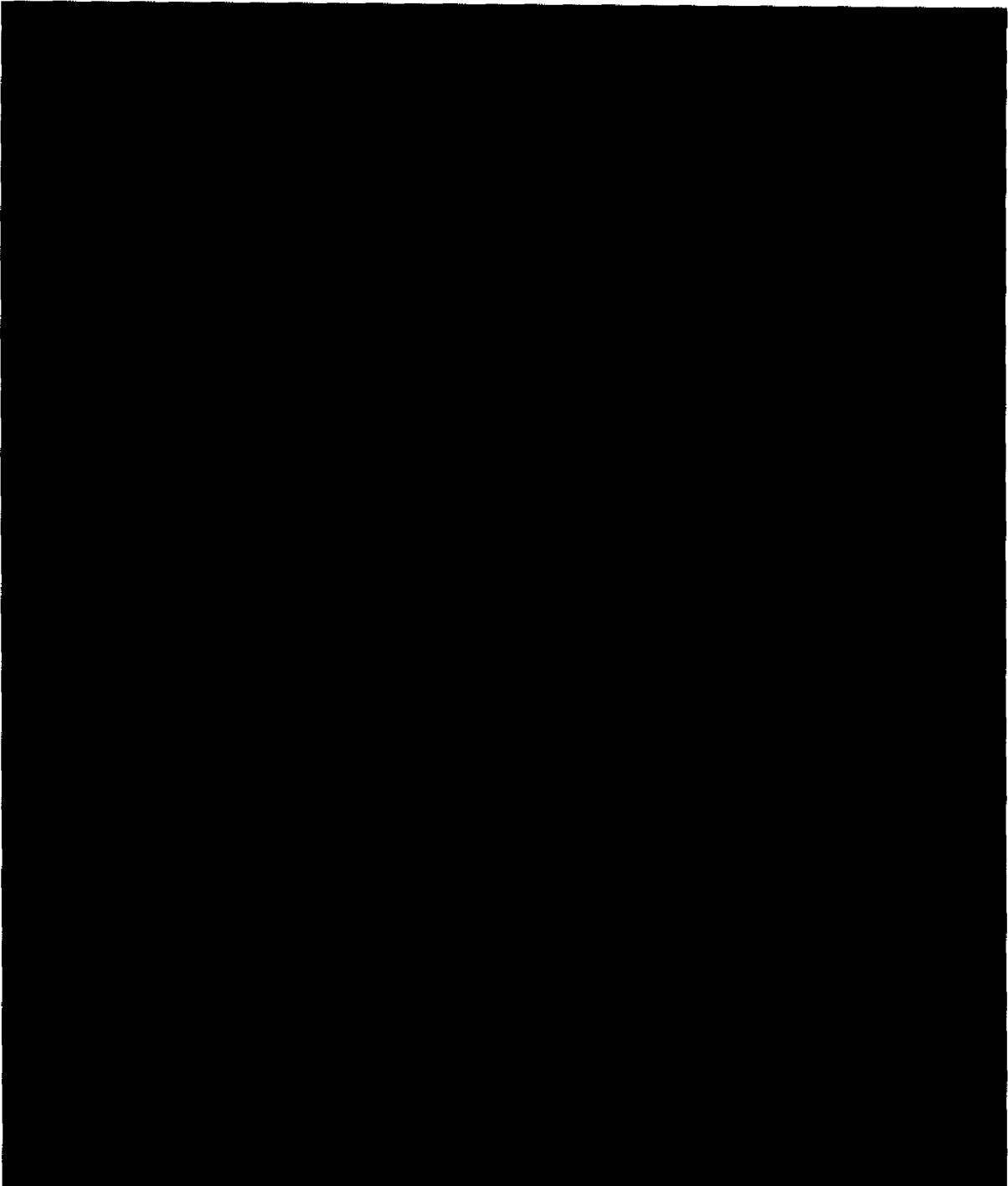
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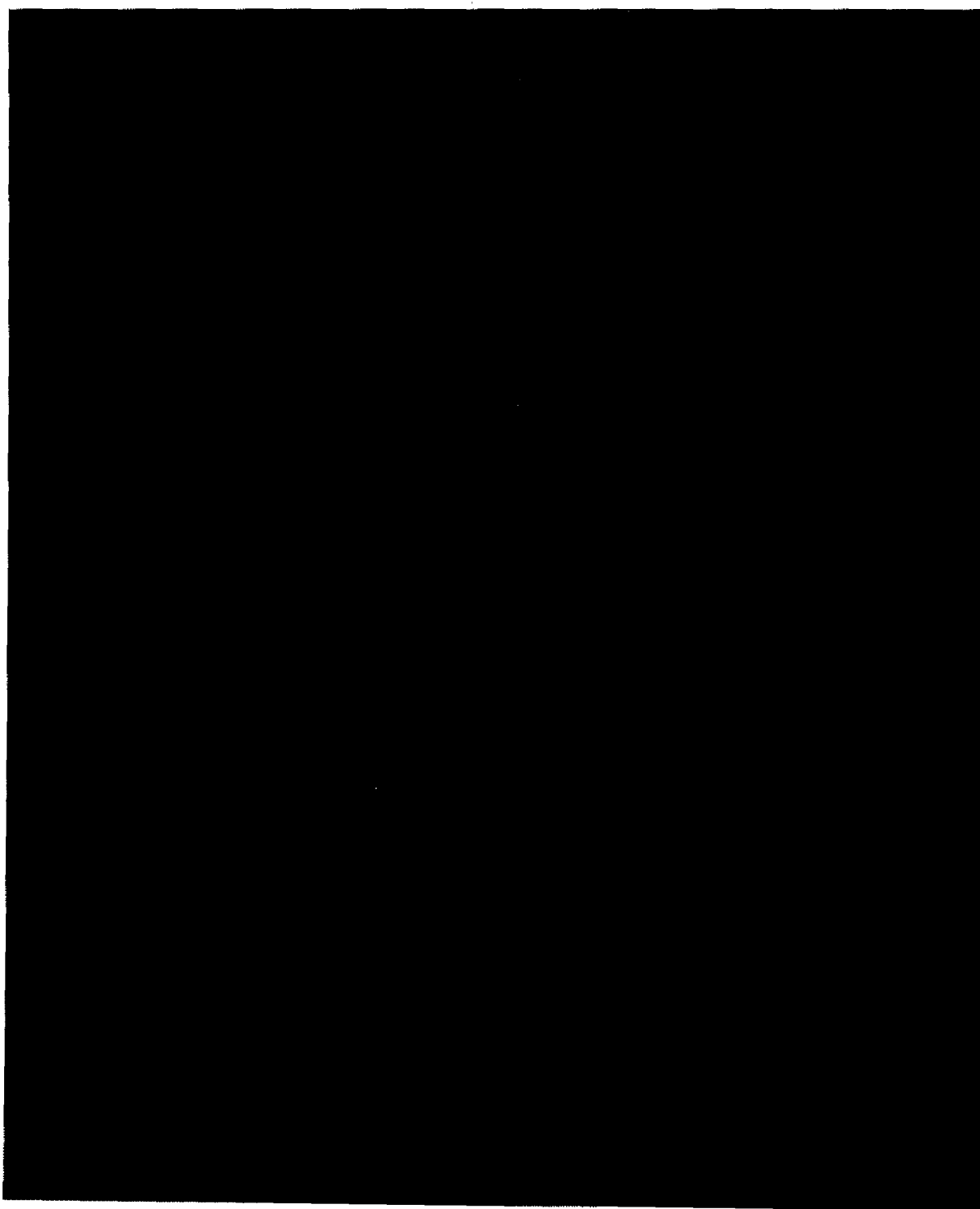
APPENDIX A: LETTERS OF SUPPORT

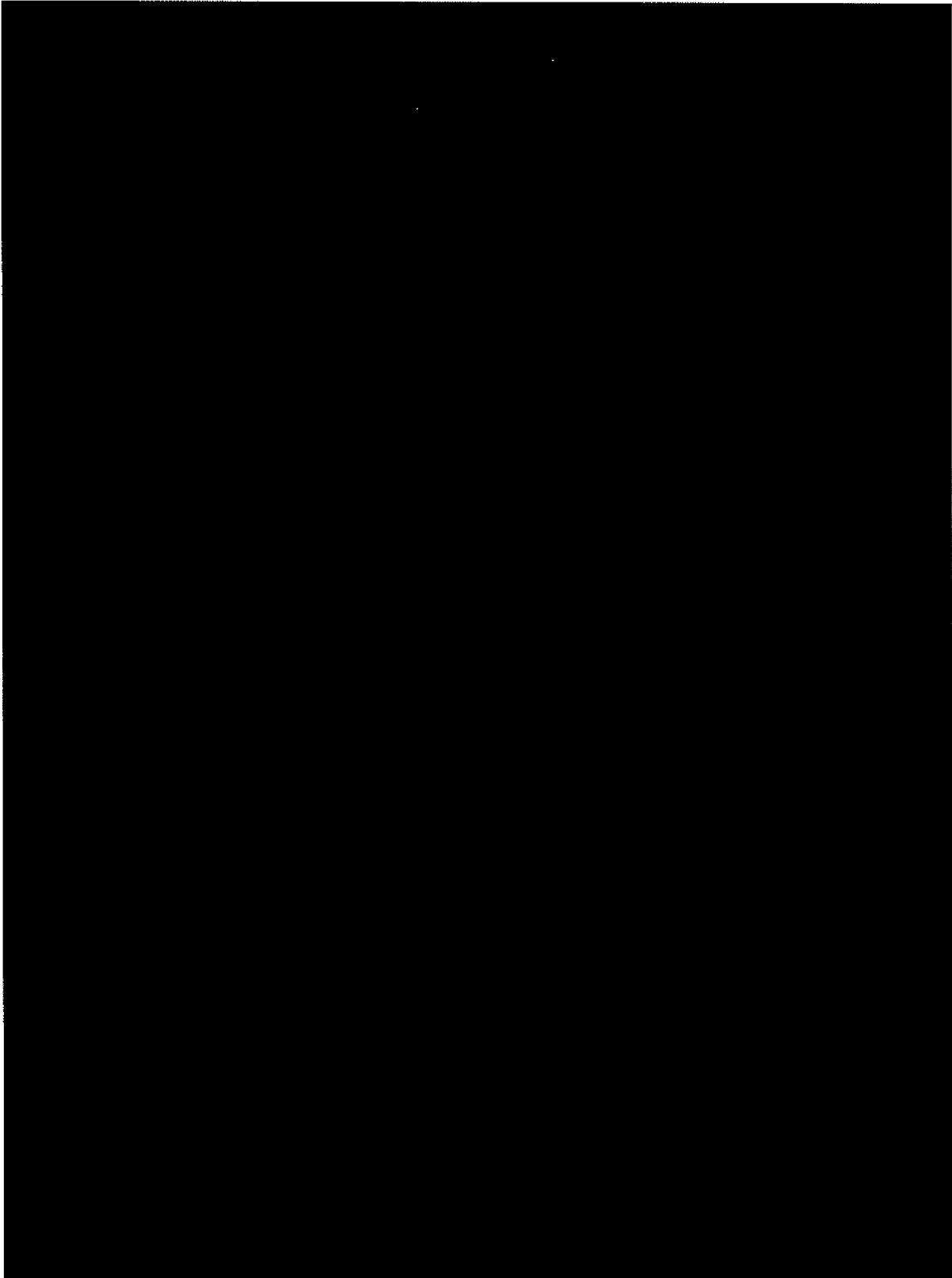














UNITED STATES DEPARTMENT OF AGRICULTURE
Federal Crop Insurance Corporation
Industrial Hemp Crop Provisions

1. Definitions

Base contract price – The price stipulated on the processor contract without regard to discounts or incentives that may apply.

CBD – Cannabidiol

Good farming practices – The cultural practices generally in use for the county for the crop to make normal progress toward maturity and produce at least the yield used to determine the production guarantee and any requirements contained in the processor contract.

Harvest – The combining or threshing the insured crop for grain or cutting the insured crop for fiber or CBD. A grain crop which is swathed prior to combining or a fiber crop cut for the purpose of retting and not baled will not be considered harvested.

Industrial hemp – Plants of the *Cannabis sativa* species, by type, grown for the production of industrial and consumer products.

Planted acreage – In addition to the definition contained in the Basic Provisions, land in which industrial hemp seedlings, including hydroponic plants, have been transplanted by hand or machine into the field.

Processor contract – A legal contractual written agreement executed between the producer and processor engaged in the production and processing of industrial hemp containing at a minimum:

- (a) The producer's promise to plant and grow industrial hemp and to deliver all industrial hemp to the processor;
- (b) The processor's promise to purchase the industrial hemp produced by the producer; and;
- (c) A base contract price, or method to derive a value that will be paid to the producer for the production as specified in the processor's contract.

Multiple contracts with the same processor that specify amounts of production will be considered as a single processor contract unless the contracts are for different types of hemp.

Pound – 16 ounces avoirdupois.

Processor – Any business enterprise regularly engaged in processing industrial hemp that possesses all licenses and permits for processing industrial hemp required by the applicable governing authority in the state in which it operates, and that possesses facilities, or has contractual access to such facilities with enough equipment to accept and process contracted industrial hemp within a reasonable amount of time after harvest.

Retting – The process for separating the different fibers of the hemp plant and involves leaving the crop

in the field to allow decomposition.

THC – Tetrahydrocannabinol (also known as delta-9 tetrahydrocannabinol).

Type – A category of industrial hemp identified as a type on the Special Provisions and shown below:

- (a) **CBD** – CBD produced from the flowers, leaves, and stems of industrial hemp plants containing not more than 0.3 percent THC on a dry weight basis;
- (b) **Dual-purpose** – A type of industrial hemp that is grown to produce grain and fiber in the same crop year;
- (c) **Fiber** – The fiber produced from the stems and stalk of the industrial hemp plant;
- (d) **Grain** – Grain produced by the industrial hemp plant;
- (e) **Oil** – Oil produced from industrial hemp grain;
- (f) **Other** – Other types of industrial hemp contained in the Special Provisions.

2. Unit Division

Units will be established in accordance with the Basic provisions except:

- (a) In addition to definition of basic unit in the Basic Provisions, separate basic units will be established by type; and
- (b) The whole farm unit provisions are not applicable.

3. Insurance Guarantees, Coverage Levels, and Prices for Determining Indemnities

In accordance with the requirements of section 3 of the Basic Provisions:

- (a) You may select only one coverage level for each insured type in the county insured under this policy. For example, the insured may elect the 75 percent coverage level on one type and the 65 percent coverage level on a different type.
- (b) You may select only one price election for each insured crop in the county unless the actuarial documents provide different price elections for the insured crop, by type as contained in the Special Provisions, you may select one price election for each type designated in the actuarial documents even if the prices for each type are the same. The price elections you choose for each type are not required to have the same percentage relationship to the maximum price election offered by us for each type. For example, if you choose 100 percent of the maximum price election for one type, you may choose 65 percent of the maximum price election for another type.
- (c) Notwithstanding section 3(a) and b), if you elect the Catastrophic Risk Protection (CAT) plan of insurance coverage, the CAT level of coverage and

price election will be applicable to all insured industrial hemp acreage of the insured crop in the county.

4. **Contract Changes**

In accordance with section 4 of the Basic Provisions, the contract change date is November 30 preceding the cancellation date for all counties.

5. **Cancellation and Termination Dates**

In accordance with section 2 of the Basic Provisions, the cancellation date and termination dates are:

<u>State and County</u>	<u>Cancellation and Termination Date</u>
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California, North Carolina	February 28
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Colorado, Indiana, Kentucky, Illinois, Minnesota, Montana, New York, North Dakota, Oregon, Pennsylvania, Tennessee, Virginia, Wisconsin	March 15
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6. **Report of Acreage**

In addition to the requirements of section 6 of the Basic Provisions, you must:

- (a) Report the applicable land identifier contained in section 6(c) of the Basic Provisions, including Global Positioning System (GPS) coordinates; and
- (b) Submit on or before the acreage reporting date a copy of:
 - (1) The certification form or official license issued by the applicable governing authority authorizing you to produce industrial hemp; and
 - (2) Each processor contract.

7. **Insured Crop**

- (a) The crop insured will be industrial hemp that is grown in the county on insurable acreage, and for which premium rates are provided by the actuarial documents:
 - (1) In which you have a share;
 - (2) That is a type of industrial hemp designated in the Special Provisions;
 - (3) That is grown under a processor contract executed by the applicable acreage reporting date;
 - (4) That is grown under an official certification or license issued by the applicable governing authority that permits the production of the industrial hemp;
 - (5) That is planted for harvest as industrial hemp in accordance with the requirements of the processor contract and the production management practices of the processor;
 - (6) That is planted to an approved variety contained in a list issued by the applicable governing authority in the State in which the industrial hemp is grown or a proxy State contained in the Special Provisions; and

(7) That is not (unless allowed by the Special Provisions):

- (i) Planted for any purpose other than industrial hemp;
 - (ii) Interplanted with another crop;
 - (iii) Planted into an established grass or legume;
 - (iv) Planted in a confined space such as a greenhouse or other physical structure;
 - (v) Planted to a variety not contained in the list of varieties issued by the applicable governing authority in the State, or a proxy State as contained in Special Provisions; or
 - (vi) Does not meet the minimum acreage requirements contained in the Special Provisions.
- (b) An industrial hemp producer who is also a processor may be able to insure the industrial hemp crop if the following requirements are met:
- (1) The processor company has an insurable interest in the industrial hemp crop;
 - (2) Prior to the sales closing date, the Board of Directors or officers of the processor has executed and adopted a corporate resolution that contains the same terms as an industrial hemp contract. This corporate resolution will be considered a contract under this policy; and
 - (3) Our inspection reveals that the processing facilities comply with the definition of a processor contained in these Crop Provisions.

8. **Insurable Acreage**

- (a) In addition to the provisions of section 9 of the Basic Provisions we will not insure any acreage of the insured crop not in compliance with the rotation requirements contained in the Special Provisions or, if applicable, required by the processor contract.
- (b) If the processor contract specifies an amount of acreage or production, insurable acreage for the unit will not exceed:
 - (1) The contracted acreage specified in your processor contract(s) for the unit; or
 - (2) The result of dividing the amount of production specified in your processor contract(s) for the unit by your approved yield for the unit.
- (c) Any acreage of the insured crop damaged before the final planting date, to the extent that the majority of growers in the area would normally not further care for the crop, must be replanted unless we agree that replanting is not practical. We will not require you to replant if it is not practical to replant to the same type of industrial hemp as originally planted.

9. **Insurance Period**

In accordance with the provisions contained in section 11(b) of the Basic Provisions, the calendar date for the end of the insurance period is October 31

10. Causes of Loss

- (a) In addition to the provisions of section 12 of the Basic Provisions, any loss covered by this policy must occur within the insurance period. The specific causes of loss for industrial hemp are:
- (1) Adverse weather conditions;
 - (2) Fire;
 - (3) Insects, but not damage allowed because of insufficient or improper application of pest control measures;
 - (4) Plant disease, but not damage allowed because of insufficient or improper application of disease control measures and the failure to follow applicable rotation requirements contained in section 8(a)(1) of these Crop Provisions;
 - (5) Wildlife;
 - (6) Earthquake;
 - (7) Volcanic eruption;
 - (8) Failure of the irrigation water supply due to a cause of loss specified in sections 10(a)(1) through (7) that also occurs during the insurance period.
- (b) In addition to the causes of loss excluded in section 12 of the Basic Provisions, we will not insure against any loss of production that is due to:
- (1) Levels of THC in excess of 0.3 percent or more on a dry weight basis except as otherwise specified on the Special Provisions;
 - (2) Your failure to follow the requirements contained in the processor contract;
 - (3) Any harvested production infected by mold, yeast, fungus, or other microbial organisms after harvest except as specified in section 12(c)(4) of these Crop Provisions; or
 - (4) Any damage or loss of production due to the inability to market the industrial hemp for any reason other than actual physical damage to the industrial hemp from an insurable cause specified in this section. For example, we will not pay you an indemnity if you are unable to market due to quarantine, boycott, or refusal of any person to accept production.

11. Duties In The Event of Damage or Loss

- (a) Representative samples are required in accordance with section 14 of the Basic Provisions.
- (b) If insured acreage of the insured type is damaged during the insurance period by an insured cause of loss and you intend to harvest the acreage before the final THC level is determined by the applicable governing authority, you must provide us notice so we may inspect the damaged acreage to determine the appraised production to count. If you harvest the acreage before our inspection and you are required to destroy such harvested production due to a THC level in excess of the level specified in section 10(b)(1), the acreage will be considered destroyed without consent and will result in an appraisal of production to count of not less than the production guarantee per acre for the unit.

12. Settlement of Claim

- (a) We will determine your loss on a unit basis. In the event you are unable to provide records of production that are acceptable to us for any:
- (1) Optional unit, we will combine all optional units for which acceptable records of production were not provided; or for any
 - (2) Basic unit, we will allocate any commingled production to such units in proportion to our liability on the harvested acreage for each unit.
- (b) In the event of loss or damage covered by this policy, we will settle your claim by:
- (1) Multiplying the number of insured acres for the type and practice, as applicable, by its respective production guarantee (per acre);
 - (2) Multiplying each result of 12(b)(1) by its respective price election;
 - (3) Totaling the results of section 12(b)(2);
 - (4) Multiplying the production to count for the type and practice, as applicable, by the respective price election;
 - (5) Totaling the results of section 12(b)(4);
 - (6) Subtracting the result of section 12(b)(5) from the result of section 12(b)(3); and
 - (7) Multiplying the result of section 12(b)(6) by your share.

Example: You have 100 percent share in a unit of grain containing 50 acres with a production guarantee per acre of 1,200 pounds (1,600 pound approved yield per acre x 75% coverage level), your production guarantee for the unit is 60,000 pounds (50 acres x 1,200 pounds/acre guarantee), your price election is \$0.50 per pound (\$0.50 published price election x 100% price percentage), and your production to count is 50,000 pounds. Your premium rate is 7.0 percent.

The premium due is \$2,100 (1,200 lbs./ac. production guarantee X \$0.50/lb. price election X 50 acres X .07 premium rate X 100 % share).

- (1) 50 acres x 1,200 pound production guarantee/acre = 60,000 pound production guarantee;
- (2) 60,000 pound production guarantee x \$0.50 price election = \$30,000 value of the production guarantee;
- (4) 50,000 pound production to count x \$0.50 price election = \$25,000 value of the production to count;
- (6) \$30,000 - \$25,000 = \$5,000; and
- (7) \$5,000 x 1.000 share = \$5,000 indemnity.

Example: You have 100 percent share in a unit of transplant-whole plant CBD containing 30 acres with a production guarantee per acre of 1,200 pounds (1,600 pound approved yield per acre x 75% coverage level), your production guarantee for the unit is 36,000 pounds (30 acres x 1,200 pounds/acre guarantee), your price election is

\$5.00 per pound (\$5.00 published price election x 100% price percentage), and your production to count is 25,000 pounds. Your premium rate is 7.0 percent.

The premium due is \$12,600 (1,200 lbs./ac. production guarantee X \$5.00/lb. price election X 30 acres X .07 premium rate X 100 % share).

- (1) 30 acres x 1,200 pound production guarantee/acre = 36,000 pound production guarantee;
 - (2) 36,000 pound production guarantee x \$5.00 price election = \$180,000 value of the production guarantee;
 - (4) 25,000 pound production to count x \$5.00 price election = \$125,000 value of the production to count;
 - (6) \$180,000 – \$125,000 = \$55,000; and
 - (7) \$55,000 x 1.000 share = \$55,000 indemnity.
- (c) The total production to count (in pounds) from all insurable acreage on the unit will include:
- (1) All appraised production as follows:
 - (i) Not less than the production guarantee (per acre) for acreage:
 - (A) Which is abandoned;
 - (B) Put to another use without our consent;
 - (C) Damaged solely by uninsured causes; or
 - (D) For which you fail to provide records of production that are acceptable to us;
 - (ii) Production lost due to uninsured causes including production that exceeds THC limit specified in section 10(b)(1) of these Crop Provisions;
 - (iii) Potential production on insured acreage that you intend to put to another use or abandon, if you and we agree on the appraised amount of production. Upon such agreement, the insurance period for that acreage will end when you put the acreage to another use or abandon the crop. If agreement on the appraised amount of production is not reached:
 - (A) If you do not elect to continue to care for the crop, we may give you consent to put the acreage to another use if you agree to leave intact, and provide sufficient care for, representative samples of the crop in locations acceptable to us. (The amount of production to count for such acreage will be based on the harvested production or appraisals from the samples at the time harvest should have occurred. If you do not leave the required samples intact, or you fail to provide sufficient care for the samples our appraisal made prior to giving you

consent to put the acreage to another use will be used to determine the amount of production to count.); or

- (B) If you elect to continue to care for the crop, the amount of production to count for the acreage will be the harvested production, or our reappraisal if additional damage occurs and the crop is not harvested; and

- (2) All harvested production from the insurable acreage.
- (3) Mature grain production and harvested CBD production will be adjusted to a moisture content specified in FCIC approved procedures. Moisture adjustments for fiber production are not applicable.
- (4) Any production destroyed in accordance with section 15(j) of the Basic Provisions will not be considered production to count (excludes production that exceeds the THC levels specified in section 10(b)(1) of these Crop Provisions).

13. Late Planting, Prevented Planting, and Written Agreements.

The late planting, prevented planting, and written agreement provisions of the Basic Provisions are not applicable.

**Special Provisions of Insurance
2020 and Succeeding Crop Years**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: Tt APH (90)

State: Kentucky (011)
County: Adair (001)

Program Dates for Insurable Types and Practices

Sales Closing Date
3/15/2020

Earliest Planting Date

Final Planting Date
6/20/2020

Acreage Reporting Date
7/31/2020

Premium Billing Date
8/30/2020

TP	Type	Practice
T/P 1	Grain UUU	Non-Irrigated 003*7
T/P 2	Fiber VVV	Non-Irrigated 003*7
T/P 3	Grain UUU	Irrigated 002*7
T/P 4	Fiber VVV	Irrigated 002*7
T/P 5	Grain UUU	Organic (Certified) Non-Irr. 713*7
T/P 6	Fiber VVV	Organic (Certified) Non-Irr. 713*7
T/P 7	Grain UUU	Organic (Certified) Irr. 702*7
T/P 8	Fiber VVV	Organic (Certified) Irr. 702*7
TP 9	Grain UUU	Organic (Transitional) Non-Irr. 714*7
TP 10	Fiber VVV	Organic (Transitional) Non-Irr. 714*7
T/P 11	Grain UUU	Organic (Transitional) Irr. 712*7
TP 12	Fiber VVV	Organic (Transitional) Irr. 712*7

**Special Provisions of Insurance
2020 and Succeeding Crop Years**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: Tt APH (90)

State: Kentucky (021)
County: Adair (001)

Program Dates for Insurable Types and Practices

Sales Closing Date
3/15/2020

Earliest Planting Date

Final Planting Date
7/20/2020

Acreage Reporting Date
7/31/2020

Premium Billing Date
8/30/2020

TP	Type	Practice
TP 13	CBD – Direct Seeded – Floral WWW*X	Non-Irrigated 003*7
TP 14	CBD – Direct Seeded – Whole Plant XXX*Y	Non-Irrigated 003*7
T/P 15	CBD -Transplant – Floral YYY*X	Non-Irrigated 003*7
T/P 16	CBD -Transplant – Whole Plant ZZZ*Y	Non-Irrigated 003*7
TP 17	CBD – Direct Seeded – Floral WWW*X	Irrigated 002*7
TP 18	CBD – Direct Seeded – Whole Plant XXX*Y	Irrigated 002*7
TP 19	CBD -Transplant – Floral YYY*X	Irrigated 002*7
TP 20	CBD -Transplant – Whole Plant ZZZ*Y	Irrigated 002*7
TP 21	CBD – Direct Seeded – Floral WWW*X	Organic (Certified) Non-Irr. 713*7
TP 22	CBD – Direct Seeded – Whole Plant XXX*Y	Organic (Certified) Non-Irr. 713*7
T/P 23	CBD -Transplant – Floral YYY*X	Organic (Certified) Non-Irr. 713*7
T/P 24	CBD -Transplant – Whole Plant ZZZ*Y	Organic (Certified) Non-Irr. 713*7
TP 25	CBD – Direct Seeded – Floral WWW*X	Organic (Certified) Irr. 702*7
TP 26	CBD – Direct Seeded – Whole Plant XXX*Y	Organic (Certified) Irr. 702*7
TP 27	CBD -Transplant – Floral YYY*X	Organic (Certified) Irr. 702*7
TP 28	CBD -Transplant – Whole Plant ZZZ*Y	Organic (Certified) Irr. 702*7

**Special Provisions of Insurance
2020 and Succeeding Crop Years**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: Tt APH (90)

State: Kentucky (021)
County: Adair (001)

Program Dates for Insurable Types and Practices

Sales Closing Date
3/15/2020

Earliest Planting Date

Final Planting Date
7/20/2020

Acreage Reporting Date
7/31/2020

Premium Billing Date
8/30/2020

TP	Type	Practice
TP 29	CBD – Direct Seeded - Floral*X	Organic (Transitional) Non-Irr. 714*7
TP 30	CBD – Direct Seeded – Whole Plant*Y	Organic (Transitional) Non-Irr. 714*7
T/P 31	CBD -Transplant - Floral*X	Organic (Transitional) Non-Irr. 714*7
T/P 32	CBD -Transplant – Whole Plant*Y	Organic (Transitional) Non-Irr. 714*7
TP 33	CBD – Direct Seeded - Floral*X	Organic (Transitional) Irr. 712*7
TP34	CBD – Direct Seeded – Whole Plant*Y	Organic (Transitional) Irr. 712*7
TP 35	CBD -Transplant - Floral*X	Organic (Transitional) Irr. 712*7
TP 36	CBD -Transplant – Whole Plant*Y	Organic (Transitional) Irr. 712*7

Statement

General

Contact your agent regarding possible premium discounts, options, and/or additional coverage that may be available.

In accordance with section 10(b)(1) of the Crop Provisions, a THC limit of above .3% is allowed if authorized by the applicable governing authority for the local in which the insured crop is grown. Any production exceeding the applicable limit will be considered lost due to an uninsured cause of loss.

**Special Provisions of Insurance
2020 and Succeeding Crop Years**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: Tt APH (90)

State: Kentucky (011)
County: Adair (001)

Type

- *X Floral means all parts of the Industrial Hemp flower.
- *Y Whole plant means all parts of the Industrial Hemp plant including the stalks, stems, leaves and flowers.

Practice

*7 Insurance shall not attach or be considered to have attached to a planted crop on acreage from which, in the same calendar year:

1. A perennial hay crop was harvested; or
2. A crop (other than a cover crop) reached the headed or budded stage prior to termination, regardless of the percentage of plants that reached the headed or budded stage.

Termination means growth has ended. A cover crop is one that meets the criteria outlined in the Insurance Availability section of this Special Provisions of Insurance.

Premium

Any acreage in this county with a high risk area designation on the actuarial map will have a rate adjusted in accordance with the high risk area and map area rates table.

Price

If a contract price is available as shown in the actuarial documents, you may elect to have your price election determined in accordance with the Contract Price Addendum (CPA). If the Crop Provisions or Special Provisions provide a method to determine a contract, price your price election will be determined in accordance with the Crop Provisions or Special Provisions and the CPA does not apply.

Special Provisions of Insurance
2020 and Succeeding Crop Years

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: Tt APH (90)

State: Kentucky (021)
County: Adair (001)

Insurance Availability

In addition to the definition of Planted acreage in the Basic Provisions, acreage planted with a single implement designed to place the seed (at the proper depth) into the soil in rows too narrow to permit cultivation will be insurable. Acreage on which seed is first broadcast onto the surface of the soil using any implement or aircraft, and on which the seed subsequently is incorporated into the soil, will not be insurable.

Insurance will not attach to any acreage on which *Cannabis*, canola, dry beans, dry peas, mustard, rapeseed, soybeans, or sunflowers were grown the preceding crop year.

The minimum acreage required to establish insurability is:

<u>Type</u>	<u>Minimum Acres</u>
Grain	20
Fiber	20
CBD	5

for each separate unit for the type (either a basic or optional unit). Any location that may qualify as a separate unit that contains less than the minimum acreage will be combined with the nearest qualifying unit of the same type.

Insurance shall attach to a crop following a cover crop when the cover crop meets the definition provided in the Basic Provisions, was planted within the last 12 months, and is managed and terminated according to NRCS guidelines. If growing conditions warrant a deviation from the guidelines, producers should contact either Extension or the local NRCS for management guidance. For information on cover crops and crop insurance and the Cover Crop Termination Guidelines go to <http://www.rma.usda.gov/news/currentissues/covercrops/>.

In accordance with section 7(a)(6) and 7(a)(7)(v), the applicable proxy state will be the nearest State to the State with an authorized industrial hemp insurance program without an approved variety listing.

HEMP PRODUCTION AND SALES AGREEMENT

This Hemp Production and Sales Agreement ("Agreement") is between:

_____, an Oregon limited liability company, ("_____") and
_____, an Oregon limited liability company, ("Farm.")

This Agreement has an effective date of _____ ("Effective Date")
and remains effective for one year from the Effective Date first written above.

RECITALS

_____ and Farm desire to enter into an agreement to grow, harvest, market, extract and sell industrial hemp. The parties enter into this Agreement to lay out their respective duties and disbursement of revenues.

AGREEMENT

Crop Year: _____
ODA Hemp License #: _____
Acres: _____
Location(s): _____

Hemp Varieties Planted: _____

- Farm's Obligations.** Farm agrees, at Farm's sole expense, to grow and harvest the crop; to insure the hemp biomass in the name of Farm and _____; to provide testing of the crop conducted in accordance with Oregon Department of Agriculture ("ODA") rules and regulations; to use only organic products on the crop; to ensure the crop is tested free from non-organic pesticides, herbicides or solvents; to ensure the crop passes the ODA potency test of under .034% THC and thus qualifies as federally and state legal industrial hemp; coordinate harvesting of plants out of the field; deliver harvested plants to drying facilities in _____ for hanging and drying; cover costs to have hemp bucked off the stem and kiln dried for early harvest; and cover cost to rent and operate hand dry facility and pay, including labor costs.

Farm agrees not to sell to third parties or destroy any portion of the hemp crop or hemp biomass during the term of this Agreement without the prior written permission of _____ and, unless otherwise instructed by _____, to destroy any biomass from the crop on termination of this Agreement.

2. **_____’s Obligations.** _____ agrees, at _____’s sole expense, to harvest, dry and store the hemp biomass until sold; including but not limited to, overseeing and coordinating drying of crops; buck and trim dry crops; marketing and sales of all products harvested by _____ under this Agreement; and extraction of all crops harvested under this Agreement that is agreed to by both parties to be extracted.
3. **Payment.** The parties agree to split the gross proceeds from the sale of all products grown under this Agreement evenly, 50% to each party; except for any extraction by _____, which shall be split 70%/30% in favor of _____. After each sale of product by _____, _____ shall deliver Farm’s share in cash to Farm within 14 days of receipt of the cash proceeds from the sale.
4. **Ownership of the Hemp.** The parties expressly agree that the hemp biomass grown under this Agreement is the sole and exclusive property of Farm when it is grown under Farm’s ODA license until each sale is completed. _____’s rights under this agreement are for the revenue sharing anticipated under this Agreement.
5. **Exclusivity.** Farm nor _____ shall sell, assign, or transfer any portion of the crop, hemp biomass or products developed under this Agreement outside of the terms of this Agreement.
6. **Security.** If requested, Farm hereby grants to _____ a security interest in the hemp biomass stock, growing crop and hemp biomass. Farm agrees to notify _____ within thirty (30) days of any change in the lease or ownership of the property on which the hemp biomass is grown. _____ is authorized to file a UCC-1 and EFS-1.
7. **Right to Enter.** _____ reserves the right, at its expense, to enter upon the land on which the crop is being grown to inspect the fields and test the crop and _____ shall not be liable for damage, if any, to the crop resulting therefrom. Farm reserves the right to enter, at its expense, any facilities controlled by _____ which include the hemp grown under this Agreement to inspect the product.
8. **Right to Complete Agreement.** If either party shall fail to carry out their obligations under this Agreement, the non-defaulting party shall have the option to take such measures as in its opinion are necessary to otherwise complete the terms of this Agreement, at the defaulting party’s expense.
9. **Conformance to Specifications.** If the hemp grown under this Agreement does not conform to federal and state industrial hems standards for being pesticide-free, then _____ is relieved from performing their obligations under this Agreement and this Agreement shall be void and have no further effect.
10. **Independent Contractor.** Each party to this Agreement is an independent contractor with respect to the other, and not an agent, employee, or partner of the other, and is solely responsible for its own actions.

11. **Confidentiality and Nondisclosure.** The Parties shall (i) use reasonable efforts to maintain the confidentiality of the information and materials, whether oral, written or in any form whatsoever, of the other that may be reasonably understood, from legends, the nature of such information itself and/or the circumstances of such information's disclosure, to be confidential and/or proprietary thereto or to third parties to which either of them owes a duty of nondisclosure (collectively, "Confidential Information.") The foregoing shall not require separate written agreements with employees and agents already subject to written agreements substantially conforming to the requirements of this Section nor with legal counsel, certified public accountants, or other professional advisers under a professional obligation to maintain the confidences of clients. All Confidential Information delivered pursuant to this Agreement shall be and remain the property of the disclosing Party, and any documents containing or reflecting the Confidential Information, and all copies thereof, shall be promptly returned to the disclosing Party upon written request, or destroyed at the disclosing Party's option. Nothing herein shall be construed as granting or conferring any rights by license or otherwise, express or implied, regarding any idea made, conceived or acquired prior to or after the Effective Date, nor as granting any right with respect to the use or marketing of any product or service. The Parties shall use the Confidential Information only for the purposes of executing this Agreement. The obligations of the Parties under this Agreement shall continue and survive the completion or abandonment of this Agreement and shall remain binding for a period of two (2) years after the termination of this Agreement. Neither Party makes any representation or warranty with respect to any Confidential Information disclosed by it, nor shall either Party or any of their respective representatives have any liability hereunder with respect to the accuracy or completeness of any Confidential Information or the use thereof. This section shall survive termination of the Agreement.
12. **Indemnification.** Each party will defend and indemnify the other and each present and future shareholder, director, member, manager, partner, officer, and authorized representative of the other party for, from, and against any and all claims, actions, proceedings, damages, liabilities, and expenses of every kind, whether known or unknown, including but not limited to reasonable attorney's fees, resulting from or arising out of the other's acts, omissions or breach of any representation, warranty, or covenant in this Agreement.
13. **Termination.** This Agreement may only terminate upon the written agreement of the parties or upon 30 days notice of a breach to this Agreement by the non-breaching party and the breaching party has not cured the breach within the 30 days notice.
14. **Attorney Fees.** If either party shall fail to perform any portion of this Agreement, the non-defaulting party may specifically enforce this Agreement by injunction proceedings or otherwise, or may use such other legal proceedings as it deems necessary. The defaulting party agrees to pay the non-defaulting party reasonable attorney's fees in said action in addition to court costs.
15. **Arbitration.** Any dispute or claim that arises out of or that relates to this agreement or to the interpretation or breach thereof shall be resolved by arbitration in accordance with the then effective arbitration rules of Arbitration Service of Portland Inc. and judgment upon the

award rendered pursuant to such arbitration may be entered in any court having jurisdiction thereof.

16. **Force Majeure.** Neither party shall be liable for any failure or delay in performing its obligations under this Agreement if and to the extent that such failure or delay is caused by a Force Majeure event. A Force Majeure event means, in relation to either party, any event or circumstance beyond the reasonable control of that party including act of God, fire, explosion, flood, epidemic, power failure, governmental actions, war or threat of war, acts of terrorism, national emergency, or riot. A party affected by the Force Majeure (the "Affected Party") shall immediately notify the other party ("Non-Affected Party") in writing of the event, giving sufficient details thereof and the likely duration of the delay. The Affected Party shall use all commercially reasonable efforts to recommence performance of its obligations under this Agreement as soon as reasonably possible.
17. **No Waiver.** Neither party shall be deemed to have waived any provision of this Agreement unless such waiver shall be in writing.
18. **Notice.** Any notice relating to this Agreement shall be in writing and shall be deemed given when actually delivered or when deposited in the United States registered or certified mail, return receipt requested, in an envelope addressed as set forth below or to such other address as either party may hereafter specify by notice to the other.

Name and Address:

Name and Address:

19. **No Assignment.** This contract is personal in nature and is not assignable by either party without the other party's written approval. Farm represents and warrants to _____ that Farm has not executed an Agreement with any other party which grants to that party the right to set prices or to act as Farm's agent for marketing the product subject to this Agreement.
20. **Interpretation.** The paragraph headings are for the convenience of the reader only and are not intended to act as a limitation on the scope or meaning of the paragraphs themselves. This agreement shall not be construed against the drafting party.
21. **Severability.** The invalidity of any term or provision of this agreement shall not affect the validity of any other provision.
22. **Waiver.** Waiver by any party of strict performance of any provision of this agreement shall not be a waiver of or prejudice any party's right to require strict performance of the same provision in the future or of any other provision.

23. **Binding Effect.** Subject to restrictions in this agreement upon assignment, if any, this agreement shall be binding on and inure to the benefit of the heirs, legal representatives, successors, and assigns of the parties.

24. **Governing Law.** This agreement shall be interpreted and enforced according to the laws of the state of Oregon.

25. **Counterparts.** This agreement may be executed in multiple counterparts, each of which shall constitute one agreement, even though all parties do not sign the same counterpart.

26. **Entire Agreement.** This Agreement represents the entire agreement between the parties. There are no promises, terms, conditions, or obligations other than those contained in this agreement. This agreement shall supersede all prior communications, representations, and agreements, oral or written, of the parties. No modification of this agreement shall be valid unless it is in writing and is signed by all of the parties.

IN WITNESS WHEREOF, the parties hereto have entered and executed this Agreement to be effective as to the date first written above.

Farms:

Contractor:

Name: _____

Title: _____

Name: _____

Title: _____



United States
Department of
Agriculture



Federal Crop Insurance
Corporation

FCIC-20XXXL (01-2020)

INDUSTRIAL HEMP LOSS ADJUSTMENT STANDARDS HANDBOOK

2020 and Succeeding Crop Years

**RISK MANAGEMENT AGENCY
KANSAS CITY, MO 64133**

TITLE: Industrial Hemp Loss Adjustment Standards Handbook	NUMBER: 20XXXL
EFFECTIVE DATE: 2020 and Succeeding Crop Years	ISSUE DATE: January XX, 2020
SUBJECT: Provides the procedures and instructions for administering the Industrial Hemp crop insurance program	OPI: Product Administration and Standards Division
	APPROVED: /s/ Deputy Administrator for Product Management

REASON FOR ISSUANCE

This handbook provides procedures and instructions for administering the Industrial Hemp insurance program beginning with the 2020 crop year.

**INDUSTRIAL HEMP
LOSS ADJUSTMENT STANDARDS HANDBOOK**

CONTROL CHART

Industrial Hemp Loss Adjustment Standards Handbook							
	TP Page(s)	TC Page(s)	Text Page(s)	Exhibit Number	Exhibit Page(s)	Date	FCIC Number
Insert	Entire Handbook						
Current Index	1-2	1-2	1-14	1 2 3 4 5 6 7	15 16-17 18-26 27-45 46-47 48-51 52	01-2020	FCIC-20XXXL

FILING INSTRUCTIONS:

This handbook is effective for the 2020 and succeeding crop years.

**INDUSTRIAL HEMP
LOSS ADJUSTMENT STANDARDS HANDBOOK
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PART 1 GENERAL INFORMATION AND RESPONSIBILITIES

1 General Information

A. Purpose and Objective

The RMA issued loss adjustment standards for Industrial Hemp (IP) program are the official standard requirements for adjusting losses in a uniform and timely manner. The RMA issued standards for this crop and crop year are in effect as of the signature date for this crop handbook located at <https://legacy.rma.usda.gov/handbooks/20000/>.

This handbook remains in effect until superseded by reissuance of either the entire handbook or selected portions (through amendments, bulletins, or FADs). If amendments are issued for a handbook, the original handbook as amended shall constitute the handbook. A bulletin or FAD can supersede either the original handbook or subsequent amendments.

B. Related Handbooks

The following table identifies handbooks that shall be used in conjunction with this handbook.

Handbook	Relation/Purpose
CIH	Provides overall general underwriting procedures for crop insurance contracts.
DSSH	Provides the form standards and procedures for use in the sales and service of crop insurance contracts.
GSH	Provides general crop insurance information.
LAM	Provides overall general loss adjustment (not crop-specific) process.

- (1) Terms, abbreviations, and definitions general (not crop specific) to loss adjustment are identified in the GSH and LAM.
- (2) Terms, abbreviations, and definitions specific to IP loss adjustment and this handbook are in Exhibits 1 and 2, herein.

C. CAT Coverage

Refer to the CIH, GSH and LAM for provisions and procedures not applicable to CAT coverage.

D. Irrigated Practice

Refer to the CIH and LAM for irrigated standards and the DSSH for irrigated practice guidelines.

A. Utilization of Standards

All AIPs shall utilize these standards for both loss adjustment and loss training for the applicable crop year. These standards, which include crop appraisal methods, claims completion instructions, and form standards, supplement the general (not crop-specific) loss adjustment standards identified in the LAM.

B. Form Distribution

The following is the minimum distribution of forms completed by the adjuster and signed by the insured (or the insured's authorized representative) for the loss adjustment inspection.

- (1) One legible copy to the insured; and
- (2) The original and all remaining copies as instructed by the AIP; and
- (3) It is the AIP's responsibility to maintain original insurance documents relative to policyholder servicing as designated in their approved plan of operations.

C. Record Retention

It is the AIPs responsibility to maintain records (documents) as stated in the SRA and described in the LAM.

D. Form Standards

- (1) The entry items in Exhibits 3 and 4 are the minimum requirements for the Appraisal Worksheets and the PWs (Production Worksheet). All entry items are "Substantive," (i.e., they are required).
- (2) The Privacy Act and Non-Discrimination statements are required statements that must be printed on the form or provided to the insured as a separate document. These statements are not shown on the example form(s) in Exhibits 3 - 4. The current Non-Discrimination Statement and Privacy Act Statement can be found on the RMA website at:
<https://legacy.rma.usda.gov/handbooks/20000/>.
- (3) The certification statement required by the current DSSH must be included on the PW directly above the insured's signature block immediately followed by the statement below:

"I understand the certified information on this Production Worksheet will be used to determine my loss, if any, to the above unit. The insurance provider may audit and approve this information and supporting documentation. The Federal Crop Insurance Corporation, an agency of the United States, subsidizes and reinsures this crop insurance."
- (4) Refer to the DSSH for other crop insurance form requirements (such as point size of font, and so forth).

3-10 (Reserved)

PART 2 POLICY INFORMATION

11 Insurability

The AIP determines the insured has complied with all policy provisions of the insurance contract. The Industrial Hemp CP which are to be considered in this determination include (but are not limited to):

The following may not be a complete list of insurability requirements. Refer to the BP, CP, and the SP for a complete list.

A. Insured Crop

The crop insured will be industrial hemp that is grown in the county on insurable acreage, and for which premium rates are provided by the actuarial documents:

- (1) In which the insured has a share;
- (2) That is a type of industrial hemp designated in the SP;
- (3) That is grown under a processor contract executed by the applicable acreage reporting date;
- (4) That is grown under an official certification or license issued by the applicable governing authority that permits the production of the industrial hemp;
- (5) That is planted for harvest as industrial hemp in accordance with the requirements of the processor contract and the production management practices of the processor;
- (6) That is planted to an approved variety contained in a list issued by the applicable governing authority in the State in which the industrial hemp is grown, or a proxy State contained in the Special Provisions; and
- (7) That is not (unless allowed by the SP):
 - (i) Planted for any purpose other than industrial hemp;
 - (ii) Interplanted with another crop;
 - (iii) Planted into an established grass or legume;
 - (iv) Planted in a confined space such as a greenhouse or other physical structure;
 - (v) Planted to a variety not contained in the list of varieties issued by the applicable governing authority in the State or a proxy State as contained in Special Provisions; or
 - (vi) Does not meet the minimum acreage requirements contained in the SP.

11 Insurability (Continued)

B. Insurable Acreage

- (a) In additions to the provisions of section 9 of the Basic Provisions insurable acreage will not include any acreage of the insured crop not in compliance with the rotation requirements contained in the Special Provisions or, if applicable, required by the processor contract.
- (b) If the processor contract specifies an amount of acreage or production, insurable acreage for the unit will not exceed:
 - (1) The contracted acreage specified in the insured's processor contract(s) for the unit; or
 - (2) The result of dividing the amount of production specified in insured's processor contract(s) for the unit by the insured's approved yield for the unit.
- (c) Any acreage of the insured crop damaged before the final planting date, to the extent that the majority of growers in the area would normally not further care for the crop, must be replanted unless the AIP agrees that replanting is not practical. The AIP will not require the insured to replant if it is not practical to replant to the same type of IH as originally planted.

12 Unit Divisions

Refer to the BP and CP for unit division provisions.

13 Insurance Period

A. Coverage Begins

Insurance coverage attaches in accordance with section 11 of the BP.

B. End of Insurance Period

In accordance with the provisions contained in section 11(b) of the Basic Provisions, the calendar date for the end of the insurance period is October 31.

14 Causes of Loss and Exclusions

Refer to the BP and CP for causes of loss and exclusions and the LAM for additional instructions.

15 Qualify Adjustment

Quality adjustment of industrial hemp production is not authorized under the IH Crop Insurance Program. (See section 12(c)(4) of the CP and the PW, Exhibit 4 for information regarding the Federal or State ordered destruction of the insured crop due to substances injurious to human or animal health.)

16 Insured Duties

- (1) The insured must leave representative samples of the unharvested crop.
- (2) If a preliminary THC level test conducted by the applicable governing authority indicates the THC level specified in section 10(b)(1) of the SP is exceeded and:
 - (a) If:
 - (i) Other insured damage has occurred during the insurance period; and
 - (ii) The crop is to be harvested prior to a final THC level is determined;

The insured must provide notice to the AIP so the AIP may inspect the crop before harvest to appraise the crop and determine the production to count and establish the production lost due to the insured cause of loss.
 - (b) If the acreage is harvested prior to the AIP inspection and the insured is required to destroy the harvested production due to an excess THC level, the acreage will be considered destroyed without consent and will result in an appraisal of production to count of not less than the production guarantee per acre for the unit.
 - (c) If the final THC test determines the harvested production does not exceed the specified THC level, the harvested production will be the basis for production to count and any appraisal applicable under Para. 16(2) will not apply.

17-20 (Reserved)

PART 3 APPRAISALS

Potential production for all types of inspections will be appraised in accordance with procedures specified in this handbook and the LAM. Appraisals must not be made until an accurate appraisal of potential production can be made.

21 Selection of Representative Samples for Appraisal

A. Determine Minimum Samples

Determine the minimum number of required samples for a field or subfield by the field size, the average stage of growth, age (size); general capabilities of the plants, variability of potential production, and plant damage within the field or subfield.

B. Splitting Fields

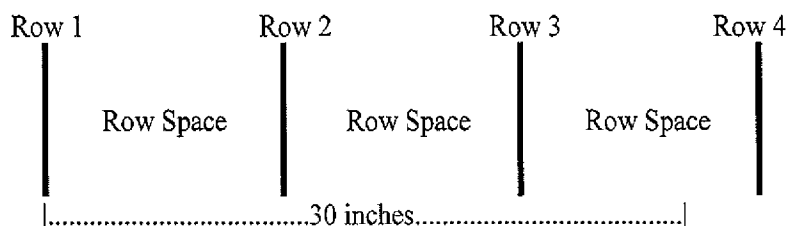
- (1) Split the field into subfields when:
 - (a) Variable damage causes the crop potential to appear to be significantly different within the same field; or
 - (b) The insured wishes to destroy a portion of a field.
- (2) Each field or subfield must be appraised separately.
- (3) Take not less than the minimum number (count) of representative samples required in Exhibit 5, Table A (Minimum Representative Sample Requirements) for each field or subfield.

22 Measuring Row Width for Sample Selection

Use these instructions for all appraisal methods that require row width determinations.

- (1) Use a measuring tape marked in inches or convert a tape marked in tenths, to inches, to measure row width (refer to the LAM for conversion table).
- (2) Measure across three OR MORE row spaces, from the center of the first row to the center of the fourth row (or as many rows as needed) and divide the result by the number of row spaces measured across, to determine an average row width.

EXAMPLE:



$$30 \text{ inches} \div 3 \text{ row spaces} = 10 \text{ inches average row width}$$

22 Measuring Row Width for Sample Selection (Continued)

- (3) Where rows are skipped for tractor and planter tires, refer to the LAM.
- (4) For broadcast acreage, use a 3-foot square grid (9 square feet).
- (5) Apply average row width to Exhibit 5, Table B (Sample Row Length) to determine the sample row length required for the stand reduction and seed count methods.

23 Sample Size by Appraisal Method

- (1) Stand Reduction: One sample is nine square feet of row (or a one square yard area if broadcast seeded). Calculate the row length in feet to tenths required to equal nine square feet using Exhibit 5, Table B (Sample Row Length).
- (2) Plant Damage: Sample consists of 5 damaged plants.
- (3) Seed Count: One hand-harvested sample is five square feet of row (one square yard area if broadcast seeded). Calculate the row length in feet to tenths required to equal five square feet using Exhibit 5, Table B (Sample Row Length).

24 Sampling Procedure

- (1) Determine average stage of growth for IH in selected representative samples.
- (2) For stand reduction, plant damage, seed count, or CBD appraisals, establish the stage of growth (vegetative or reproductive, i.e. flowering and ripening) for sampling based on the most advanced stage reached by at least 50 percent of the plants in the sample.
- (3) Use the stage of growth (vegetative or reproductive) at the date of damage.
- (4) Where there is hail or freeze damage, defer appraisals for at least 7 to 10 days from the date damage occurred when IH is in the vegetative stage.
- (5) Where there is hail or freeze damage, defer appraisals for at least 7 to 14 days from the date damage occurred when IH is in the flowering and ripening stage.

25 Appraisal Methods

These instructions provide information on the following appraisal methods:

Appraisal Method.	Use...
Stand Reduction (Grain and Fiber)	for planted acreage with no emerged seed, and to appraise plants in the vegetative stage.
Plant Damage (Grain and Fiber)	to appraise plants that are damaged in the vegetative or flowering stage.
Seed Count (Grain)	to appraise plants when the seeds have reached maturity.
Stand Reduction and Plant Damage (CDB)	to appraise plants from the time of transplanting until the crop is harvested or removed from the field.

A. Stand Reduction Appraisals – Grain and Fiber (see Para. 26D for CBD appraisal instructions)

- (1) If the reduction in stand is due to insufficient soil moisture that has affected seed emergence, do not complete appraisals prior to the time specified in the LAM. Refer to the LAM regarding deferred appraisals and non-emerged seed. Verify the acreage was initially seeded with a sufficient amount of seed to produce a normal stand.
- (2) Stand reduction appraisals are done in the vegetative stage. The vegetative stage usually lasts 30 - 60 days (depending of variety) and is from seedling emergence until flowering begins.
- (3) IH plants (planted) injured in the vegetative stage may have either one or both cotyledons missing, the seedling beaten down, or the stem broken at the soil line. Plants with both cotyledons broken or torn off and those broken off below the cotyledons, usually do not survive.
- (4) Procedure for determining percent yield loss.

Refer to Exhibit 6 (Percent Yield Loss from IH-Grain and Fiber Stand Reduction) to determine percent yield loss due to insurable causes. To qualify for stand reduction appraisals, damaged plants in the vegetative stage must:

- (a) Be cut off below the cotyledons;
 - (b) Have both cotyledons removed;
 - (c) Be dead; or
 - (d) Be injured to such an extent they are in non-recoverable condition (e.g., have a damaged or destroyed growing point).
- (5) Procedure for stand reduction appraisals.
- (a) In a representative sample area, determine the original stand (living and dead/non-harvestable, missing, or non-emerged), by counting the number of plants per nine square feet of row (one square yard if broadcast seeded). Enter this number on the appraisal worksheet in column 11. If possible, when damage from an insurable cause results in missing plants or non-emergence, determine the original plants per acre from an undamaged area of the field or unit.

If none of the original stand emerged or was completely destroyed and cannot be determined in any manner, after verifying that the crop was actually initially planted, record the original stand as zero in column 11 on the appraisal worksheet (resulting in a zero appraisal). Refer to the LAM for procedures for documenting zero yield appraisals.

- (b) In the representative sample areas with crop damage, count the number of surviving plants per nine square feet of row (one square yard if broadcast seeded). Enter this number on the appraisal worksheet in column 12.
- (c) Refer to Exhibit 6 (Percent Yield Loss from IH-Grain and Fiber Stand Reduction) to identify the percent yield loss. Enter the percent yield loss, expressed as a decimal to hundredths, on the appraisal worksheet in column 13.

Stand reduction usually ends when flowering begins with the opening of the first flower approximately 30 - 60 days after planting depending on the variety.

B. Plant Damage Appraisals (Hail Only)

- (1) Plant damage appraisals may be done in the vegetative and reproductive stage (flowering until the leaves begin to change color; turn yellow or brown). The flowering stage usually lasts approximately 20 days and begins with stem elongation and the opening of the first flower. Flowering starts at the bottom of the seed head and continues upward.
- (2) Whenever possible, delay appraisal a minimum of 7 days after damage. Plants that are not damaged at the growing point or are damaged at the growing point later in the vegetative stage may recover and enter the reproductive (flowering) stage. Such plants may suffer further injury to the leaf canopy in the reproductive stage any appraisal will be based on the reproductive stage. Leaves that are only bruised or torn suffer only partial loss while leaves that are bruised on the main vein, torn, broken, and/or wilted will usually die. Hail damage can destroy a portion of the leaf area or completely defoliate a plant.
- (3) Since IH leaves usually vary in size, assess the loss of leaf area rather than the number of leaves lost as follows:
 - (a) For the applicable stage based on the date of damage, determine the percent of defoliation from 5 consecutive sample plants.
 - (b) Include only the area removed or affected by a tear or bruise as indicated by browning of the tissue.
 - (c) Apply the result to Exhibit 7 (Percent Yield Loss from Defoliation) to determine the factor used to calculate the percent yield loss due to defoliation for the applicable stage (Vegetative – Vegetative through start of flowering; Reproductive – 5 or 10 days after flowering).

C. Seed Count Appraisals – Grain

- (1) Seed count appraisals are done in the reproductive (ripening) stage when the seeds have reached maturity. Defer all appraisals using the seed count method until the plants have matured and the seeds can be harvested. However, ensure that seed count appraisals are made as soon as feasible because the potential for shattering increases significantly once the plants begin to mature and dry down.
- (2) IH grain is not normally swathed except in special conditions (in dry arid climates, for short varieties, or other conditions normally conducive to swathing). When grain is damaged in the swath, use the seed count appraisal method (either hand-harvested or machine harvested) to determine production to count in the field.
- (3) Hand Harvested Appraisals:
 - (a) For each sample required for the size of field (refer to Exhibit 5, Table A and B, shell out the seeds from all seed heads from a five square feet of row (or a one square yard area if broadcast seeded).
 - (b) Pour the seeds from each sample into a graduated cylinder and measure level in milliliters (ml.).
 - (c) Record seed level in ml. for each sample area on the appraisal worksheet.
 - (d) Total the ml. of seed from all samples. Divide the total ml by the number of square feet per sample (e.g., 5 sq. ft. if planted in rows, 9 sq. ft. if broadcast seeded) to determine the average ml. Convert to pounds of seed by multiplying the average ml of seed by a conversion factor of “54.4” Divide the resultant pounds of seed by the number of representative samples taken to determine the pounds per acre appraisal.
 - (e) If the IH grain is damaged in the swath, determine production to count for in the swath as follows:
 - 1 In lieu of step (3)(a) above for each required sample (see Exhibit 5, Table A and B), determine a representative plant population for five square feet of row (one square yard if broadcast seeded) by counting the stubble plants in a neighboring area adjacent to the swath.
 - 2 Remove the equivalent number of representative plants from the swath by selecting approximately one third of the plants from the top portion of the swath, one third of the plants from the center portion of the swath, and one third of the plants from the lower portion of the swath. Care must be taken when removing plants from the swath to avoid unnecessary shatter of the seeds from the seed heads.
 - 3 Shell out the seeds from all seed heads removed from the swath.

4 Proceed as usual with steps (3)(b) through (3)(d) above.

(5) Machine Harvested Appraisals:

- (a) If hand harvesting is not feasible, allow the insured to machine harvest representative sample areas of the field (either standing or in windrows) to calculate the yield per acre. If swathing is a normal practice for the area, defer appraisal until the crop is swathed. Machine harvest/swathing should start in accordance recommended maturity levels for the seed or increased susceptibility to shattering.)
- (b) Calculate the appraisal in whole pounds per acre of IH grain using the formula below.

FORMULA:

$$\frac{\text{Lbs. of IH harvested}}{\text{Square feet harvested}} \times 43,560 \text{ sq. ft./A} = \text{Lbs./A}$$

EXAMPLE:

$$\frac{5 \text{ Lbs. IH}}{200 \text{ sq. ft. harvested}} \times 43,560 \text{ sq. ft./A} = 1089 \text{ Lbs./A}$$

D. CBD Appraisals- Stand Reduction/Plant Damage - Transplant

- (1) CBD transplant appraisals may apply for both vegetative and reproductive stages.
- (2) Stand reduction applies from transplanting to harvest (stage is based on the date of damage for the appraisal). If stand reduction occurs in both the vegetative and reproductive stages (e.g., excess moisture damage in the vegetative stage and hail damage in the reproductive stage destroying the plant), the stage will be based on the most recent date of damage/appraisal.
 - (a) Determine the number of acres in the field or subfield being appraised and number of required samples (see Exhibit 5, Table A).
 - (b) Select representative samples and count the number of live plants (capable of producing a seed head) in each 1/100th-acre sample (see Exhibit 5, Table C for sample row length).
 - (c) Total the number of live plants from all the samples.
 - (d) Divide the result of item (c) by the number of samples taken to determine average live plants per 1/100 acre.
 - (e) Multiply the result of item (d) times the factor determined as follows. The result equals the appraisal in pounds per acre. Document calculations for determining the factor on a Special Report or in the Narrative of the PW.

Item (d) x (APH approved yield x 100 ÷ Determined plant population per acre before damage).

26 Appraisal Methods (Continued)

Example: Number of live plants per 1/100 acre = 6.

Determined plant population equals the number of plants (living, dead, or missing) in 1/100th-acre multiplied by 100.

13 plants (live, dead, or missing) x 100 = 1,300 determined plant population per acre.

APH approved yield = 1,000 pounds per acre

Determined plant population per acre = 1,300 plants per acre

$1,000 \times 100 \div 1,300 = 76.9$ yield factor

Appraisal = 6 live plants x 76.9 yield factor = 461 pounds/acre

- (3) Plant damage appraisals. Conduct appraisals as instructed in Para. 26B (plant damage appraisals may be in addition to stand reduction appraisals under Para. 26D(2)).

E. CBD Appraisals- Stand Reduction/Plant Damage – Direct Seeded

Conduct appraisals as instructed in Para. 26A and B (stage is based on the date of damage for the appraisal).

27 Deviations and Modifications

- (1) Deviations in appraisal methods require RMA written authorization (as described in the LAM) prior to implementation.
- (2) There are no pre-established appraisal modifications contained in this handbook, refer to the LAM for additional information.

28 General Information for Worksheet Entries and Completion Procedures

- (1) Include the AIP's name in the appraisal worksheet title if not preprinted on the worksheet or when a worksheet entry is not provided.
- (2) Include the claim number on the appraisal worksheet (when required by the AIP) when a worksheet entry is not provided.
- (3) Separate appraisal worksheets must be completed for each unit appraised, and for each field or subfield including fields or subfields with a differing base (APH) yield or farming practice (applicable to preliminary and final claims). Refer to Part 3, Appraisals for sampling requirements.
- (4) Standard appraisal worksheet items are numbered consecutively in Exhibit 3. Example appraisal worksheets are also provided to illustrate how to complete item entries.
- (5) For all zero appraisals, refer to the LAM.

29-40 (Reserved)

PART 4 PRODUCTION WORKSHEET

41 General Information for Production Worksheet Entries and Completion Information

- (1) The PW is a progressive form containing all notices of damage for all preliminary and final inspections (including “No Indemnity Due” claims) on a unit.
- (2) If a PW has been prepared on a prior inspection, verify each entry and enter additional information as needed. If a change or correction is necessary, strike out all entries on the line and re-enter correct entries on a new line. The adjuster and insured should initial any line deletions.
- (3) Refer to the LAM for instructions regarding the following:
 - (a) Acreage report errors.
 - (b) Delayed notices and delayed claims.
 - (c) Corrected claims or fire losses (double coverage) and cases involving uninsured causes of loss, unusual situations, controversial claims, concealment, or misrepresentation.
 - (d) Claims involving a Certification Form (when all the acreage on the unit has been appraised to be put to another use or other reasons as described in the LAM).
 - (e) “No Indemnity Due” claims (which must be verified by an APPRAISAL or NOTIFICATION from the insured that the production exceeded the guarantee).
- (4) The adjuster is responsible for determining if any of the insured’s requirements under the notice and claim provisions of the policy have not been met. If any have not, the adjuster should contact the AIP.
- (5) Instructions labeled “PRELIMINARY” apply to preliminary inspections only. Instructions labeled “FINAL” apply to final inspections only. Instructions not labeled apply to ALL inspections.
- (6) If the AIP determines the claim is to be DENIED, refer to the LAM for PW completion instructions.
- (7) Standard PW items are numbered consecutively in Exhibit 4. An example PW is also provided to illustrate how to complete item entries.
- (8) Determining Harvested Farm-Stored Fiber and CBD Production
 - (a) Large Bales

If the baler tally count is acceptable, multiply the number of bales times the average weight of at least two bales. If the tally count is not acceptable, count the individual bales, and multiply the number of bales times the average weight of at least two bales.

41 General Information for Production Worksheet Entries and Completion Information (Continued)

(b) Small Bales

- (i) To determine tons for small square or round bales when the production remains in the field, weigh 3 or 4 representative bales for an average bale weight. If acceptable baler tally counts are available, use the tally count times the average bale weight to compute the total tons. If tally counts are not available, count the number of bales in the field.
- (ii) To determine tons for small square or round bales which are stacked, and the number of bales can be determined, use the number of bales times the average bale weight.
- (iii) To determine tons for small square or round bales which are piled (not stacked) and the number of bales cannot be determined, use the following method:
 - (A) Determine the size of the pile of bales and the average size of each bale: length times width times depth equals cubic feet.
 - (B) Determine the average weight per bale, then divide the average weight per bale by the average number of cubic feet per bale to equal the number of pounds per cubic ft.
 - (C) Multiply the number of pounds per cubic ft. times the number of cubic feet in the pile to determine the total pounds in the pile (in whole pounds).

EXAMPLE:

Pile is 30.0 ft. x 20.0 ft. x 10.0 ft. = 6,000 cu. ft.

Average bale is 1.5ft. x 1.2 ft. x 2.5 ft. = 4.5 cu. ft. @ 47 lbs. per bale

47 lbs. ÷ 4.5 cu. ft. = 10.4 lbs. per cu. ft.

6000 cu. ft. 10.4 lbs. per cu. ft. = 62,400 lbs.

- (c) Additional instructions for forage production found at Par. 1002D of the LAM may be applicable in determining fiber production.

42-50 (Reserved)

EXHIBITS

Acronyms and Abbreviations

The following table provides the acronyms and abbreviations used in this handbook.

Approved Acronym/Abbreviation	Term
AD	Actuarial Documents
AIP	Approved Insurance Provider
APH	Actual Production History
BP	Basic Provisions
CAT	Catastrophic Risk Protection
CBD	Cannabidiol
CIH	Crop Insurance Handbook
CP	Crop Provisions
DSSH	Document and Supplemental Standards Handbook
GSH	General Standards Handbook
IH	Industrial Hemp
LAM	Loss Adjustments Manual
RMA	Risk Management Agency
PW	Production Worksheet
SP	Special Provisions

Definitions

Base contract price – The price stipulated on the processor contract without regard to discounts or incentives that may apply.

CBD – Cannabidiol

Good farming practices – The cultural practices generally in use for the county for the crop to make normal progress toward maturity and produce at least the yield used to determine the production guarantee and any requirements contained in the processor contract.

Harvest – The combining or threshing the insured crop for grain or cutting the insured crop for fiber or CBD. A grain crop which is swathed prior to combining or a fiber crop cut for the purpose of retting and not baled will not be considered harvested.

Industrial hemp – Plants of the *Cannabis sativa* species, by type, grown for the production of industrial and consumer products.

Planted acreage – In addition to the definition contained in the Basic Provisions, land in which industrial hemp seedlings, including hydroponic plants, have been transplanted by hand or machine into the field.

Processor contract – A legal contractual written agreement executed between the producer and processor engaged in the production and processing of industrial hemp containing at a minimum:

- (a) The producer's promise to plant and grow industrial hemp and to deliver all industrial hemp to the processor;
- (b) The processor's promise to purchase the industrial hemp produced by the producer; and;
- (c) A base contract price, or method to derive a value that will be paid to the producer for the production as specified in the processor's contract.

Multiple contracts with the same processor that specify amounts of production will be considered as a single processor contract unless the contracts are for different types of hemp.

Pound – 16 ounces avoirdupois.

Processor – Any business enterprise regularly engaged in processing industrial hemp that possesses all licenses and permits for processing industrial hemp required by the applicable governing authority in the state in which it operates, and that possesses facilities, or has contractual access to such facilities with enough equipment to accept and process contracted industrial hemp within a reasonable amount of time after harvest.

Retting – The process for separating the different fibers of the hemp plant and involves leaving the crop in the field to allow decomposition.

THC – Tetrahydrocannabinol (also known as delta-9 tetrahydrocannabinol).

Definitions (Continued)

Type – A category of industrial hemp identified as a type on the Special Provisions and shown below

- (a) CBD – CBD produced from the flowers, leaves, and stems of industrial hemp plants containing not more than 0.3 percent THC on a dry weight basis;
- (b) Dual-purpose – A type of industrial hemp that is grown to produce grain and fiber in the same crop year;
- (c) Fiber- The fiber produced from the stems and stalk of the industrial hemp plant;
- (d) Grain - Grain produced by the industrial hemp plant;
- (e) Oil - Oil produced from industrial hemp grain;
- (f) Other - Other types of industrial hemp contained in the Special Provisions.

Form Standards – Appraisal Worksheet

Verify and/or make the following entries for each appraisal worksheet element/item number. A completed appraisal worksheet example is at the end of this exhibit. For general form standards and other general information, see subparagraph 2D and paragraph 28.

Complete separate appraisal worksheets for stand reduction/plant damage appraisals, seed count appraisals, and CBD appraisals.

Element/Item Number	Description
Company	Name of if not preprinted on the worksheet (Company Name).
1. Insured's Name	Name of the insured that identifies EXACTLY the person (legal entity) to whom the policy is issued.
2. Policy Number	Insured's assigned policy number.
3. Unit Number	Unit number from the Summary of Coverage after it is verified to be correct.
4. Crop Year	Four-digit crop year, as defined in the policy, for which the claim is filed.
5. Claim Number	Claim number as assigned by the AIP.
6. Type & Stage	Determined IH type and stage of growth at time of damage [e.g., Grain (Vegetative or Reproductive – flowering/ripening), Fiber (Vegetative), and CBD – (Vegetative or Reproductive – see Para 26D(2))].
7. Acres Appraised	Number of acres being appraised.

STAND REDUCTION AND PLANT DAMAGE APPRAISALS – GRAIN AND FIBER

Element/Item Number	Description
8. Sample Number	MAKE NO ENTRY. Sample identification numbers are printed on the appraisal form.
9. Field ID	Field or subfield identification symbol.
10. Drill Space	Row width (drill spacing) to the nearest tenth of an inch. If broadcast, enter "B." Refer to Para. 22 for row width determination information.
To minimize errors, percentages in columns 13 through 18 are to be entered as 2-place decimals (e.g., .80 for 80 percent, and so forth).	
For CBD stand reduction appraisals, see Page 21 for appraisal instructions.	
11. Original Stand	For grain and fiber appraisals: Original number of plants (living and dead/non-harvestable, missing, or non-emerged) in nine square feet of row (one square yard if broadcast seeded). If original stand is in excess of 35 plants/nine square feet, round to the nearest 5 plants. (Example: There are 83 plants/nine square feet in the original stand. Round up to "85" and enter this on the appraisal worksheet.) If none of the original stand emerged, or is completely destroyed, refer to Para. 26A(5)(a).

Forms Standards – Appraisal Worksheet (Continued)

Element/Item Number	Description
12. Surviving Stand	Number of live plants remaining in nine square feet of row (one square yard if broadcast seeded). If surviving stand is in excess of 35 plants/nine square feet, round to the nearest 5 plants. (Example: There are 39 plants/nine square feet in the surviving stand. Round up to “40” and enter this on the appraisal worksheet.)
13. % Damage from Stand Reduction (Grain or Fiber)	Percent yield loss from Exhibit 6 (Percent Yield Loss from IH Stand Reduction).
14. Potential Remaining (1.00 - Item 13)	1.00 minus column 13 entry.
15. % Leaf Area Destroyed (Hail Only)	The average percent of leaf area destroyed from five consecutive plants in the representative sample area. Plants may be damaged in the vegetative stage yet progress into the reproductive stage; such plants may be actually appraised during the reproductive stage, but the percent of damage will be based date of damage and amount of damage determined for the vegetative stage (see Exhibit 7, Stage – Vegetative through start of flowering). If there is no leaf area destroyed, MAKE NO ENTRY.
16. % Damage from Leaf Destruction	Percent yield loss from defoliation (refer to Exhibit 7 – Percent Yield Loss from Defoliation). If there is no entry in column 15, MAKE NO ENTRY.
17. Net Damage to Leaf Loss	Column 14 times column 16. If there is no entry in column 16, MAKE NO ENTRY.
18. Net Potential Remaining	Column 14 minus column 17. If there is no entry in column 17, transfer the entry from column 14.
19. APH Yield (Pounds)	Approved APH yield in whole pounds from the APH form.
20. Total Pounds per Sample	Column 18 times column 19, in whole pounds.
21.-23. MAKE NO ENTRY	
Make entry under the “Stand Reduction or Plant Damage” Column for items 24 through 26.	
24. Sub-total	Total all item 20 entries, in whole pounds.
25. Number of Samples	Enter the number of samples taken from Stand Reduction and Plant Damage Appraisals.
26. Appraisal (Pounds/A)	Item 24 divided by item 25, results in whole pounds.
27. Remarks	Enter pertinent information about the appraisal. Include any appropriate calculations. Explain the reason for any “zero” original stand for all zero appraisals. Refer to the LAM.

Forms Standards – Appraisal Worksheet (Continued)

The following required entries are not illustrated on the Appraisal Worksheet example below.

Element/Item Number	Description
28. Insured's Signature and Date	Insured's (or insured's authorized representative's) signature and date. BEFORE obtaining signature, REVIEW ALL ENTRIES on the Appraisal Worksheet WITH THE INSURED (or insured's authorized representative), particularly explaining codes, and so forth, which may not be readily understood.
29. Adjuster's Signature, Code Number, and Date:	Signature of adjuster, code number, and date signed after the insured (or insured's authorized representative) has signed. If the appraisal is performed prior to signature date, document the date of appraisal in the Remarks/Narrative section of the Appraisal Worksheet (if applicable); otherwise, document the appraisal date in the "Narrative" of the PW.
Page Number	Page numbers - (Example: Page 1 of 1, Page 1 of 2, and so forth).

SEED COUNT APPRAISALS – Grain

Element/Item Number	Description
1.-7.	Refer to the applicable item entries as described above.
8.-20.	MAKE NO ENTRY.
21. Sample Number	MAKE NO ENTRY. Sample identification numbers are pre-printed on the appraisal worksheet.
22. Seed Level in Cylinder (ml)	Seed level in cylinder to the nearest whole milliliter (ml.). Refer to Para. 26C. Use a graduated cylinder to measure seed samples. Adjusters can obtain graduated cylinders, in ml., from most chemical supply stores.
23(a) Total ml	Total all column 22 entries.
23(b) Total ml from 23(a)	Enter Total ml from item 23(a).
23(c) Sq. Ft. Per Sample	Enter the square feet per representative sample. Enter "5" for grain or fiber seeded in rows (drilled). Enter "9" for broadcast seeded.
23(d) Average ml	Enter the result of item 23(b) divided by item 23(c) to tenths.
23(e) Conversion Factor	"54.4."
Make entry under the "Seed Count" column for items 24 through 26.	
24. Sub-total	Convert ml. to pounds by multiplying the Average ml. from item 23(d) by a factor of "54.4" Enter the result in pounds to tenths.
25. Number of Samples	Total number of samples taken for all Seed Count Appraisals.
26. Appraisal (Pounds/A)	Item 24 divided by item 25, in whole pounds.

Forms Standards – Appraisal Worksheet (Continued)

Element/Item Number	Description
27. Remarks	Enter pertinent information about the appraisal. Include any appropriate calculations. Enter field or subfield identification symbol and row width/drill spacing for Seed Count appraisals.

The following required entries are not illustrated on the Appraisal Worksheet example below.

Element/Item Number	Description
28. Insured's Signature and Date	Insured's (or insured's authorized representative's) signature and date. BEFORE obtaining signature, REVIEW ALL ENTRIES on the Appraisal Worksheet WITH THE INSURED (or insured's authorized representative), particularly explaining codes, and so forth, which may not be readily understood.
29. Adjuster's Signature, Code Number, and Date	Signature of adjuster, code number, and date signed after the insured (or insured's authorized representative) has signed. If the appraisal is performed prior to signature date, document the date of appraisal in the Remarks/Narrative section of the Appraisal Worksheet (if applicable); otherwise, document the appraisal date in the "Narrative" of the PW.
Page Number	Page numbers - (Example: Page 1 of 1, Page 1 of 2, Page 2 of 2, and so forth).

CBD – STAND REDUCTION/PLANT DAMAGE APPRAISALS - TRANSPLANT

Complete a separate CBD appraisal worksheet using stand reduction. (If plant damage is also applicable, the appraisal worksheet would include stand reduction and plant damage appraisals.)

Element/Item Number	Description
Stand Reduction and Plant Damage	
8. Sample Number	MAKE NO ENTRY. Sample identification numbers are printed on the appraisal form.
9. Field ID	Field or subfield identification symbol.
10. Drill Space	Strike though "Drill Space: and enter "1/100 Acre".
11. Original Stand	Enter the original number plants (living and dead/non-harvestable, missing, or non-emerged) in each 1/100 acre sample. If none of the original stand emerged, or is completely destroyed, refer to Para. 26A(5)(a).
12. Surviving Stand	Enter the number of live plants remaining in each 1/100 acre sample.
13. % Damage from Stand Reduction	Enter the percent of damage from stand reduction by dividing item 12 by item 11.
14. Potential Remaining	Enter the result of 1.00 minus the column 13 entry.

Forms Standards – Appraisal Worksheet (Continued)

Element/Item Number	Description
15. % Leaf Area Destroyed (Hail Only)	The average percent of leaf area destroyed from five consecutive plants in the representative sample area. Plants may be damaged in the vegetative stage yet progress into the reproductive stage; such plants may be actually appraised during the reproductive stage, but the percent of damage will be based the amount of damage in the vegetative stage (see Exhibit 7, Stage – Vegetative through start of flowering). (See Para. 26B(c)(3) regarding multiple plant damage appraisals and separate appraisal worksheets.) If there is no leaf area destroyed, MAKE NO ENTRY.
16. % Damage from Leaf Destruction	MAKE NO ENTRY.
17. Net Damage to Leaf Loss	MAKE NO ENTRY.
18. Net Potential Remaining	Transfer the entry from column 14.
19. APH Yield (Pounds)	Approved APH yield in whole pounds from the APH form.
20. Total Pounds per Sample	Column 18 times column 19, in whole pounds.
21.-23. MAKE NO ENTRY	
Make entry under the “Stand Reduction or Plant Damage” Column for items 24 through 26.	
24. Sub-total	Total all item 20 entries, in whole pounds.
25. Number of Samples	Enter the number of samples taken from Stand Reduction and Plant Damage Appraisals.
26. Appraisal (Pounds/A)	Item 24 divided by item 25, results in whole pounds.

The following required entries are not illustrated on the Appraisal Worksheet example below.

Element/Item Number	Description
27. Remarks	Enter pertinent information about the appraisal. Include any appropriate calculations. (See Para. 26B(c)(3) for additional Remarks instructions.) Explain the reason for any “zero” original stand for all zero appraisals. Refer to the LAM.
28. Insured’s Signature and Date	Insured’s (or insured’s authorized representative’s) signature and date. BEFORE obtaining signature, REVIEW ALL ENTRIES on the Appraisal Worksheet WITH THE INSURED (or insured’s authorized representative), particularly explaining codes, and so forth, which may not be readily understood.
29. Adjuster’s Signature, Code Number, and Date:	Signature of adjuster, code number, and date signed after the insured (or insured’s authorized representative) has signed. If the appraisal is performed prior to signature date, document the date of appraisal in the Remarks/Narrative section of the Appraisal Worksheet (if applicable); otherwise, document the appraisal date in the “Narrative” of the PW.
Page Number	Page numbers - (Example: Page 1 of 1, Page 1 of 2, and so forth).

Forms Standards – Appraisal Worksheet (Continued)

CBD – STAND REDUCTION/PLANT DAMAGE APPRAISALS – DIRECT SEEDED

Follow completed instructions for **Stand Reduction And Plant Damage Appraisals – Grain And Fiber** (See example Appraisal Worksheet for Grain – Vegetative Stage.)

Forms Standards – Appraisal Worksheet (Continued)

COMPANY: ANY COMPANY

INDUSTRIAL HEMP APPRAISAL WORKSHEET (FOR ILLUSTRATION PURPOSES ONLY)	1 INSURED'S NAME	2 POLICY NUMBER	3 UNIT NUMBER	4 CROP YEAR
	I.M. Insured	XXXXXX	0001-0001 OU	YYYY
	5 CLAIM NUMBER	6 TYPE & STAGE		7 ACRES APPRAISED
	XXXXX	Grain -- Vegetative		20.0

STAND REDUCTION AND PLANT DAMAGE APPRAISALS												
SAMPLE NUMBER 8	FIELD ID 9	DRILL SPACE 10	ORIGINAL STAND 11	SURVIVING STAND 12	% DAMAGE FROM STAND REDUCTION 13	POTENTIAL REMAINING (1.00-item 13) 14	% LEAF AREA DESTROYED (Hail Only) 15	% DAMAGE FROM LEAF DESTRUCTION 16	NET DAMAGE TO LEAF LOSS (14 x 16) 17	NET POTENTIAL REMAINING (14 - 17) 18	APH YIELD (Pounds) 19	TOTAL POUNDS PER SAMPLE (18 x 19) 20
1	A	6	85	26	.12	.88	.65	.17	.15	.73	1,300	949
2	A	6	90	30	.09	.91	.70	.18	.16	.75	1,300	975
3	A	6	75	0	1.00	.00				.00	1,300	0
4	A	6	100	33	.07	.93	.60	.15	.14	.79	1,300	1,027
5	A	6	65	22	.17	.83	.75	.19	.16	.67	1,300	871

SEED COUNT APPRAISALS								
SAMPLE NUMBER 21	SEED LEVEL IN CYLINDER (ML.) 22	23(b) TOTAL ML FROM 23(a)	23(c) SQ. FT. PER SAMPLE	23(d) AVERAGE ML	23(e) CONVERSION FACTOR		SEED COUNT	STAND REDUCTION OR PLANT DAMAGE
1		÷	=	x	54.4	24 SUB-TOTAL		
2						25 NUMBER OF SAMPLES		3,822
3						26 APPRAISAL (Pounds/A)		5
4								764
5						27 REMARKS		
6								
TOTAL ML 23(a)								

Refer to the Above Appraisal Worksheet instructions for required statements and signature entries.

Forms Standards – Appraisal Worksheet (Continued)

COMPANY: ANY COMPANY

INDUSTRIAL HEMP APPRAISAL WORKSHEET (FOR ILLUSTRATION PURPOSES ONLY)	1 INSURED'S NAME I.M. Insured	2 POLICY NUMBER XXXXXXX	3 UNIT NUMBER 0001-0001 OU	4 CROP YEAR YYYY
	5 CLAIM NUMBER XXXXX	6 TYPE & STAGE Grain - Reproductive		7 ACRES APPRAISED 6.0

STAND REDUCTION AND PLANT DAMAGE APPRAISALS

SAMPLE NUMBER 8	FIELD ID 9	DRILL SPACE 10	ORIGINAL STAND 11	SURVIVING STAND 12	% DAMAGE FROM STAND REDUCTION 13	POTENTIAL REMAINING (1.00-item 13) 14	% LEAF AREA DESTROYED (Hail Only) 15	% DAMAGE FROM LEAF DESTRUCTION 16	NET DAMAGE TO LEAF LOSS (14 x 16) 17	NET POTENTIAL REMAINING (14 - 17) 18	APH YIELD (Pounds) 19	TOTAL POUNDS PER SAMPLE (18 x 19) 20
1												
2												
3												
4												

SEED COUNT APPRAISALS

SAMPLE NUMBER 21	SEED LEVEL IN CYLINDER (ML) 22	23(b) TOTAL ML FROM 23(a)	23(c) SQ. FT. PER SAMPLE	23(d) AVERAGE ML	23(e) CONVERSION FACTOR		SEED COUNT	STAND REDUCTION OR PLANT DAMAGE			
1	25	140	÷	5	=	28.0	x	54.4	24 SUB-TOTAL	1,523.2	
2	18										
3	21										
4	17										
5	12										
6	15	27 REMARKS Field ID 1B Drilled in 10 inch rows									
7	19										
8	13										
TOTAL ML 23(a)	140										
						26 APPRAISAL (Pounds/A)	190				

Refer to the Above Appraisal Worksheet instructions for required statements and signature entries.

Forms Standards – Appraisal Worksheet (Continued)

COMPANY: ANY COMPANY

INDUSTRIAL HEMP APPRAISAL WORKSHEET (FOR ILLUSTRATION PURPOSES ONLY)	1 INSURED'S NAME	2 POLICY NUMBER	3 UNIT NUMBER	4 CROP YEAR
	I.M. Insured	XXXXXX	0002-0001 OU	YYYY
	5 CLAIM NUMBER	6 TYPE & STAGE		7 ACRES APPRAISED
	XXXXX	CBD – Reproductive		6.0

STAND REDUCTION AND PLANT DAMAGE APPRAISALS

SAMPLE NUMBER 8	FIELD ID 9	DRILL SPACE 1/100 Acre 10	ORIGINAL STAND 11	SURVIVING STAND 12	% DAMAGE FROM STAND REDUCTION 13	POTENTIAL REMAINING (1.00-item 13) 14	% LEAF AREA DESTROYED (Hail Only) 15	% DAMAGE FROM LEAF DESTRUCTION 16	NET DAMAGE TO LEAF LOSS (14 x 16) 17	NET POTENTIAL REMAINING (14 - 17) 18	APH YIELD (Pounds) 19	TOTAL POUNDS PER SAMPLE (18 x 19) 20
1	A	48	1,300	550	.42	.58				.58	1,000	580
2	A	48	1,300	635	.49	.51				.51	1,000	510
3	A	48	1,300	0	1.00	.00				.00	1,000	0
4	A	48	1,300	533	.41	.59				.59	1,000	590
5	A	48	1,300	622	.48	.52				.52	1,000	520

SEED COUNT APPRAISALS

SAMPLE NUMBER 21	SEED LEVEL IN CYLINDER (ML) 22	23(b) TOTAL ML FROM 23(a)	23(c) SQ. FT. PER SAMPLE	23(d) AVERAGE ML	23(e) CONVERSION FACTOR		SEED COUNT	STAND REDUCTION OR PLANT DAMAGE
1		÷	=	x	54.4	24 SUB-TOTAL		2,200
2						25 NUMBER OF SAMPLES		5
3						26 APPRAISAL (Pounds/A)		440
4								
5								
6		27 REMARKS						
7								
8								
TOTAL ML 23(a)								

Refer to the Above Appraisal Worksheet instructions for required statements and signature entries.

Form Standards – Production Worksheet

Verify and/or make the following entries for each PW element/item number. A completed PW examples are at the end of this exhibit. For general form standards and other general information, see subparagraph 2D and paragraph 41.

Element/Item Number	Description
1. Crop/Code #	“Industrial Hemp” (00XX). Refer to Section I, column 22 herein, for type code entry procedures.
2. Unit #	Unit number from the Summary of Coverage after it is verified to be correct.
3. Location Description	Land location that identifies the legal description, if available, and the location of the unit (e.g., section, township, and range; FSA Farm Numbers; FSA Common Land Units (CLU) and tract numbers; GPS identifications; or Grid identifications) as applicable for the crop.
4. Date(s) of Damage	First three letters of the month(s) during which the determined insured damage occurred for the inspection and cause(s) of loss listed in item 5 below. If no entry in item 5 below MAKE NO ENTRY. For progressive damage, enter the month that identifies when the majority of the insured damage occurred. Include the SPECIFIC DATE where applicable as in the case of hail damage (e.g., Aug 11). Enter additional dates of damage in the extra spaces, as needed. If more space is needed, document the additional dates of damage in the Narrative (or on a Special Report). Refer to the illustration in item 6 below. If there is no insurable cause of loss, and a no indemnity due claim will be completed, MAKE NO ENTRY.
5. Cause(s) of Damage	<p>Name of the determined insured cause(s) of damage for this crop as listed in the LAM for the date of damage listed in item 4 above. If an insured cause(s) of damage is coded as “Other,” explain in the Narrative. Enter additional causes of damage in the extra spaces, as needed. If more space is needed, document the additional determined insured causes of damage in the Narrative (or on a Special Report). Refer to the illustration in item 6 below.</p> <p>If it is evident that no indemnity is due, enter “NO INDEMNITY DUE” across the columns in Item 5 (refer to the LAM for more information on no indemnity due claims).</p>
6. Insured Cause %	<p>PRELIMINARY: MAKE NO ENTRY.</p> <p>FINAL: Whole percent of damage for the insured cause of damage listed in item 5 above. Enter additional “Insured Cause %” in the extra spaces, as needed. If additional space is needed, enter the additional determined “Insured Cause %” in the Narrative (or on a Special Report). The total of all “Insured Cause %” including those entered in the Narrative must equal 100%.</p>

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description												
6. Insured Cause % (Continued)	<p>If there is no insurable cause of loss, and a no indemnity due claim will be completed, MAKE NO ENTRY.</p> <p>Example entries for items 4-6 and the Narrative, reflecting entries for multiple dates of damage, the corresponding insured causes of damage and insured cause percents:</p> <table border="1"> <tr> <td>4. Date(s) of Damage</td><td>MAY</td><td>JUN 10</td><td>AUG</td></tr> <tr> <td>5. Cause(s) of Damage</td><td>Excess Moisture</td><td>Hail</td><td>Drought</td></tr> <tr> <td>6. Insured Cause %</td><td>40</td><td>30</td><td>20</td></tr> </table> <p>Narrative: Additional date of damage – OCT 15; Cause of Damage – Freeze; Insured cause percent - 10%.</p>	4. Date(s) of Damage	MAY	JUN 10	AUG	5. Cause(s) of Damage	Excess Moisture	Hail	Drought	6. Insured Cause %	40	30	20
4. Date(s) of Damage	MAY	JUN 10	AUG										
5. Cause(s) of Damage	Excess Moisture	Hail	Drought										
6. Insured Cause %	40	30	20										
7. Company/Agency	Name of company and agency servicing the contract.												
8. Name of Insured	Name of the insured that identifies EXACTLY the person (legal entity) to whom the policy is issued.												
9. Claim #	Claim number as assigned by the AIP.												
10. Policy #	Insured's assigned policy number.												
11. Crop Year	Four-digit crop year, as defined in the policy, for which the claim is filed.												
12. Additional Units	<p>PRELIMINARY: MAKE NO ENTRY.</p> <p>FINAL: Unit number(s) for ALL non-loss units for the crop at the time of final inspection. A non-loss unit is any unit for which a PW has not been completed. Additional non-loss units may be entered on a single PW.</p> <p>If more spaces are needed for non-loss units, enter the unit numbers, identified as "Non-Loss Units," in the "Narrative" or on an attached Special Report.</p>												
13. Est. Prod. Per Acre	<p>PRELIMINARY: MAKE NO ENTRY.</p> <p>FINAL: Estimated yield per acre, in whole pounds, of ALL non-loss units for the crop at the time of final inspection.</p>												
14. Date(s) Notice of Loss	<p>PRELIMINARY:</p> <p>a. Date the first or second notice of damage or loss was given for the unit in item 2, in the 1st or 2nd space, as applicable. Enter the complete date (MM/DD/YYYY) for each notice.</p>												

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description
14. Date(s) Notice of Loss (Continued)	<p>b. A notice of damage or loss for a third preliminary inspection (if needed) requires an additional set of PWs. Enter the date of notice for a third preliminary inspection in the 1st space of item 14 on the second set of PWs.</p> <p>c. Reserve the “Final” space on the first page of the first set of PWs for the date of notice for the final inspection.</p> <p>d. If the inspection is initiated by the AIP, enter “Company Insp.” instead of the date.</p> <p>e. If the notice does not require an inspection, document as directed in the “Narrative” instructions.</p> <p>FINAL: Transfer the last date (in the 1st or 2nd space from the first or second set of PWs) to the FINAL space on the first page of the first set of PWs if a final inspection should be made as a result of the notice. Always enter the complete date of notice (MM/DD/YYYY) for the “FINAL” inspection in the final space on the first set of PWs. For a delayed notice of loss or delayed claim, refer to the LAM.</p>
15. Companion Policy(s)	<p>a. If no other person has a share in the unit (insured has 100 percent share), MAKE NO ENTRY.</p> <p>b. In all cases where the insured has LESS than a 100 percent share of a loss-affected unit, ask the insured if the OTHER person sharing in the unit has a multiple-peril crop insurance contract (not crop-hail, fire, and so forth). If the other person does not, enter “NONE.”</p> <p>(1) If the other person has a multiple-peril crop insurance contract and it can be determined that the SAME AIP services it, enter the contract number. Handle these companion policies according to AIP instructions.</p> <p>(2) If the OTHER person has a multiple-peril crop insurance contract and a DIFFERENT AIP or agent services it, enter the name of the AIP and/or agent (and contract number) if known.</p> <p>(3) If unable to verify the existence of a companion contract, enter “Unknown” and contact the AIP for further instructions.</p> <p>c. Refer to the LAM for further information regarding companion contracts.</p>

Forms Standards – Production Worksheet (Continued)

Section I – Determined Acreage Appraised, Production and Adjustments

Make separate line entries for varying:

- (1) Rate classes, types, classes, sub-classes, intended uses, irrigated practices, cropping practices, or organic practices, as applicable;
- (2) APH yields;
- (3) Appraisals;
- (4) Adjustments to appraised mature production (moisture and/or quality adjustment factors);
- (5) Stages or intended use(s) of acreage;
- (6) Shares (e.g., 50 percent and 75 percent shares on the same unit); or
- (7) Appraisals for damage due to hail or fire if Hail and Fire Exclusion is in effect.

Element/Item Number	Description
16. Field ID	The field identification symbol from a sketch map or an aerial photo. Refer to the "Narrative."
17. Multi-Crop Code	PRELIMINARY AND FINAL: The applicable two-digit code for first crop and second crop. REFER TO THE LAM FOR INSTRUCTIONS REGARDING ENTRY OF FIRST CROP AND SECOND CROP CODES.
18. Reported Acres	In the event of over-reported acres, handle in accordance with the individual AIP's instructions. In the event of under-reported acres, enter the reported acres to tenths for the field or sub field. If there are no under-reported acres MAKE NO ENTRY.
19. Determined Acres	Refer to the LAM for definition of acceptable determined acres used herein. Enter the determined acres to tenths for the field or subfield for which consent is given for other use and/or: <ol style="list-style-type: none"> a. Put to other use without consent; b. Abandoned; c. Damaged by uninsured causes; or d. For which the insured failed to provide acceptable records of production. Refer to the LAM for procedures regarding when estimated acres are allowed and documentation requirements.

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description
19. Determined Acres (continued)	<p>PRELIMINARY AND FINAL: Determined acres to tenths.</p> <p>Acreage breakdowns WITHIN a unit or field may be estimated (refer to the LAM) if a determination is impractical.</p> <p>ACCOUNT FOR ALL PLANTED ACREAGE IN THE UNIT</p>
20. Interest or Share	Insured's interest in the crop to three decimal places as determined at the time of inspection. If shares vary on the same UNIT, use separate line entries.
21. Risk	<p>Three-digit code for the correct "Rate" as specified on the actuarial document maps. If a "Rate" or "High-Risk Area" is not specified on the actuarial document maps, MAKE NO ENTRY. Verify with the Summary of Coverage and if the "Rate" is found to be incorrect, revise according to the AIP's instructions. Refer to the LAM.</p> <p>Unrated land is uninsurable without a written agreement. (Written agreements are not authorized for the IH crop insurance program.)</p>
22. Type	Three-digit code number, entered exactly as specified on the actuarial documents for the type grown by the insured. If "No Type Specified" is shown in the actuarial documents, enter the appropriate three-digit code number from the actuarial documents (e.g., 997). If a type is not specified on the actuarial documents, MAKE NO ENTRY .
23. Class	Three-digit code number, entered exactly as specified on the actuarial documents for the class grown by the insured. If "No Class Specified" is shown in the actuarial documents, enter the appropriate three-digit code number from the actuarial documents (e.g., 997). If a class is not specified on the actuarial documents, MAKE NO ENTRY .
24. Sub-Class	Three-digit code number, entered exactly as specified on the actuarial documents for the sub-class grown by the insured. If "No Sub-Class Specified," is shown in the actuarial documents, enter the appropriate three-digit code number from the actuarial documents (e.g., 997). If a sub-class is not specified on the actuarial documents, MAKE NO ENTRY .
25. Intended Use	Three-digit code number, entered exactly as specified on the actuarial documents for the intended use of the crop grown by the insured. If "No Intended Use Specified" is shown in the actuarial documents, enter the appropriate three-digit code number from the actuarial documents (e.g., 997). If an intended use is not specified on the actuarial documents, MAKE NO ENTRY .

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description														
26. Irr. Practice	Three-digit code number, entered exactly as specified on the actuarial documents for the irrigated practice carried out by the insured. If “No Irrigated Practice Specified” is shown in the actuarial documents, enter the appropriate three-digit code number from the actuarial documents (e.g., 997). If an irrigated practice is not specified on the actuarial documents, MAKE NO ENTRY.														
27. Cropping Practice	Three-digit code number, entered exactly as specified on the actuarial documents for the cropping practice (or practice) carried out by the insured. If “No Cropping Practice” or “No Practice Specified” is shown in the actuarial documents, enter the appropriate three-digit code number from the actuarial documents (e.g., 997). If a cropping practice is not specified on the actuarial documents, MAKE NO ENTRY.														
28. Organic Practice	Three-digit code number, entered exactly as specified on the actuarial documents for the organic practice carried out by the insured. If “No Organic Practice Specified” is shown in the actuarial documents, enter the appropriate three-digit code number from the actuarial documents (e.g., 997). If an organic practice is not specified on the actuarial documents, MAKE NO ENTRY.														
29. Stage	<p>PRELIMINARY: MAKE NO ENTRY.</p> <p>FINAL: Stage abbreviation as shown below.</p> <table> <tr> <th><u>STAGE</u></th><th><u>EXPLANATION</u></th></tr> <tr> <td>“P”</td><td>Acreage abandoned without consent, put to other use without consent, damaged solely by uninsured causes, or for which the insured failed to provide acceptable records of production to the AIP.</td></tr> <tr> <td>“H”</td><td>Harvested.</td></tr> <tr> <td>“UH”</td><td>Unharvested or put to other use with consent.</td></tr> <tr> <td>“TZ”</td><td>UUF/Third Party Damage – Zero production on same acreage</td></tr> <tr> <td>“TA”</td><td>UUF/ Third Party Damage – Appraised production on same acreage.</td></tr> <tr> <td>“TH”</td><td>UUF/Third Party Damage – Harvested production on same acreage.</td></tr> </table> <p>GLEANED ACREAGE: Refer to the LAM for information on gleaning.</p>	<u>STAGE</u>	<u>EXPLANATION</u>	“P”	Acreage abandoned without consent, put to other use without consent, damaged solely by uninsured causes, or for which the insured failed to provide acceptable records of production to the AIP.	“H”	Harvested.	“UH”	Unharvested or put to other use with consent.	“TZ”	UUF/Third Party Damage – Zero production on same acreage	“TA”	UUF/ Third Party Damage – Appraised production on same acreage.	“TH”	UUF/Third Party Damage – Harvested production on same acreage.
<u>STAGE</u>	<u>EXPLANATION</u>														
“P”	Acreage abandoned without consent, put to other use without consent, damaged solely by uninsured causes, or for which the insured failed to provide acceptable records of production to the AIP.														
“H”	Harvested.														
“UH”	Unharvested or put to other use with consent.														
“TZ”	UUF/Third Party Damage – Zero production on same acreage														
“TA”	UUF/ Third Party Damage – Appraised production on same acreage.														
“TH”	UUF/Third Party Damage – Harvested production on same acreage.														

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description														
30. Use of Acreage	<p>Use of acreage. Use the following “Intended Use” abbreviations.</p> <table border="0"> <thead> <tr> <th><u>USE</u></th><th><u>EXPLANATION</u></th></tr> </thead> <tbody> <tr> <td>“To Millet”.....</td><td>Use made of the acreage</td></tr> <tr> <td>“WOC”.....</td><td>Other use without consent</td></tr> <tr> <td>“SU”.....</td><td>Solely uninsured</td></tr> <tr> <td>“ABA”.....</td><td>Abandoned without consent</td></tr> <tr> <td>“H”.....</td><td>Harvested</td></tr> <tr> <td>“UH”.....</td><td>Unharvested</td></tr> </tbody> </table> <p>Verify any “Intended Use” entry. If final use of the acreage was not as indicated, strike out the original line and initial it. Enter all data on a new line showing the correct “Final Use.”</p> <p>GLEANED ACREAGE: Refer to the LAM for information on gleaning.</p>	<u>USE</u>	<u>EXPLANATION</u>	“To Millet”.....	Use made of the acreage	“WOC”.....	Other use without consent	“SU”.....	Solely uninsured	“ABA”.....	Abandoned without consent	“H”.....	Harvested	“UH”.....	Unharvested
<u>USE</u>	<u>EXPLANATION</u>														
“To Millet”.....	Use made of the acreage														
“WOC”.....	Other use without consent														
“SU”.....	Solely uninsured														
“ABA”.....	Abandoned without consent														
“H”.....	Harvested														
“UH”.....	Unharvested														
31. Appraised Potential	<p>PRELIMINARY AND FINAL: Per-acre appraisal in whole pounds of POTENTIAL production for the acreage appraised as shown on the appraisal worksheet. Refer to Para. 26, “Appraisal Methods” for additional instructions.</p> <p>If there is no potential on UH acreage, enter “0.” Refer to the LAM for procedures for documenting zero yield appraisals.</p>														
32a. Moisture %	Enter moisture percent to tenths.														
32b. Factor	<p>For mature grain: If moisture is in excess of 9.0 percent, subtract from 100 the percent of moisture above 9.0; enter result to four places (percent moisture is 10.5 percent; 1.5 percent excess of 9.0: $100 - 1.5 = 98.5 \div 100 = .9850$); . Adjust for moisture prior to any qualifying adjustment for quality. MAKE NO ENTRY for fiber or CBD or if the moisture percent is equal to or less than 9.0 for grain.</p>														
33. Shell %, Factor, or Value	MAKE NO ENTRY.														
34. Production Pre QA	PRELIMINARY AND FINAL: Result of multiplying column 31 times column 19, times column 32b rounded to whole pounds. If no entry in column 31, MAKE NO ENTRY.														
35. Quality Factor	<p>Under section 15 (j) of the BP and section 12(c)(4) of the CP, if due to insured causes, a Federal or State agency has ordered the appraised crop or production to be destroyed, enter the factor “0.000.”</p> <p>a. Instruct the insured to complete and submit a Certification Form stating the date the crop or production was destroyed and the method of destruction (refer to the Narrative below).</p> <p>b. Refer to LAM for additional information.</p> <p>Otherwise, MAKE NO ENTRY.</p>														
36. Production Post QA	Result of multiplying column 34 times column 35, in whole pounds. If no entry in column 35, transfer entry from column 34.														

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description						
37. Uninsured Cause	<p>PRELIMINARY AND FINAL: Result of per acre appraisal for uninsured causes (taken from appraisal worksheet or other documentation) multiplied by column 19, rounded to whole pounds. Refer to the LAM for information on how to determine uninsured cause appraisals. If no uninsured causes, MAKE NO ENTRY.</p> <p>a. Hail and Fire exclusion NOT in effect.</p> <p>(1) On preliminary inspections, advise the insured to keep the harvested production from any acreage damaged SOLELY by uninsured causes separate from other production. Refer to the LAM for information on how to determine uninsured cause appraisals.</p> <p>(2) For acreage that is damaged PARTLY by uninsured causes, enter the result of multiplying the APPRAISED UNINSURED loss of production per acre in whole pounds, by column 19 entry for any such acreage</p> <p>b. Refer to the LAM when a Hail and Fire Exclusion is in effect and damage is from hail or fire.</p> <p>c. Enter the result of adding uninsured cause appraisals to hail and fire exclusion appraisals.</p> <p>d. For fire losses, if the insured also has other fire insurance (double coverage), refer to the LAM.</p>						
38. Total to Count	Result of adding item 36 and item 37.						
39. Total	<p>PRELIMINARY: MAKE NO ENTRY.</p> <p>FINAL: Total determined acres (column 19), to tenths.</p>						
40. Quality	<p>PRELIMINARY AND FINAL: No adjustment for quality applies except as applicable for grain for conditions requiring the destruction of the crop. (See section 15(j) of the BP and section 12(c)(4) of the CP.) Follow the applicable instructions in items a. and b.</p> <table border="1"> <tr> <td>Qualifying QA Condition:</td></tr> <tr> <td>Aflatoxin</td></tr> <tr> <td>Vomitoxin</td></tr> <tr> <td>Fumonisin</td></tr> <tr> <td>Other</td></tr> <tr> <td>None</td></tr> </table>	Qualifying QA Condition:	Aflatoxin	Vomitoxin	Fumonisin	Other	None
Qualifying QA Condition:							
Aflatoxin							
Vomitoxin							
Fumonisin							
Other							
None							

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description
40. Quality (Continued)	<p>a. For all qualifying conditions checked, in the Narrative (or on a Special Report):</p> <ul style="list-style-type: none"> (1) Document the level for each qualifying QA condition as indicated by approved test results, and the name and location of each testing facility that verifies the presence of the qualifying QA condition and the date of the test(s); or (2) Enter “See documentation included in the claim file” (e.g., include copy of the test facility certificate, grade certificate, summary or settlement sheet, and so forth, that documents the QA condition). <p>b. If one of listed qualifying QA conditions or “Other” are checked, in addition to the documentation requirements in item a., document in the Narrative (or on a Special Report):</p> <ul style="list-style-type: none"> (1) A description of the qualifying QA condition; (2) The name of the controlling authority that considers this qualifying QA condition to be injurious to human and animal health and why. (3) Refer to Para. 15 if, due to insured causes, a Federal or State agency has ordered the appraised crop or production to be destroyed. <p>c. For items a. and b., follow the instructions in item 35 for the destruction of the crop.</p> <p>d. Check “None” if none of the production qualifies for QA.</p>
41. Mycotoxins exceed FDA, State, or other health organization maximum limits. Check “Yes:”	<p>PRELIMINARY AND FINAL: Check “Yes” if any mycotoxins listed in item 40 (including any identified as “Other”) for grain exceed the FDA, state, or other health organization maximum limits, otherwise leave blank. Document in the Narrative (or on a Special Report), the disposition of the production that was:</p> <ul style="list-style-type: none"> a. Sold, document the name and address of the processor; or b. Not sold, document the date(s) of the disposition, how the production was used, or how it was destroyed. <p>Refer to the LAM for additional information on mycotoxins.</p>

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description
42. Totals	Total of entries in columns 34, 36, 37 and 38. If a column has no entries, MAKE NO ENTRY.

Narrative Instructions

If more space is needed, document on a Special Report, and enter “Refer to the Special Report.” Attach the Special Report to the PW.

a.	If no acreage is released on the unit, enter “No acreage released,” adjuster’s initials, and date.
b.	If notice of damage was given and “No Inspection” is required, enter “No Inspection,” the unit number(s), date, and adjuster’s initials (do not enter unit numbers for which notice has not been given). The insured’s signature is not required.
c.	Explain any uninsured causes, unusual, or controversial cases.
d.	If there is an appraisal in Section I, column 37 for uninsured causes due to a hail/fire exclusion, show the original hail/fire liability per acre and the hail/fire indemnity per acre.
e.	Document the actual appraisal date if an appraisal was performed prior to the adjuster’s signature date on the appraisal worksheet, and the date of the appraisal is not recorded on the appraisal worksheet.
f.	State that there is “No other fire insurance” when fire damages or destroys the insured crop and it is determined that the insured has no other fire insurance. Also refer to the LAM.
g.	Explain any errors found on the Summary of Coverage.
h.	Explain any commingled production. Refer to the LAM.
i.	Explain any entry for “Production Not to Count” in Section II, column 62 and/or any production not included in Section II, column 56 or column 49-52 entries (e.g., harvested production from uninsured acreage that can be identified separately from the insured acreage in the unit).
j.	Explain a “NO” checked in item 44, “Damage Similar to Other Farms in the Area?”
k.	<p>Attach a sketch map or aerial photo to identify the total unit:</p> <p>(i) If consent is or has been given to put part of the unit to another use;</p> <p>(ii) If uninsured causes are present; or</p> <p>(iii) For unusual or controversial cases.</p> <p>Indicate on the aerial photo or sketch map, the disposition of acreage destroyed or put to other use with or without consent.</p>
l.	Explain any difference between date of inspection and signature dates. For an ABSENTEE insured, enter the date of the inspection AND the date of mailing the PW for signature.
m.	When any other adjuster or supervisor accompanied the adjuster on the inspection, enter the code number of the other adjuster or supervisor and the date of inspection.
n.	Explain the reason for a “No Indemnity Due” claim. “No Indemnity Due” claims are to be distributed in accordance with the AIP’s instructions.
o.	Explain any delayed notices or delayed claims as instructed in the LAM.
p.	Document any authorized estimated acres shown in Section I, column 19.

Forms Standards – Production Worksheet (Continued)

q.	Document the method and calculation used to determine acres for the unit. Refer to the LAM.
r.	Specify the type of insects or disease when the insured cause of damage or loss is listed as insects or disease. Explain why control measures did not work.
s.	For production that qualifies for Quality Adjustment (supporting documentation should be included in the insured's claim file): <ul style="list-style-type: none"> (i) If mycotoxins are present, document the level based on laboratory test results. A copy of the test results from the approved testing facility may be attached to the PW in lieu of writing in the Narrative of the PW (Refer to the LAM). (ii) If a Federal or State destruction order has been issued, attach to the PW a copy of the Federal or State destruction order and the insured's completed Certification Form. Refer to the LAM for additional documentation requirements.
t.	Document the name and address of the charitable organization when gleaned acreage is applicable. Refer to the LAM for more information on gleaned.
u.	Document any other pertinent information, including any data to support any factors used to calculate the production. If on an attachment, enter "See attachment."

Section II – Determined Harvested Production

- (1) Account for ALL HARVESTED PRODUCTION (for ALL ENTITIES sharing in the crop) except production appraised BEFORE harvest and shown in Section I because the quantity cannot be determined later (e.g., high moisture grain going into air-tight storage, released for other uses, and so forth). Any production harvested from plants growing in the insured crop may be counted as production of the insured crop on an unadjusted weight basis.
- (2) Columns 49 through 52 are for structure measurement entries (Rectangular, Round, Square, conical pile, and so forth). If structures are a combination of shapes, break into a series of average measurements, if possible. Enter "Odd Shape" if production is stored in an odd-shaped structure. Document measurements on a Special Report or other worksheet used for this purpose.
- (3) If farm-stored production has been weighed prior to storage and acceptable weight tickets are available showing gross weights, enter "Weighed and Stored On Farm" in columns 49 through 52. Refer to the LAM for acceptable weight tickets.
- (4) For production commercially stored, sold, and so forth, make entries in columns 49 through 52 as follows:
 - (a) Name and address of storage facility or processor.
 - (b) "Seed," "Fed," and so forth

Forms Standards – Production Worksheet (Continued)

- (5) If acceptable sales or weight tickets are not available, refer to the LAM.
- (6) If additional lines are necessary, the data may be entered on a continuation sheet. USE SEPARATE LINES FOR:
 - (a) Separate storage structures.
 - (b) Varying names and addresses of processors of sold production.
 - (c) Varying determinations of production (varying moisture, foreign material (FM), test weight, value, and so forth).

Average percent of moisture can be entered when the elevator has calculated the average on the summary sheet, and the determined average is acceptable to the adjuster. Separate line entries are not otherwise required. Refer to the LAM for instructions.
 - (d) Varying shares; e.g., 50 percent and 75 percent shares on same unit.
 - (e) Conical piles. Do **NOT** add the cone in the top or bottom of a bin to the height of other grain in the structure. For computing the production in cones and conical piles, refer to the LAM.
 - (f) Varying types in the same unit. If there are multiple types planted within the same unit, the AIP may complete a separate PW for each type in the unit.
- (8) There will generally be no harvested production entries in columns 47 through 66 for preliminary inspections.
- (9) If there is harvested production from more than one insured practice (or type) and a separate approved APH yield has been established for each, the harvested production also must be entered on separate lines in columns 47 through 66 by type or practice. If production has been commingled, refer to the LAM.

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description
43. Date Harvest Completed: (Used to determine if there is a delayed notice or a delayed claim. Refer to the LAM.)	<p>Used to determine if there is a delayed notice or a delayed claim. Refer to the LAM.</p> <p>PRELIMINARY: MAKE NO ENTRY.</p> <p>FINAL:</p> <ul style="list-style-type: none"> a. The earlier of the date the ENTIRE acreage on the unit was (1) harvested, (2) totally destroyed, (3) put to other use, (4) a combination of harvested, destroyed, or put to other use, or (5) the calendar date for the end of the insurance period. b. If at the time of final inspection (if prior to the end of the insurance period), there is any unharvested insured acreage remaining on the unit that the insured does not intend to harvest; enter “Incomplete.” c. If at the time of final inspection (if prior to the end of the insurance period), none of the insured acreage on the unit has been harvested, and the insured does not intend to harvest such acreage, enter “No Harvest.” d. If the case involves a Certification Form, enter the date from the Certification Form when the entire unit is put to another use, replanting is complete for the unit, and so forth Refer to the LAM.
44. Damage similar to other farms in the area?	<p>PRELIMINARY: MAKE NO ENTRY.</p> <p>FINAL: Check “Yes” or “No.” Check “Yes” if the amount and cause of damage due to insurable causes is similar to the experience of other farms in the area. If “No” is checked, explain in the “Narrative.”</p>
45. Assignment of Indemnity	<p>Check “Yes” only if an assignment of indemnity is in effect for the crop year; otherwise, check “No.” Refer to the LAM.</p>
46. Transfer of Right to Indemnity	<p>Check “Yes” only if a transfer of right to indemnity is in effect for the unit for the crop year; otherwise, check “No.” Refer to the LAM.</p>
47a. Share	<p>RECORD ONLY VARYING SHARES on SAME unit to three decimal places.</p>

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description
47b. Field ID	<p>a. If only one practice and/or type of harvested production is listed, in Section I, MAKE NO ENTRY.</p> <p>b. If more than one practice and/or type of harvested production is listed in Section I, and a separate approved APH yield exists, indicate for each practice/type the corresponding Field ID (from Section I, column 16).</p>
48. Multi-Crop Code	The applicable two-digit code for first crop and second crop. REFER TO THE LAM FOR INSTRUCTIONS REGARDING ENTRY OF FIRST CROP AND SECOND CROP CODES.
Complete items 49 – 55 for the grain, item 55 for fiber and CBD, as applicable. For production sold, enter name and address of processor for production sold.	
49. Length or Diameter	<p>Internal measurement in feet to tenths of structural space occupied by crop.</p> <p>a. Length if rectangular or square.</p> <p>b. Diameter if round or conical pile. Refer to the LAM to convert circumference to diameter if internal diameter measurement is not possible.</p> <p>c. For fiber and CBD: Describe the method of storage for the production accounted for on the line and enter the quantity. For example, the number of bales (round, rectangular bales, etc.).</p>
50. Width	Internal width measurement in feet to tenths of space occupied by crop in structure if rectangular or square. If round, enter "RND." If conical pile, enter "Cone."
51. Depth	Depth measurement in feet to tenths of space occupied by crop in rectangular, round, or square structure. If conical pile, enter the height of the cone. If there is production in the storage structure from other units or sources, refer to the LAM.
52. Deductions	Cubic feet, to tenths, of crop space displaced by chutes, vents, studs, crossties, and so forth. Refer to the LAM for computation instructions.
53. Net Cubic Feet	Net cubic feet of crop in the storage structure. Refer to the LAM for computation instructions.
54. Conversion Factor	Enter Conversion Factor as ".8" (only if structure measurements are entered).
55. Gross Prod.	<p>For grain: Multiply column 53 times column 54, rounded to tenths of a BUSHEL. The results of this calculation represent the amount of gross bushels in the bin.</p> <p>For fiber and CBD: Multiply the average weight of each bale times the number of bales in column 49 and enter in whole pounds. See Para. 41(8) for detailed instructions.</p>

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description
56. Bu., Ton, Lbs., Cwt.	<p>Circle “Lbs.” in column heading. Enter the production in whole pounds of production after all applicable deductions except moisture:</p> <p>a. For grain:</p> <p>(1) Weighed and stored on the farm from item 55</p> <p>For farm stored production, calculate the pounds as follows: column 55 (gross production in bushels to tenths) times 44 pounds/bushel (applicable test weight).</p> <p>(2) Stored in odd-shaped structures. The adjuster must compute the amount of gross production. (Refer to the LAM for cubic footage and production computations). A copy of ALL production calculations must be left in the file folder.</p> <p>b. For farm stored fiber and CBD production: Transfer the entry from item 55.</p> <p>c. For grain, fiber, and CBD: Sold and/or stored in commercial storage - Obtain production for the UNIT from the summary and/or settlement sheets. (Individual load slips only WILL NOT suffice unless the storage facility or processor WILL NOT provide summary and/or settlement sheets to the insured, and this is documented in the “Narrative.”)</p> <p>c. For mycotoxin-infected grain, enter ALL production even if it has no market value and required destruction applies.</p>
57. Shell/Sugar Factor	MAKE NO ENTRY.
58a. FM %	MAKE NO ENTRY.
58b. Factor	MAKE NO ENTRY.
59a. Moisture %	<p>Enter moisture percent to tenths for grain and CBD. If moisture is in excess of 9.0 percent (for CBD, - 10 percent). For grain, subtract from 100 the percent of moisture above 9.0; enter result to four places (percent moisture is 10.5 percent; 1.5 percent excess of 9.0; $100 - 1.5 = 98.5 \div 100 = .9850$ factor); for CBD, subtract 0.11 from 100 for each tenth of a percent in excess of 10 percent; enter result to four places. Moisture adjustment is applied prior to applying any qualifying adjustment for quality. MAKE NO ENTRY for fiber or if the moisture percent is equal to or less than 9.0 for grain or 10.0 for CBD.</p>
59b. Factor	MAKE NO ENTRY.
60a. Test Wt.	Enter 44 pounds for grain (ONLY when storage structure measurements are entered).
60b. Factor	MAKE NO ENTRY.

Forms Standards -- Production Worksheet (Continued)

Element/Item Number	Description
61. Adjusted Production	<p>For grain: Result of multiplying (columns 55 or 56) times 59b or for CBD: columns 56 times 59b. Round to whole pounds. (Stored fiber and CBD are not adjusted for moisture.)</p> <p>For grain, the test weight factor is not used in this step. The production was previously converted to the actual whole pounds in column "56" (Refer to column 56 paragraph "c"). Transfer entry from item 56.</p>
62. Prod. Not to Count	<p>Net production NOT to count, in whole pounds, WHEN ACCEPTABLE RECORDS IDENTIFYING SUCH PRODUCTION ARE AVAILABLE, from harvested acreage which has been assessed an appraisal of not less than the guarantee per acre, or from other sources (e.g., other units or uninsured acreage) in the same storage structure (if the storage entries include such production).</p> <p>THIS ENTRY MUST NEVER EXCEED PRODUCTION SHOWN ON THE SAME LINE. For grain, explain the total bin contents (bin grain depth, and so forth) and any "production not to count" in the "narrative."</p> <p>Make no entry if only the depth for production to count has been entered in column 51, and the depth for production not to count has been entered in the "Narrative" section. Refer to the example in the LAM.</p>
63. Production Pre-QA	Result of subtracting column 62 from column 61.
64a. Value	MAKE NO ENTRY.
64b. MKT Price	MAKE NO ENTRY.
65. Quality Factor	<p>Under section 15 (j) of the BP and section 12(c)(4) of the CP, if due to insured causes, a Federal or State agency has ordered the appraised crop or production to be destroyed, enter the factor "0.000."</p> <p>a. Instruct the insured to complete and submit a Certification Form stating the date the crop or production was destroyed and the method of destruction (refer to the Narrative below).</p> <p>(b) Refer to LAM for additional information</p> <p>Otherwise, MAKE NO ENTRY. MAKE NO ENTRY.</p>
66. Production to Count	Enter result from multiplying column 63 times column 65, rounded to whole pounds.
67. Total of column 63.	If no entry in column 63, MAKE NO ENTRY.

Forms Standards – Production Worksheet (Continued)

Element/Item Number	Description
For items 68-72. When separate line entries are made for varying shares, stages, APH yields, price elections, types, etc., within the unit, and totals need to be kept separate for calculating indemnities, MAKE NO ENTRY and follow the AIP's instructions. Otherwise, make the following entries.	
68. Section II Total:	PRELIMINARY: MAKE NO ENTRY. FINAL: Total of column 66.
69. Section I Total	PRELIMINARY: MAKE NO ENTRY. FINAL: Enter figure from Section I, column 38 total.
70. Unit Total	PRELIMINARY: MAKE NO ENTRY. FINAL: Total of column 68 and column 69.
71. Allocated Prod	Refer to the LAM for instructions for determining allocated production. Enter the total production, rounded to whole pounds, allocated to this unit that is included in Sections I or II of the PW. Document how allocated production was determined and record supporting calculations in the Narrative or on a Special Report.
72. Total APH Prod.	Result, rounded to whole pounds, of subtracting the total of column 37 (item 42 "Totals") and item 71 (Allocated Prod.) from item 70 (Unit Total). If no entries in column 37 and item 71, transfer the entry in item 70. MAKE NO ENTRY when separate APH yields are maintained by type, practice, and so forth, within the unit.
The following required entries are not illustrated on the PW example below.	
73. Insured's Signature and Date	Insured's (or insured's authorized representative's) signature and date. BEFORE obtaining the signature, REVIEW ALL ENTRIES on the PW WITH THE INSURED (or insured's authorized representative), particularly explaining codes, and so forth, that may not be readily understood. Final indemnity inspections and final replanting payment inspections should be signed on bottom line.
74. Adjuster's Signature, Code #, and Date	Signature of adjuster, code number, and date signed after the insured (or insured's authorized representative) has signed. For an absentee insured, enter adjuster's code number ONLY. The signature and date will be entered AFTER the absentee has signed and returned the PW. Final indemnity inspections and final replanting payment inspections should be signed on bottom line.
75. Page	PRELIMINARY: Page numbers – "1," "2," and so forth, at the time of inspection. FINAL: Page numbers - (Example: Page 1 of 1, Page 1 of 2, Page 2 of 2, and so forth).

Forms Standards – Production Worksheet – Grain (Continued)

PRODUCTION WORKSHEET																								
ANY COMPANY																								
ANY AGENCY																								
1. Crop/Code # INDUSTRIAL HEMP 00XX	2. Unit # 0001-0001 OU	3. Location Description SW1-96N-3W			7. Company Agency			8. Name of Insured I.M. INSURED																
4. Date(s) of Damage MAY	JUL 10				9. Claim # XXXXXXXX							11. Crop Year YYYY												
5. Cause(s) of Damage EX. MOIST.	HAIL				10. Policy #																			
6. Insured Cause % 60	40				14. Date(s) Notice of Loss							1st MM/DD/YYYY	2nd MM/DD/YYYY	Final MM/DD/YYYY										
12. Additional Units					15. Companion Policy(s) NONE																			
13. Est. Prod. Per Acre																								
SECTION I – DETERMINED ACREAGE APPRAISED, PRODUCTION AND ADJUSTMENTS																								
A. ACTUARIAL															B. POTENTIAL YIELD									
16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32a. 32b.	33.	34.	35.	36.	37.	38.		
Field ID	Multi-Crop Code	Reported Acres	Determined Acres	Interest or Share	Risk	Type	Class	Sub-Class	Intended Use	Irr Practice	Cropping Practice	Organic Practice	Stage	Use of Acreage	Appraised Potential	Moisture % Factor	Shell %, Factor, or Value	Production Pre QA	Quality Factor	Production Post QA	Uninsured Causes	Total to Count		
A	NS		20.0	1.000		XXX				002			UH	UH	764	-----		15,280		15,280		15,280		
B	NS		6.0	1.000		XXX				002			UH	UH	190	-----		1,140		1,140		1,140		
C	NS		6.0			XXX				002			H	H		-----								
D	NS		58.0	1.000		XXX				002			H	H		-----								
39. TOTAL			84.0	40. Quality: TW <input type="checkbox"/> KD <input type="checkbox"/> Aflatoxin <input type="checkbox"/> Vomitoxin <input type="checkbox"/> Fumonisin <input type="checkbox"/> Garlicky <input type="checkbox"/> Dark Roast <input type="checkbox"/> Sclerotinia <input type="checkbox"/> Ergoty <input type="checkbox"/> CoFo <input type="checkbox"/> Other <input type="checkbox"/> None <input type="checkbox"/>												42. TOTALS		16,420		16,420		16,420		
															41. Mycotoxins exceed FDA, State or other health organization maximum limits. Yes <input type="checkbox"/>									

NARRATIVE (If more space is needed, attach a Special Report) Acres were determined using permanent field measurements. Grain from field C stored at Acme Elevator.

SECTION II – DETERMINED HARVESTED PRODUCTION																			
43. Date Harvest Completed MM/DD/YYYY						44. Damage similar to other farms in the area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						45. Assignment of Indemnity Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						46. Transfer of Right to Indemnity? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
A. MEASUREMENTS						B. GROSS PRODUCTION				C. ADJUSTMENTS TO HARVESTED PRODUCTION									
47a. 47b.	48.	49.	50.	51.	52.	53.	54.	55.	56.	57.	58a. 58b.	59a. 59b.	60a. 60b.	61.	62.	63.	64a. 64b.	65.	66.
Share Field ID	Multi-Crop Code	Length or Diameter	Width	Depth	Deduction	Net Cubic Feet	Conversion Factor	Gross Prod.	Bu. Ton Lbs CWT	Shell/Sugar Factor	FM% Factor	Moisture % Factor	Test WT Factor	Adjusted Production	Prod. Not to Count	Production Pre-QA	Value Mkt. Price	Quality Factor	Production to Count
1.000 C	NS	ACME ELEVATOR ANYTOWN, ANY STATE							900					900		900	-----		900
1.000 D	NS	14.0	RND	10.0		1,539.4	.8	1,231.5	59,112				44	59,112		59,112	-----		59,112
67. TOTAL																60,012	68. Section II Total		60,012
																69. Section I Total		16,420	
																70. Unit Total		76,432	
																71. Allocated Prod.			
																72. Total APH Prod.		76,432	

This form example does not illustrate all required entry items (e.g., signatures, dates, etc.).

Forms Standards – Production Worksheet – CBD (Continued)

PRODUCTION WORKSHEET																							
1. Crop/Code # INDUSTRIAL HEMP 00XX	2. Unit # 0002-0001 OU	3. Location Description SW1-96N-3W	7. Company Agency ANY COMPANY ANY AGENCY																				
4. Date(s) of Damage JUN	5. Cause(s) of Damage EX. MOSIT.	6. Insured Cause % 100	12. Additional Units	13. Est. Prod. Per Acre											8. Name of Insured I.M. INSURED	9. Claim # XXXXXXXXXX	11. Crop Year YYYY						
															10. Policy #								
															14. Date(s) Notice of Loss	1st MM/DD/YYYY	2nd	Final MM/DD/YYYY					
															15. Companion Policy(s) NONE								
SECTION I – DETERMINED ACREAGE APPRAISED, PRODUCTION AND ADJUSTMENTS																							
A. ACTUARIAL															B. POTENTIAL YIELD								
16. Field ID	17. Multi-Crop Code	18. Reported Acres	19. Determined Acres	20. Interest or Share	21. Risk	22. Type	23. Class	24. Sub-Class	25. Intended Use	26. Irr Practice	27. Cropping Practice	28. Organic Practice	29. Stage	30. Use of Acreage	31. Appraised Potential	32a. Moisture % Factor	32b.	33. Shell %, Factor, or Value	34. Production Pre QA	35. Quality Factor	36. Production Post QA	37. Uninsured Causes	38. Total to Count
A	NS		6.0	1,000		YYY				002			UH	UH	440	-----			2,640		2,640		2,640

39. TOTAL			6.0	40. Quality: TW <input type="checkbox"/> KD <input type="checkbox"/> Aflatoxin <input type="checkbox"/> Vomitoxin <input type="checkbox"/> Fumonisin <input type="checkbox"/> Garlicky <input type="checkbox"/> Dark Roast <input type="checkbox"/> Sclerotinia <input type="checkbox"/> Ergoty <input type="checkbox"/> CoFo <input type="checkbox"/> Other <input type="checkbox"/> None <input type="checkbox"/> 41. Mycotoxins exceed FDA, State or other health organization maximum limits. Yes <input type="checkbox"/>												42. TOTALS		2,640		2,640		2,640	

NARRATIVE (If more space is needed, attach a Special Report) Acres were determined using permanent field measurements.

SECTION II – DETERMINED HARVESTED PRODUCTION

43. Date Harvest Completed MM/DD/YYYY						44. Damage similar to other farms in the area? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						45. Assignment of Indemnity Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						46. Transfer of Right to Indemnity? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>					
A. MEASUREMENTS						B. GROSS PRODUCTION				C. ADJUSTMENTS TO HARVESTED PRODUCTION													
47a. Share Field ID	48. Multi-Crop Code	49. Length or Diameter	50. Width	51. Depth	52. Deduction	53. Net Cubic Feet	54. Conversion Factor	55. Gross Prod.	56. Bu. Ton (lbs) CWT	57. Shell/Sugar Factor	58a. FM% Factor	58b.	59a. Moisture % Factor	59b.	60a. Test WT Factor	60b.	61. Adjusted Production	62. Prod. Not to Count	63. Production Pre-QA	64a. Value Mkt. Price	64b.	65. Quality Factor	66. Production to Count

67. TOTAL																		60,012	68. Section II Total				
																			69. Section I Total				
																			70. Unit Total				
																			71. Allocated Prod.				
																			72. Total APH Prod.				

This form example does not illustrate all required entry items (e.g., signatures, dates, etc.).

Reference Material

Table A - Minimum Representative Sample Requirements

ACRES IN FIELD OR SUBFIELD	MINIMUM NO. OF SAMPLES
0.1 - 10.0	3
Add one additional sample for each additional 40.0 acres (or fraction thereof) in the field or subfield.	

Table B – Sample Row Length – Grain and Fiber and CBD Types

ROW WIDTH	STAND REDUCTION SAMPLE ROW LENGTH	SEED COUNT SAMPLE ROW LENGTH
6	18.0	10.0
7	15.4	8.6
8	13.5	7.5
10	10.8	6.0
12	9.0	5.0
14	7.7	4.3
16	6.8	3.8
18	6.0	3.3
20	5.4	3.0
22	4.9	2.7
24	4.5	2.5
26	4.2	2.3
28	3.9	2.1
30	3.6	2.0

Stand Reduction Sample Row Length - For row widths not shown above, divide 12 inches by the row width in inches (e.g., drill space) and multiply the result by nine to get the row length for nine square feet.

EXAMPLE: Row width is 15 inches.

12 inches ÷ 15 inch row width = 0.8 feet X 9 = 7.2 feet of row for nine square feet

Seed Count Sample Row Length - For row widths not shown above, divide 12 inches by the row width in inches (e.g., drill space) and multiply the result by five to get the row length for five square feet.

EXAMPLE: Row width is 15 inches.

12 inches ÷ 15 inch row width = 0.8 feet X 5 = 4.0 feet of row for five square feet

Reference Materials (Continued)

Table C: Row Length Factors – CBD Type (Transplant)

ROW WIDTH (INCHES)	ROW LENGTH (FEET) FOR 1/100 ACRE
42	124.5
40	130.7
38	137.6
36	145.2
34	153.7
32	163.4
30	174.2
28	186.7
26	201.0
24	217.08
22	237.6
20	261.4
18	290.4
16	326.7
14	373.4

For row widths not listed, use the following formula:

$$\frac{43,560 \text{ sq. ft./acre} \div (\text{row width in inches} \div 12 \text{ inches})}{100 \text{ ft.}}$$

EXAMPLE:

$$\frac{43,560 \text{ sq. ft./acre} \div \frac{25"}{12}}{100 \text{ ft.}} = 43,560 \text{ sq. ft.} \div 2.083 = \frac{20,912.146}{100 \text{ ft.}} = 209.121 \text{ ft. or } 209.1 \text{ ft. row length}$$

Percent Yield Loss from IH Stand Reduction

Use Exhibit 6 on the following pages to determine the yield loss from stand reduction for the grain and fiber types. If the plant population is over 35 plants per nine square feet (one square yard for broadcast seeded), round the population to the nearest denomination on the table (e.g., 52 would be rounded down to 50 and 53 would be rounded up to 55, etc.).

EXAMPLE:

If the original number of plants in the nine square foot sample is 67 plants (rounded down to 65) and the surviving number of plants in the nine square foot sample is 21 plants, the resultant loss from stand reduction would be 18 percent.

Percent Yield Loss from IH Stand Reduction (Continued)

Surviving Stands / 9 ft ²																																	
Orginal Stands / 9 ft ²	180	175	170	165	160	155	150	145	140	135	130	125	120	115	110	105	100	95	90	85	80	75	70	65	60	55	50	45	40	35	34	33	
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
175		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
170			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
165				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
160					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
155						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
150							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
145								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
140									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
135										0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
130											0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
125												0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
120													0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
115														0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
110															0	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
105																0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7	
100																	0	0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7
95																		0	0	0	0	0	0	0	1	1	1	2	3	4	6	6	7
90																			0	0	0	0	0	0	1	1	1	2	3	4	6	6	7
85																				0	0	0	0	0	1	1	1	2	3	4	6	6	7
80																					0	0	0	0	1	1	1	2	3	4	6	6	7
75																						0	0	0	1	1	1	2	2	4	6	6	7
70																							0	0	0	1	1	1	2	4	6	6	7
65																								0	0	1	1	2	3	5	6	7	
60																									0	0	1	2	3	5	6	6	
55																										0	1	1	3	5	5	6	
50																											0	1	2	4	5	5	
45																												0	1	3	4	4	
40																													0	2	3	3	
35																														0	1	1	
34																															0	1	

PERCENT LOSS FROM STAND REDUCTION

Percent Yield Loss from IH Stand Reduction (Continued)

SURVIVING PLANTS / 9FT²																																		
Original Stands / 9 ft²	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
180	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
175	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
170	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
165	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
160	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
155	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
150	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
145	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
140	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
135	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
130	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
125	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
120	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
115	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
110	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
105	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
100	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
95	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	28	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
90	8	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	27	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
85	7	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	27	30	32	35	38	41	45	48	52	57	62	67	72	79	85	92	100	
80	7	8	9	10	10	11	12	13	14	16	17	18	20	22	23	25	27	30	32	35	38	41	45	48	52	57	62	67	72	78	85	92	100	
75	7	8	9	9	10	11	12	13	14	15	17	18	20	21	23	25	27	30	32	35	38	41	45	48	52	57	62	67	72	78	85	92	100	
70	7	8	9	9	10	11	12	13	14	15	17	18	20	21	23	25	27	30	32	35	38	41	44	48	52	57	62	67	72	78	85	92	100	
65	7	8	8	9	10	11	12	13	14	15	17	18	20	21	23	25	27	29	32	35	38	41	44	48	52	57	61	67	72	78	85	92	100	
60	7	7	8	9	10	11	12	13	14	15	16	18	19	21	23	25	27	29	32	35	38	41	44	48	52	57	61	67	72	78	85	92	100	
55	6	7	8	9	9	10	11	12	13	15	16	17	19	21	23	25	27	29	32	34	37	41	44	48	52	56	61	66	72	78	85	92	100	
50	6	7	7	8	9	10	11	12	13	14	15	17	19	20	22	24	26	29	31	34	37	40	44	47	52	56	61	66	72	78	85	92	100	
45	5	6	6	7	8	9	10	11	12	13	15	16	18	19	21	23	26	28	31	33	36	40	43	47	51	56	61	66	72	78	85	92	100	
40	4	4	5	6	7	8	9	10	11	12	14	15	17	18	20	22	25	27	30	32	35	39	42	46	51	55	60	65	71	78	84	92	100	
35	2	2	3	4	5	6	7	8	9	10	12	13	15	17	19	21	23	25	28	31	34	37	41	45	49	54	59	65	71	77	84	92	100	
34	1	2	3	3	4	5	6	7	9	10	11	13	14	16	18	20	23	25	28	31	34	37	41	45	49	54	59	65	71	77	84	92	100	
33	1	1	2	3	4	5	6	7	8	9	11	12	14	16	18	20	22	25	27	30	33	37	41	45	49	54	59	64	70	77	84	92	100	

PERCENT LOSS FROM STAND REDUCTION

Percent Yield Loss from IH Stand Reduction (Continued)

SURVIVING PLANTS / 9FT²																																		
Original Stands / 9 ft²	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
32	0	1	1	2	3	4	5	6	7	9	10	12	13	15	17	19	22	24	27	30	33	36	40	44	49	53	59	64	70	77	84	92	100	
31		0	1	2	2	3	4	6	7	8	10	11	13	15	17	19	21	24	26	29	32	36	40	44	48	53	58	64	70	77	84	92	100	
30			0	1	2	3	4	5	6	7	9	10	12	14	16	18	20	23	26	29	32	35	39	43	48	53	58	64	70	76	84	91	100	
29				0	1	2	3	4	5	7	8	10	11	13	15	17	20	22	25	28	31	35	39	43	47	52	58	63	69	76	84	91	100	
28					0	1	2	3	4	6	7	9	11	12	14	17	19	22	24	27	31	34	38	42	47	52	57	63	69	76	83	91	100	
27						0	1	2	4	5	6	8	10	12	14	16	18	21	24	27	30	34	38	42	46	51	57	63	69	76	83	91	100	
26							0	1	2	4	5	7	9	11	13	15	17	20	23	26	29	33	37	41	46	51	56	62	69	76	83	91	100	
25								0	1	3	4	6	8	10	12	14	16	19	22	25	28	32	36	40	45	50	56	62	68	75	83	91	100	
24									0	1	3	5	6	8	11	13	15	18	21	24	28	31	35	40	44	50	55	61	68	75	83	91	100	
23										0	2	3	5	7	9	12	14	17	20	23	27	30	34	39	44	49	55	61	67	75	82	91	100	
22											0	2	4	6	8	10	13	16	19	22	25	29	33	38	43	48	54	60	67	74	82	91	100	
21												0	2	4	6	9	11	14	17	20	24	28	32	37	42	47	53	59	66	74	82	91	100	
20													0	2	4	7	9	12	15	19	23	27	31	36	41	46	52	59	66	73	81	90	100	
19														0	2	5	8	10	14	17	21	25	29	34	39	45	51	58	65	73	81	90	100	
18															0	3	5	8	12	15	19	23	28	33	38	44	50	57	64	72	81	90	100	
17																0	3	6	9	13	17	21	26	31	36	42	49	56	63	71	80	90	100	
16																	0	3	7	10	14	19	24	29	34	40	47	54	62	70	79	89	100	
15																		0	4	7	12	16	21	26	32	39	45	53	61	69	79	89	100	
14																			0	4	8	13	18	24	30	36	43	51	59	68	78	89	100	
13																				0	5	9	15	21	27	34	41	49	58	67	77	88	100	
12																					0	5	11	17	23	30	38	46	56	65	76	88	100	
11																						0	6	12	19	27	35	44	53	63	75	87	100	
10																							0	7	14	22	31	40	50	61	73	86	100	
9																								0	8	16	26	36	47	58	71	85	100	
8																									0	9	19	30	42	55	69	84	100	
7																										0	11	23	36	50	65	82	100	
6																											0	13	28	44	61	80	100	
5																												0	17	35	55	77	100	
4																													0	22	46	72	100	
3																														0	31	64	100	
2																															0	48	100	
1																																0	100	
0																																	100	

PERCENT LOSS FROM STAND REDUCTION

Percent Yield Loss from Defoliation

Percent Defoliation																				
Stage of Growth	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Vegetative through start of Flowering	0	0	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	4
5 Days after Flowering:	0	0	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	3
10 Days after Flowering	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
Percent Yield Loss																				

Percent Defoliation																				
Stage of Growth	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Vegetative through start of Flowering	4	4	5	5	5	5	5	6	6	6	6	7	7	8	8	8	9	9	10	10
5 Days after Flowering:	3	3	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6
10 Days after Flowering	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
Percent Yield Loss																				

Percent Defoliation																				
Stage of Growth	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Vegetative through start of Flowering	10	10	11	11	11	11	11	12	12	12	12	13	13	13	14	14	14	14	15	15
5 Days after Flowering:	6	6	7	7	7	7	7	8	8	8	8	8	9	9	9	9	9	10	10	10
10 Days after Flowering	3	3	3	3	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5
Percent Yield Loss																				

Percent Defoliation																				
Stage of Growth	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Vegetative through start of Flowering	15	16	16	16	17	17	17	17	18	18	18	18	19	19	19	19	19	20	20	20
5 Days after Flowering:	10	10	10	10	11	11	11	11	11	11	11	11	12	12	12	12	12	13	13	13
10 Days after Flowering	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Percent Yield Loss																				

Percent Defoliation																				
Stage of Growth	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Vegetative through start of Flowering	20	20	21	21	21	21	21	22	22	22	22	23	23	23	24	24	24	24	25	25
5 Days after Flowering:	13	13	13	13	14	14	14	14	14	14	14	14	15	15	15	15	15	16	16	16
10 Days after Flowering	6	6	6	6	7	7	7	7	7	7	7	7	7	7	8	8	8	8	8	8
Percent Yield Loss																				



United States
Department of
Agriculture



Federal Crop
Insurance
Corporation

FCIC-20XXXU
(01-2020)

INDUSTRIAL HEMP CROP INSURANCE STANDARDS HANDBOOK

2020 and Succeeding Crop Years

**RISK MANAGEMENT AGENCY
KANSAS CITY, MO**

TITLE: Industrial Hemp Crop Insurance Standards Handbook	NUMBER: FCIC-20XXXU
EFFECTIVE DATE: 2020 and succeeding Crop Years	ISSUE DATE: January XX, 2020
SUBJECT: Provides the procedures and instructions for administering the Industrial Hemp crop insurance program	OPI: Product Administration and Standards Division
	APPROVED: /s/ Deputy Administrator for Product Management

REASON FOR ISSUANCE

The Industrial Hemp Crop Insurance Standards Handbook is effective for the industrial hemp crop insurance program beginning with the 2020 crop year.

INDUSTRIAL HEMP CROP INSURANCE STANDARDS HANDBOOK

CONTROL CHART

Industrial Hemp Crop Insurance Standards Handbook							
	TP Page(s)	TC Page(s)	Text Page(s)	Exhibit Number	Exhibit Page No.(s)	Date	Directive Number
Insert	Entire Handbook						
Current Index	1-2	1-2	1-11	1 2 3	12 13-14 15	01-2020	FCIC-20XXXU

FILING INSTRUCTIONS

This handbook is effective for the 2020 and succeeding crop years.

**INDUSTRIAL HEMP CROP INSURANCE STANDARDS HANDBOOK
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PART 1 GENERAL INFORMATION AND RESPONSIBILITIES

1 General Information

A. Purpose

The purpose of this handbook is to provide supplementary instructions for establishing Industrial Hemp (IH) crop insurance coverage in accordance with the IH CP (20-IH-00XX), IH LASH (FCIC-20X00L), CIH (FCIC-18010), DSSH (FCIC- 24040), and GSH (GSH- 18190). The supplemental RMA-issued standards for this crop and crop year are in effect as of the signature date for this crop handbook

<https://www.rma.usda.gov/Policy-and-Procedure/Privately-Developed-Products---20000>

This handbook remains in effect until superseded by reissuance of either the entire handbook or selected portions (through amendments, bulletins, or FADs). If amendments are issued for a handbook, the original handbook as amended shall constitute the handbook. A bulletin or FAD can supersede either the original handbook or subsequent amendments.

B. Authority

The IH Crop Insurance Program is approved by the FCIC Board of Directors under Section 508(h) of the Federal Crop Insurance Act.

C. Program Duration

The IH Crop Insurance Program is available until cancelled by the FCIC Board of Directors.

D. Background Information

RMA is implementing the IH program for all insurable IH beginning with the 2020 crop year. The program is patterned after other Category B APH based crops and provides an indemnity caused by the insured causes of loss contained in the IH CP occurring during the insurance period.

2 Responsibilities

A. AIPs

AIPs must use standards, procedures, methods and instructions as authorized by FCIC in the sale and service of crop insurance policies. Each AIP is responsible for using RMA approved procedures. Procedures herein must be administered on a policy basis.

B. Insured

To be eligible for the IH Crop Insurance Program, insureds must comply with all terms and conditions of the BP and IH CP.

3-10 (Reserved)

PART 2 STANDARDS AND INSTRUCTIONS

11 General Rules

- A. The IH Crop Insurance Program is a program providing coverage to IH producers under the actual production history plan of insurance. In general, the FCIC 18010 CIH for Category B crops applies to IH. Other applicable terminology and instructions contained in the CIH that apply to the AIP and the insured apply to the IH insurance program except as noted in this handbook.

B. Related Handbooks

The following table provides handbooks closely related to this handbook. However, other RMA approved handbooks may refer to this handbook and be applicable.

Handbook	Relation/Purpose
CIH	Provides overall general underwriting (not crop specific) process.
DSSH	Provides general document standards
GSH	Provides general administrative procedures.
LAM	Provides general loss adjustment procedures.
INDUSTRIAL HEMP LASH	Provides loss adjustment procedures for IH.

- (1) General procedures, terms, abbreviations, and definitions (not crop specific) are identified in the CIH, GSH, and LAM.
- (2) Procedures, terms, abbreviations, and definitions specific to IH are identified as additions or exceptions in this handbook.

12-20 (Reserved)

PART 3 INSURABILITY

21 Availability

The IH program is available in counties contained in the AD where the FCIC IH program is offered.

Written agreements are not allowed under the IH insurance program.

22 Eligibility

A. IH Crop Insurance Program

The IH insurance program is available to all persons with a share in insurable IH acreage meeting the insurability provisions contained in the BP, CP, and SP, and is located in approved counties.

B. Ineligible Persons

Any person with a delinquent debt to RMA or an AIP, or who is otherwise ineligible under the BP, may not obtain IH insurance coverage.

23 Important Dates

A. Contract Change Date

November 30 preceding the cancellation date.

B. Sales Closing and Cancellation Dates

California, North Carolina	February 28
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Colorado, Illinois, Indiana, Kentucky, Minnesota, Montana, New York, North Dakota, Oregon, Pennsylvania, Tennessee, Virginia, Wisconsin	March 15
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C. Termination Dates

California, North Carolina	February 28
----------------------------	-------------

Colorado, Illinois, Indiana, Kentucky, Minnesota, Montana, New York, North Dakota, Oregon, Pennsylvania, Tennessee, Virginia, Wisconsin	March 15
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D. Premium Billing Date

August 30 of the crop year.

23 Important Dates (Continued)

E. Acreage Reporting Date

For new and carryover insureds:

July 31 of the crop year.

F. Insurance Period

End of the Insurance Period

In accordance with the provisions contained in section 11(b) of the BP, the calendar date for the end of the insurance period is:

October 31.

See section 11 of the BP for additional insurance period provisions.

24 Acreage Reporting

Additional acreage reporting requirements include:

- (1) The acreage report will list the insured acreage for each basic unit (by 100 percent interest, share, and type.
- (2) In addition to the requirements of section 6 of the BP, the insured must:
 - (a) Report the location (using the applicable land identifier contained in the section 6(c) of the BP, including Global Positioning System (GPS) coordinates); and
 - (b) Submit on or before the acreage reporting date a copy of:
 - (i) The certification form or official license issued by the applicable governing authority authorizing the insured to produce IH; and
 - (ii) Each processor contract.

25-30 (Reserved)

PART 4 INDUSTRIAL HEMP CROP PROVISIONS AND PROGRAM DETAILS

31 Insurance Guarantees, Coverage Levels, and Prices for Determining Indemnities

A. Coverage Levels

The insured may select a different coverage level for each insured type in the county and contained in the SP. For example, the insured may elect the 75 percent coverage level for one type, grain, and the 65 percent coverage level for a different type, fiber; or 75 percent coverage level for the CBD transplant-floral type and 65 percent for the CBD transplant-direct seeded type.

B Prices Elections

If the AD designates separate prices by type, the insured may select one price for each type so designated in the AD, even if the prices for each type are the same. The prices the insured chooses for each type are not required to have the same percentage relationship to the maximum price offered for each type. For example, if the insured chooses 100 percent of the maximum price for one type (grain), the insured may choose 75 percent of the maximum price for another type (fiber); or 100 percent maximum price for the CBD transplant-floral type and 65 percent on the CBD transplant-direct seeded type.

Note: If insured elects the Catastrophic Risk Protection (CAT) level of insurance for any type of the insured crop, the CAT level of coverage and price will be applicable to all insured acreage of that crop in the county.

32 Insured Crop

In accordance with section 7 of the CP:

- (1) The crop insured will be IH that is grown in the county on insurable acreage, and for which premium rates are provided by the AD
 - (a) In which the insured has a share;
 - (b) That is a type of IH designated in the SP;
 - (c) That is grown under a processor contract executed by the applicable acreage reporting date;
 - (d) That is grown under an official certification or license issued by the applicable governing authority that permits the production of the IH;
 - (e) That is planted for harvest as IH in accordance with the requirements of the processor contract and the production management practices of the processor;
 - (f) That is planted to an approved variety contained in a list issued by the applicable governing authority in the State in which the IH is grown or a proxy State contained in the SP; and
 - (g) That is not (unless allowed by the SP; see Exhibit 3):

32 Insured Crop (Continued)

- (i) Planted for any purpose other than IH
- (ii) Interplanted with another crop;
- (iii) Planted into an established grass or legume;
- (iv) Planted in a confined space such as a greenhouse or other physical structure;
- (v) Planted to a variety not contained in the list of varieties issued by the applicable governing authority in the State, or a proxy State as contained in SP; or
- (vi) Does not meet the minimum acreage requirements contained in the SP.

(Processors who are also a producer may be considered to have an insured share if the conditions contained in section 7(b) of the CP are met.)

33 Insurable Acreage

- (a) In addition to the provisions of section 9 of the BP, any acreage of the insured crop will be uninsurable that is not in compliance with the rotation requirements contained in the SP or, if applicable, required by the processor contract.

(See Exhibit 3 for rotation requirements and minimum acreage requirements.)
- (b) If the processor contract specifies an amount of acreage or production, insurable acreage for the unit will not exceed:
 - (1) The contracted acreage specified in the insured's processor contract(s) for the unit; or
 - (2) The result of dividing the amount of production specified in the insured's processor contract(s) for the unit by the insured's approved yield for the unit.
- (c) Any acreage of the insured crop damaged before the final planting date, to the extent that the majority of growers in the area would normally not further care for the crop, must be replanted unless the AIP agrees that replanting is not practical. The AIP will not require the insured to replant if it is not practical to replant to the same type of IH as originally planted.

34 Causes of Loss

A. Crop Provisions – Insured Causes

The CP provide crop insurance coverage only against the following causes of loss that occur within the insurance period:

- (1) Adverse weather;
- (2) Fire;

34 Causes of Loss (Continued)

- (3) Insects, but not damage allowed because of insufficient or improper application of pest control measures;
- (4) Plant disease but not damage allowed because of insufficient or improper application of disease control measures and the failure to follow applicable rotation requirements contained in section 8(a)(1) of the CP;
- (5) Wildlife;
- (6) Earthquake;
- (7) Volcanic eruption;
- (8) Failure of the irrigation water supply due to a cause of loss specified in sections 10(a)(1) through (7) the CP that also occurs during the insurance period.

B. Exclusions

In addition to the causes of loss excluded in section 12 of the BP, any loss of production that is due to following causes is not insured:

- (1) Levels of THC in excess of 0.3 percent or more on a dry weight basis except as otherwise specified on the SP;
- (2) The insured's failure to follow the requirements contained in the processor contract;
- (3) Any harvested production infected by mold, yeast, fungus, or other microbial organisms after harvest except as specified in section 12(c)(4) of the CP; or
- (4) Any damage or loss of production due to the inability to market the IH for any reason other than actual physical damage to the IH from an insurable cause specified in this section. For example, the AIP will not pay the insured an indemnity if the insured is unable to market due to quarantine, boycott, or refusal of any person to accept production.

35 Unit Division

A. Basic Unit

Basic units will be established in accordance with section 1 of the BP. Additional basic units by type apply as specified on the SP in accordance with (a) – (f) of the type definition in section 1 of the CP.

B. Optional and Enterprise Units

Optional and enterprise units may be established in accordance with section 34 of the BP

Provisions in the BP that allow enterprise units by irrigated and non-irrigated practices are not applicable.

35 Unit Division (Continued)

C. Whole-Farm Units

Whole-farm units are not allowed under the IH program except as may be provided on the SP.

36 Quality Adjustment

IH production is not subject to adjustments for quality except as provided section 15(j) of the BP and section 12(c)(4) of the CP, in which case, such destroyed production will not be considered production to count.

37 Calculation Examples

Example 1

The insured has a 100 percent share in a unit of grain containing 50 acres with a production guarantee per acre of 1,200 pounds (1,600 pound approved yield per acre x 75% coverage level), the production guarantee for the unit is 60,000 pounds (50 acres x 1,200 pounds/acre guarantee), insured's price election is \$0.50 per pound (\$0.50 published price election x 100% price percentage). Due to an insured cause of loss the production to count is 50,000 pounds. The premium rate is 7.0 percent.

Premium Calculation

The premium due is \$2,100 (1,200 lbs./ac. production guarantee X \$0.50/lb. price election X 50 acres X .07 premium rate X 100 % share).

Loss Calculation

- (1) 50 acres x 1,200 pound production guarantee/acre = 60,000 pound production guarantee;
- (2) 60,000 pound production guarantee x \$0.50 price election = \$30,000 value of the production guarantee;
- (4) 50,000 pound production to count x \$0.50 price election = \$25,000 value of the production to count;
- (6) \$30,000 – \$25,000 = \$5,000; and
- (7) \$5,000 x 1.000 share = \$5,000 indemnity.

Example 2:

The insured has a 100 percent share in a unit of transplant-whole plant CBD containing 30 acres with a production guarantee per acre of 1,200 pounds (1,600 pound approved yield per acre x 75% coverage level), the production guarantee for the unit is 36,000 pounds (30 acres x 1,200 pounds/acre guarantee), the insured's price election is \$5.00 per pound (\$5.00 published price election x 100% price percentage). Due to an insured cause of loss the production to count is 25,000 pounds. The premium rate is 7.0 percent.

The premium due is \$12,600 (1,200 lbs./ac. production guarantee X \$5.00/lb. price election X 30 acres X .07 premium rate X 100 % share).

37 Calculation Examples (Continued)

Loss Calculation

- (1) 30 acres x 1,200 pound production guarantee/acre = 36,000 pound production guarantee;
- (2) 36,000 pound production guarantee x \$5.00 price election = \$180,000 value of the production guarantee;
- (4) 25,000 pound production to count x \$5.00 price election = \$125,000 value of the production to count;
- (6) $\$180,000 - \$125,000 = \$55,000$; and
- (7) $\$55,000 \times 1.000 \text{ share} = \$55,000 \text{ indemnity.}$

38 Excluded Coverages

The following coverages and the following yield adjustments do not apply to the IH program:

- A. Late and prevented planting;**
- B. Replanting;**
- C Trend adjustment**
- D Yield Exclusion.**

39 Service Forms

The following forms are required for the IH program:

- A. Application**
- B. Policy Change**
- C. Acreage Report**

40-50 (Reserved)

PART 5 CROP INSURANCE AND GENERAL STANDARDS HANDBOOK

51 CIH, DSSH, and GSH Applicability

Changes and additions to the CIH, DSSH, and GSH for IH are described in this part. All other applicable CIH, DSSH, and GSH procedures apply.

52 General Information

A. Industrial Hemp:

- (1) Is considered a Category B crop;
- (2) Are covered under the APH coverage plan (90); and
- (3) Utilize APH procedures contained in the CIH:
 - (i) To establish insurance yields; and
 - (ii) For all other applicable insurance purposes.

B. Insurability Requirements

Availability

- (1) The IH program is available for counties for which a premium rate is quoted in the AD.
- (2) Written agreements are not allowed under the IH program.

C. Record Requirements

Applicable requirements requiring separate acceptable production records apply (records by unit, type, and practice). Production records are in pounds of grain, fiber, and CBD biomass (see Exhibit 3, CBD type descriptions).

53 CIH Part 10

Para 1032: Enterprise units by irrigated and non-irrigated practices are not allowed.

Para 1045: Whole-Farm units are not available for HP (not authorized on the SP).

54 CIH Part 14

Para. 1403: In accordance with the instructions contained in this paragraph, production records for the CBD types contained in the SP are reported in pounds of biomass (see Exhibit 3, CBD type descriptions) based on processor records.

Para. 1415: IH is added to the list of crops requiring verifiable records.

55 CIH Part 15

Section 4: Yield exclusion and trend adjustment are not allowed.

56 CIH Part 17

Procedures contained in Part 17 apply to IH in general and as otherwise noted in this handbook.

57 GSH, Exhibit 8A, Crop Policy Information

Add the following information for IH to the crop policy information table, Exhibit 8A, for crops insurable under the APH plan of insurance.

CROP POLICY INFORMATION								
APH CROPS	FCIC		⁴² CROP CATEGORY, APH YIELD TOLERANCE	LP/PP	REPLANT	UNIT OF MEASURE	UNIT(S): BASIC (B) OPTIONAL (O) ENTERPRISE (E) ⁴⁴ WHOLE FARM (W)	⁴⁵ HIGH -RISK LAND EX. OPT.
	POLICY	CROP PROVISIONS						
Industrial Hemp	18-BR	20-IH- XXXX	B 5%	No	No	Lbs.	B/O/E	Yes

⁴² Tolerance for APH field reviews.

⁴⁴ WU(s) if provided for in the AD.

⁴⁵ Requires insured's signature, refer to AD.

57-60 (Reserved)

Exhibits

1 Acronyms

The following table contains RMA-approved acronyms used in this handbook.

Approved Acronym/Abbreviation	Term
AD	Actuarial Documents
AIP	Approved Insurance Provider
APH	Actual Production History
BP	Basic Provisions (18-BR)
CAT	Catastrophic Coverage Endorsement
CIH	FCIC- 18010 Crop Insurance Handbook
CP	Crop Provisions
DSSH	Document and Supplemental Standards Handbook
FCIC	USDA Federal Crop Insurance Corporation
IH	Industrial Hemp
LAM	FCIC- 25010 Loss Adjustment Manual
LASH	Loss Adjustment Standards Handbook
RMA	Risk Management Agency
SP	Special Provisions

2 Definitions

Base contract price – The price stipulated on the processor contract without regard to discounts or incentives that may apply.

CBD – Cannabidiol

Good farming practices – The cultural practices generally in use for the county for the crop to make normal progress toward maturity and produce at least the yield used to determine the production guarantee and any requirements contained in the processor contract.

Harvest – The combining or threshing the insured crop for grain or cutting the insured crop for fiber or CBD. A grain crop which is swathed prior to combining or a fiber crop cut for the purpose of retting and not baled will not be considered harvested.

Industrial hemp – Plants of the Cannabis sativa species, by type, grown for the production of industrial and consumer products.

Planted acreage – In addition to the definition contained in the Basic Provisions, land in which industrial hemp seedlings, including hydroponic plants, have been transplanted by hand or machine into the field.

Processor contract – A legal contractual written agreement executed between the producer and processor engaged in the production and processing of industrial hemp containing at a minimum:

- (a) The producer's promise to plant and grow industrial hemp and to deliver all industrial hemp to the processor;
- (b) The processor's promise to purchase the industrial hemp produced by the producer; and;
- (c) A base contract price, or method to derive a value that will be paid to the producer for the production as specified in the processor's contract.

Multiple contracts with the same processor that specify amounts of production will be considered as a single processor contract unless the contracts are for different types of hemp.

Pound – 16 ounces avoirdupois.

Processor – Any business enterprise regularly engaged in processing industrial hemp that possesses all licenses and permits for processing industrial hemp required by the applicable governing authority in the state in which it operates, and that possesses facilities, or has contractual access to such facilities with enough equipment to accept and process contracted industrial hemp within a reasonable amount of time after harvest.

Retting – The process for separating the different fibers of the hemp plant and involves leaving the crop in the field to allow decomposition.

THC – Tetrahydrocannabinol (also known as delta-9 tetrahydrocannabinol).

Definitions (Continued)

Type – A category of industrial hemp identified as a type on the Special Provisions and shown below:

- (a) CBD – CBD produced from the flowers, leaves, and stems of industrial hemp plants containing not more than 0.3 percent THC on a dry weight basis;
- (b) Dual-purpose – A type of industrial hemp that is grown to produce grain and fiber in the same crop year;
- (c) Fiber- The fiber produced from the stems and stalk of the industrial hemp plant;
- (d) Grain - Grain produced by the industrial hemp plant;
- (e) Oil - Oil produced from industrial hemp grain;
- (f) Other - Other types of industrial hemp contained in the Special Provisions.

3 Special Provisions Insurability Requirements

1. Rotation Requirements

Insurance will not attach to any acreage on which *Cannabis*, canola, dry beans, dry peas, mustard, rapeseed, soybeans, or sunflowers were grown the preceding crop year.

2. Minimum Acreage Requirements

The minimum acreage required to establish insurability is:

<u>Type</u>	<u>Minimum Acres</u>
Grain	20
Fiber	20
CBD	5

for each separate unit for the type (either a basic or optional unit). Any location that may qualify as a separate unit that contains less than the minimum acreage will be combined with the nearest qualifying unit of the same type.

3. CBD Types

“Floral” means all parts of the IH flower.

“Whole plant” means all parts of the IH plant including the stalks, stems, leaves and flowers.

**Dates
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Types / Practices	T/P 01	T/P 02	T/P 03	T/P 04
Type Practice	Grain UUU Non-Irrigated 003	Fiber VVV Non-Irrigated 003	Grain UUU Irrigated 002	Fiber VVV Irrigated 002

Types / Practices	T/P 05	T/P 06	T/P 07	T/P 08
Type Practice	Grain UUU Organic (Certified) Non-Irr. 713	Fiber VVV Organic (Certified) Non-Irr. 713	Grain UUU Organic (Certified) Irr. 702	Fiber VVV Organic (Certified) Irr. 702

Types / Practices	T/P 09	T/P 10	T/P 11	T/P 12
Type Practice	Grain UUU Organic (Transitional) Non-Irr. 714	Fiber VVV Organic (Transitional) Non-Irr. 714	Grain UUU Organic (Transitional) Irr. 712	Fiber VVV Organic (Transitional) Irr. 712

Base County Dates				
Sales Closing Date	03/15/2020	03/15/2020	03/15/2020	03/15/2020
Cancellation Date	03/15/2020	03/15/2020	03/15/2020	03/15/2020
Final Planting Date	06/20/2020	06/20/2020	06/20/2020	06/20/2020
Acreage Reporting Date	07/31/2020	07/31/2020	07/31/2020	07/31/2020
Premium Billing Date	08/30/2020	08/30/2020	08/30/2020	08/30/2020
End Of Insurance Date	10/31/2020	10/31/2020	10/31/2020	10/31/2020
Termination Date	03/15/2021	03/15/2021	03/15/2021	03/15/2021
Contract Change Date	11/30/2020	11/30/2020	11/30/2020	11/30/2020
Production Reporting Date	04/29/2020	04/29/2020	04/29/2020	04/29/2020

**Dates
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Types / Practices	T/P 13	T/P 14	T/P 15	T/P 16
Type Practice	CBD Direct Seeded Floral WWW Non-Irr. 003	CBD Direct Seeded Whole Plant XXX Non-Irr. .003	CBD Transplant Floral YYY Non Irr. 003	CBD Transplant Whole Plant ZZZ Non Irr. 003

Types / Practices	T/P 17	T/P 18	T/P 19	T/P 20
Type Practice	CBD Direct Seeded Floral WWW Irr. 002	CBD Direct Seeded Whole Plant XXX Irr. .002	CBD Transplant Floral YYY Irr. 002	CBD Transplant Whole Plant ZZZ Irr. 002

Types / Practices	T/P 21	T/P 22	T/P 23	T/P 24
Type Practice	CBD Direct Seeded Floral WWW Organic (Certified) Non-Irr. 713	CBD Direct Seeded Whole Plant XXX Organic (Certified) Non-Irr. 713	CBD Transplant Floral YYY Organic (Certified) Non-Irr. 713	CBD Transplant Whole Plant ZZZ Organic (Certified) Non-Irr. 713

Types / Practices	T/P 25	T/P 26	T/P 27	T/P 28
Type Practice	CBD Direct Seeded Floral WWW Organic (Certified) Irr. 702	CBD Direct Seeded Whole Plant XXX Organic (Certified) Irr. 702	CBD Transplant Floral YYY Organic (Certified) Irr. 702	CBD Transplant Whole Plant ZZZ Organic (Certified) Irr. 702

Types / Practices	T/P 29	T/P 30	T/P 31	T/P 32
Type Practice	CBD Direct Seeded Floral WWW Organic (Transitional) Non-Irr. 714	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Non-Irr. 714	CBD Transplant Floral YYY Organic (Transitional) Non-Irr. 714	CBD Transplant Whole Plant ZZZ Organic (Transitional) Non-Irr. 714

Types / Practices	T/P 33	T/P 34	T/P 35	T/P 36
Type Practice	CBD Direct Seeded Floral WWW Organic (Transitional) Irr. 712	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Irr. 712	CBD Transplant Floral YYY Organic (Transitional) Irr. 712	CBD Transplant Whole Plant ZZZ Organic (Transitional) Irr. 712

Base County Dates				
Sales Closing Date	03/15/2020	03/15/2020	03/15/2020	03/15/2020
Cancellation Date	03/15/2020	03/15/2020	03/15/2020	03/15/2020
Final Planting Date	07/20/2020	07/20/2020	07/20/2020	07/20/2020
Acreage Reporting Date	07/31/2020	07/31/2020	07/31/2020	07/31/2020
Premium Billing Date	08/30/2020	08/30/2020	08/30/2020	08/30/2020
End Of Insurance Date	10/31/2020	10/31/2020	10/31/2020	10/31/2020
Termination Date	03/15/2021	03/15/2021	03/15/2021	03/15/2021
Contract Change Date	11/30/2020	11/30/2020	11/30/2020	11/30/2020
Production Reporting Date	04/29/2020	04/29/2020	04/29/2020	04/29/2020

**Prices
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Types / Practices	T/P 01	T/P 02	T/P 03	T/P 04
Type Practice	Grain UUU Non-Irrigated 003	Fiber VVV Non-Irrigated 003	Grain UUU Irrigated 002	Fiber VVV Irrigated 002

Prices - Base County				
Established Price	\$OO.0000	\$PP.0000	\$OO.0000	\$PP.0000
Catastrophic Price	\$CO.000	\$CP.000	\$CO.000	\$CP.000
Maximum Contract Price Factor				
Maximum Contract Price				
Contract Price Code	No	No	No	No

Types / Practices	T/P 05	T/P 06	T/P 07	T/P 08
Type Practice	Grain UUU Organic (Certified) Non-Irr. 713	Fiber VVV Organic (Certified) Non-Irr. 713	Grain UUU Organic (Certified) Irr. 702	Fiber VVV Organic (Certified) Irr. 702

Prices - Base County				
Established Price	\$QQ.0000	\$RR.0000	\$QQ.0000	\$RR.0000
Catastrophic Price	\$CR.000	\$CS.000	\$CR.000	\$CS.000
Maximum Contract Price Factor	1.5000	1.5000	1.5000	1.5000
Maximum Contract Price	\$MC.0000	\$MC.0000	\$MC.0000	\$MC.0000
Contract Price Code	Yes	Yes	Yes	Yes

**Prices
Selection Criteria**

Year: 2020

Commodity: Industrial Hemp (0XXX)

State: Kentucky (021)

Data: Released

Plan: APH (90)

County: Adair (001)

Types / Practices	T/P 09	T/P 10	T/P 11	T/P 12
Type Practice	Grain UUU Organic (Transitional) Non-Irr. 714	Fiber VVV Organic (Transitional) Non-Irr. 714	Grain UUU Organic (Transitional) Irr. 712	Fiber VVV Organic (Transitional) Irr. 712

Prices - Base County				
Established Price	\$OO.0000	\$PP.0000	\$OO.0000	\$PP.0000
Catastrophic Price	\$CO.000	\$CP.000	\$CO.0000	\$CP.0000
Maximum Contract Price Factor	2.0000	2.0000	2.0000	2.0000
Maximum Contract Price	\$MC.0000	\$MC.0000	\$MC.0000	\$MC.0000
Contract Price Code	Yes	Yes	Yes	Yes

Types / Practices	T/P 13	T/P 14	T/P 15	T/P 16
Type Practice	CBD Direct Seeded Floral WWW Non-Irr. 003	CBD Direct Seeded Whole Plant XXX Non-Irr. .003	CBD Transplant Floral YYY Non Irr. 003	CBD Transplant Whole Plant ZZZ Non Irr. 003

Prices - Base County				
Established Price	\$SS.0000	\$TT.0000	\$UU.0000	\$VV.0000
Catastrophic Price	\$CS.000	\$CT.000	\$CU.000	\$CV.000
Maximum Contract Price Factor				
Maximum Contract Price				
Contract Price Code	No	No	No	No

Types / Practices	T/P 17	T/P 18	T/P 19	T/P 20
Type Practice	CBD Direct Seeded Floral WWW Irr. 002	CBD Direct Seeded Whole Plant XXX Irr. .002	CBD Transplant Floral YYY Irr. 002	CBD Transplant Whole Plant ZZZ Irr. 002

Prices - Base County				
Established Price	\$SS.0000	\$TT.0000	\$UU.0000	\$VV.0000
Catastrophic Price	\$CS.000	\$CT.000	\$CU.000	\$CV.000
Maximum Contract Price Factor				
Maximum Contract Price				
Contract Price Code	No	No	No	No

**Prices
Selection Criteria**

Year: 2020

Commodity: Industrial Hemp (0XXX)

State: Kentucky (021)

Data: Released

Plan: APH (90)

County: Adair (001)

Types / Practices	T/P 21	T/P 22	T/P 23	T/P 24
Type Practice	CBD Direct Seeded Floral WWW Organic (Certified) Non-Irr. 713	CBD Direct Seeded Whole Plant XXX Organic (Certified) Non-Irr. 713	CBD Transplant Floral YYY Organic (Certified) Non-Irr. 713	CBD Transplant Whole Plant ZZZ Organic (Certified) Non-Irr. 713

Prices - Base County				
Established Price	\$WWW.0000	\$XX.0000	\$YY.0000	\$ZZ.0000
Catastrophic Price	\$CW.000	\$CX.000	\$CY.000	\$CZ.000
Maximum Contract Price Factor	1.5000	1.5000	1.5000	1.5000
Maximum Contract Price	\$MC.0000	\$MC.0000	\$MC.0000	\$MC.0000
Contract Price Code	Yes	Yes	Yes	Yes

Types / Practices	T/P 25	T/P 26	T/P 27	T/P 28
Type Practice	CBD Direct Seeded Floral WWW Organic (Certified) Irr. 702	CBD Direct Seeded Whole Plant XXX Organic (Certified) Irr. 702	CBD Transplant Floral YYY Organic (Certified) Irr. 702	CBD Transplant Whole Plant ZZZ Organic (Certified) Irr. 702

Prices - Base County				
Established Price	\$WWW.0000	\$XX.0000	\$YY.0000	\$ZZ.0000
Catastrophic Price	\$CW.000	\$CX.000	\$CY.000	\$CZ.000
Maximum Contract Price Factor	1.5000	1.5000	1.5000	1.5000
Maximum Contract Price	\$MC.0000	\$MC.0000	\$MC.0000	\$MC.0000
Contract Price Code	Yes	Yes	Yes	Yes

Types / Practices	T/P 29	T/P 30	T/P 31	T/P 32
Type Practice	CBD Direct Seeded Floral WWW Organic (Transitional) Non-Irr. 714	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Non-Irr. 714	CBD Transplant Floral YYY Organic (Transitional) Non-Irr. 714	CBD Transplant Whole Plant ZZZ Organic (Transitional) Non-Irr. 714

Prices - Base County				
Established Price	\$SS.0000	\$TT.0000	\$UU.0000	\$VV.0000
Catastrophic Price	\$CS.000	\$CT.000	\$CU.000	\$CV.000
Maximum Contract Price Factor	2.0000	2.0000	2.0000	2.0000
Maximum Contract Price	\$MC.0000	\$MC.0000	\$MC.0000	\$MC.0000
Contract Price Code	Yes	Yes	Yes	Yes

**Prices
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Types / Practices	T/P 33	T/P 34	T/P 35	T/P 36
Type Practice	CBD Direct Seeded Floral WWW Organic (Transitional) Irr. 712	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Irr. 712	CBD Transplant Floral YYY Organic (Transitional) Irr. 712	CBD Transplant Whole Plant ZZZ Organic (Transitional) Irr. 712

Prices - Base County				
Established Price	\$SS.0000	\$TT.0000	\$UU.0000	\$VV.0000
Catastrophic Price	\$CS.000	\$CT.000	\$CU.000	\$CV.000
Maximum Contract Price Factor	2.0000	2.0000	2.0000	2.0000
Maximum Contract Price	\$MC.0000	\$MC.0000	\$MC.0000	\$MC.0000
Contract Price Code	Yes	Yes	Yes	Yes

**Rates
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Types / Practices		T/P 01	T/P 02	T/P 03	T/P 04
Type Practice		Grain UUU Non-Irrigated 003	Fiber VVV Non-Irrigated 003	Grain UUU Irrigated 002	Fiber VVV Irrigated 002
Types / Practices		T/P 05	T/P 06	T/P 07	T/P 08
Type Practice		Grain UUU Organic (Certified) Non-Irr. 713	Fiber VVV Organic (Certified) Non-Irr. 713	Grain UUU Organic (Certified) Irr. 702	Fiber VVV Organic (Certified) Irr. 702
Types / Practices		T/P 09	T/P 10	T/P 11	T/P 12
Type Practice		Grain UUU Organic (Transitional) Non-Irr. 714	Fiber VVV Organic (Transitional) Non-Irr. 714	Grain UUU Organic (Transitional) Irr. 712	Fiber VVV Organic (Transitional) Irr. 712
Types / Practices		T/P 13	T/P 14	T/P 15	T/P 16
Type Practice		CBD Direct Seeded Floral WWW Non-Irr. 003	CBD Direct Seeded Whole Plant XXX Non-Irr. .003	CBD Transplant Floral YYY Non Irr. 003	CBD Transplant Whole Plant ZZZ Non Irr. 003
Types / Practices		T/P 17	T/P 18	T/P 19	T/P 20
Type Practice		CBD Direct Seeded Floral WWW Irr. 002	CBD Direct Seeded Whole Plant XXX Irr. .002	CBD Transplant Floral YYY Irr. 002	CBD Transplant Whole Plant ZZZ Irr. 002
Types / Practices		T/P 21	T/P 22	T/P 23	T/P 24
Type Practice		CBD Direct Seeded Floral WWW Organic (Certified) Non-Irr. 713	CBD Direct Seeded Whole Plant XXX Organic (Certified) Non-Irr. 713	CBD Transplant Floral YYY Organic (Certified) Non-Irr. 713	CBD Transplant Whole Plant ZZZ Organic (Certified) Non-Irr. 713
Types / Practices		T/P 25	T/P 26	T/P 27	T/P 28
Type Practice		CBD Direct Seeded Floral WWW Organic (Certified) Irr. 702	CBD Direct Seeded Whole Plant XXX Organic (Certified) Irr. 702	CBD Transplant Floral YYY Organic (Certified) Irr. 702	CBD Transplant Whole Plant ZZZ Organic (Certified) Irr. 702
Types / Practices		T/P 29	T/P 30	T/P 31	T/P 32
Type Practice		CBD Direct Seeded Floral WWW Organic (Transitional) Non-Irr. 714	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Non-Irr. 714	CBD Transplant Floral YYY Organic (Transitional) Non-Irr. 714	CBD Transplant Whole Plant ZZZ Organic (Transitional) Non-Irr. 714
Types / Practices		T/P 33	T/P 34	T/P 35	T/P 36
Type Practice		CBD Direct Seeded Floral WWW Organic (Transitional) Irr. 712	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Irr. 712	CBD Transplant Floral YYY Organic (Transitional) Irr. 712	CBD Transplant Whole Plant ZZZ Organic (Transitional) Irr. 712

**Rates
Selection Criteria**

Year: 2020

Commodity: Industrial Hemp (0XXX)

State: Kentucky (021)

Data: Released

Plan: APH (90)

County: Adair (001)

Base County Rates		T/P 01 - 36				
Coverage Level Percent	0.65	0.65	0.65	0.65	0.65	0.65
Unit Of Measure	LBS	LBS	LBS	LBS	LBS	LBS
Reference Yield	XXX.00	XXX.00	XXX.00	XXX.00	XXX.00	XXX.00
Exponent Value	0.000	0.000	0.000	0.000	0.000	0.000
Reference Rate	0.YYYY	0.YYYY	0.YYYY	0.YYYY	0.YYYY	0.YYYY
Fixed Rate	0.ZZZZ	0.ZZZZ	0.ZZZZ	0.ZZZZ	0.ZZZZ	0.ZZZZ

Base County Differentials		T/P 01 - 36				
Coverage Level						
CAT	0.A10000000	0.B10000000	0.C10000000	0.D10000000	0.E10000000	0.F10000000
0.50	0.A20000000	0.B20000000	0.C20000000	0.D20000000	0.E20000000	0.F20000000
0.55	0.A30000000	0.B30000000	0.C30000000	0.D30000000	0.E30000000	0.F30000000
0.60	0.A40000000	0.B40000000	0.C40000000	0.D40000000	0.E40000000	0.F40000000
0.65	1.000000000	1.000000000	1.000000000	1.000000000	1.000000000	1.000000000
0.70	1.A50000000	1.B50000000	1.C50000000	1.D50000000	1.E50000000	1.F50000000
0.75	1.A60000000	1.B60000000	1.C60000000	1.D60000000	1.E60000000	1.F60000000
0.80	1.A70000000	1.B70000000	1.C70000000	1.D70000000	1.E70000000	1.F70000000
0.85	1.A80000000	1.B80000000	1.C80000000	1.D80000000	1.E80000000	1.F80000000

Optional Coverage Rate(s)		T/P 01 - 04 and - 13 - 20				
Insurance Option	Rate Method					
(CP) Contract Pricing	M	---	---	---	---	---
(HF) Hail & Fire Exclusion	M	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX
(YA) Yield Adjustment (60%)	M	1.000	1.000	1.000	1.000	1.000
(YC) Yield Cup	M	1.000	1.000	1.000	1.000	1.000

**Rates
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Optional Coverage Rate(s)		T/P 05 – 12 and – 21 – 36					
Insurance Option (CP)	Rate Method						
Contract Pricing (HF) Hall & Fire Exclusion (YA) Yield Adjustment (60%) (YC) Yield Cup	M	1.000	1.000	1.000	1.000	1.000	1.000
	M	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX
	M	1.000	1.000	1.000	1.000	1.000	1.000
	M	1.000	1.000	1.000	1.000	1.000	1.000

Unit Structure Discount Factor			Applicable to T/P 01-36					
Optional Unit	Acres							
	Low	High						
			1.000	1.000	1.000	1.000	1.000	1.000
Basic Unit	0.0	49.9	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX
	50.0	199.9	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX
	200.0	399.9	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX
	400.0	9999.9	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX
Enterprise Unit	0.0	49.9	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX
	50.0	199.9	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX
	200.0	399.9	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX
	400.0	9999.9	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX	0.XXX

**Types/ Practices
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Types / Practices	T/P 01	T/P 02	T/P 03	T/P 04
Type Practice	Grain UUU Non-Irrigated 003	Fiber VVV Non-Irrigated 003	Grain UUU Irrigated 002	Fiber VVV Irrigated 002

Types / Practices	T/P 05	T/P 06	T/P 07	T/P 08
Type Practice	Grain UUU Organic (Certified) Non-Irr. 713	Fiber VVV Organic (Certified) Non-Irr. 713	Grain UUU Organic (Certified) Irr. 702	Fiber VVV Organic (Certified) Irr. 702

Types / Practices	T/P 09	T/P 10	T/P 11	T/P 12
Type Practice	Grain UUU Organic (Transitional) Non-Irr. 714	Fiber VVV Organic (Transitional) Non-Irr. 714	Grain UUU Organic (Transitional) Irr. 712	Fiber VVV Organic (Transitional) Irr. 712

Types / Practices	T/P 13	T/P 14	T/P 15	T/P 16
Type Practice	CBD Direct Seeded Floral WWW Non-Irr. 003	CBD Direct Seeded Whole Plant XXX Non-Irr. .003	CBD Transplant Floral YYY Non Irr. 003	CBD Transplant Whole Plant ZZZ Non Irr. 003

Types / Practices	T/P 17	T/P 18	T/P 19	T/P 20
Type Practice	CBD Direct Seeded Floral WWW Irr. 002	CBD Direct Seeded Whole Plant XXX Irr. .002	CBD Transplant Floral YYY Irr. 002	CBD Transplant Whole Plant ZZZ Irr. 002

Types / Practices	T/P 21	T/P 22	T/P 23	T/P 24
Type Practice	CBD Direct Seeded Floral WWW Organic (Certified) Non-Irr. 713	CBD Direct Seeded Whole Plant XXX Organic (Certified) Non-Irr. 713	CBD Transplant Floral YYY Organic (Certified) Non-Irr. 713	CBD Transplant Whole Plant ZZZ Organic (Certified) Non-Irr. 713

Types / Practices	T/P 25	T/P 26	T/P 27	T/P 28
Type Practice	CBD Direct Seeded Floral WWW Organic (Certified) Irr. 702	CBD Direct Seeded Whole Plant XXX Organic (Certified) Irr. 702	CBD Transplant Floral YYY Organic (Certified) Irr. 702	CBD Transplant Whole Plant ZZZ Organic (Certified) Irr. 702

Types / Practices	T/P 29	T/P 30	T/P 31	T/P 32
Type Practice	CBD Direct Seeded Floral WWW Organic (Transitional) Non-Irr. 714	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Non-Irr. 714	CBD Transplant Floral YYY Organic (Transitional) Non-Irr. 714	CBD Transplant Whole Plant ZZZ Organic (Transitional) Non-Irr. 714

Types / Practices	T/P 33	T/P 34	T/P 35	T/P 36
Type Practice	CBD Direct Seeded Floral WWW Organic (Transitional) Irr. 712	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Irr. 712	CBD Transplant Floral YYY Organic (Transitional) Irr. 712	CBD Transplant Whole Plant ZZZ Organic (Transitional) Irr. 712

**Unit Structure
Selection Criteria**

Year: 2020

Commodity: Industrial Hemp (0XXX)

State: Kentucky (021)

Data: Released

Plan: APH (90)

County: Adair (001)

Types / Practices		T/P 01	T/P 02	T/P 03	T/P 04
Type Practice		Grain UUU Non-Irrigated 003	Fiber VVV Non-Irrigated 003	Grain UUU Irrigated 002	Fiber VVV Irrigated 002
Types / Practices		T/P 05	T/P 06	T/P 07	T/P 08
Type Practice		Grain UUU Organic (Certified) Non-Irr. 713	Fiber VVV Organic (Certified) Non-Irr. 713	Grain UUU Organic (Certified) Irr. 702	Fiber VVV Organic (Certified) Irr. 702
Types / Practices		T/P 09	T/P 10	T/P 11	T/P 12
Type Practice		Grain UUU Organic (Transitional) Non-Irr. 714	Fiber VVV Organic (Transitional) Non-Irr. 714	Grain UUU Organic (Transitional) Irr. 712	Fiber VVV Organic (Transitional) Irr. 712
Types / Practices		T/P 13	T/P 14	T/P 15	T/P 16
Type Practice		CBD Direct Seeded Floral WWW Non-Irr. 003	CBD Direct Seeded Whole Plant XXX Non-Irr. .003	CBD Transplant Floral YYY Non Irr. 003	CBD Transplant Whole Plant ZZZ Non Irr. 003
Types / Practices		T/P 17	T/P 18	T/P 19	T/P 20
Type Practice		CBD Direct Seeded Floral WWW Irr. 002	CBD Direct Seeded Whole Plant XXX Irr. .002	CBD Transplant Floral YYY Irr. 002	CBD Transplant Whole Plant ZZZ Irr. 002
Types / Practices		T/P 21	T/P 22	T/P 23	T/P 24
Type Practice		CBD Direct Seeded Floral WWW Organic (Certified) Non-Irr. 713	CBD Direct Seeded Whole Plant XXX Organic (Certified) Non-Irr. 713	CBD Transplant Floral YYY Organic (Certified) Non-Irr. 713	CBD Transplant Whole Plant ZZZ Organic (Certified) Non-Irr. 713
Types / Practices		T/P 25	T/P 26	T/P 27	T/P 28
Type Practice		CBD Direct Seeded Floral WWW Organic (Certified) Irr. 702	CBD Direct Seeded Whole Plant XXX Organic (Certified) Irr. 702	CBD Transplant Floral YYY Organic (Certified) Irr. 702	CBD Transplant Whole Plant ZZZ Organic (Certified) Irr. 702
Types / Practices		T/P 29	T/P 30	T/P 31	T/P 32
Type Practice		CBD Direct Seeded Floral WWW Organic (Transitional) Non-Irr. 714	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Non-Irr. 714	CBD Transplant Floral YYY Organic (Transitional) Non-Irr. 714	CBD Transplant Whole Plant ZZZ Organic (Transitional) Non-Irr. 714
Types / Practices		T/P 33	T/P 34	T/P 35	T/P 36
Type Practice		CBD Direct Seeded Floral WWW Organic (Transitional) Irr. 712	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Irr. 712	CBD Transplant Floral YYY Organic (Transitional) Irr. 712	CBD Transplant Whole Plant ZZZ Organic (Transitional) Irr. 712

**Unit Structure
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Unit Availability						
Optional Unit Allowed Flag	Y	Y	Y	Y	Y	Y
Basic Unit Allowed Flag	Y	Y	Y	Y	Y	Y
Enterprise Unit Allowed Flag	Y	Y	Y	Y	Y	Y
Whole Farm Unit Allowed Flag	N	N	N	N	N	N

**Subsidy Factors
Selection Criteria**

Year: 2020

Commodity: Industrial Hemp (0XXX)

State: Kentucky (021)

Data: Released

Plan: APH (90)

County: Adair (001)

Subsidy Factors

Coverage Level		CAT	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85
Subsidy Factor										
	Basic Unit	1.000	0.670	0.640	0.640	0.590	0.590	0.550	0.408	0.380
	Optional Unit		0.670	0.640	0.640	0.590	0.590	0.550	0.480	0.380
	Enterprise Unit		0.800	0.800	0.800	0.800	0.800	0.770	0.680	0.530

**Transitional Yields
Selection Criteria**

Year: 2020

Commodity: Industrial Hemp (0XXX)

State: Kentucky (021)

Data: Released

Plan: APH (90)

County: Adair (001)

Types / Practices	T/P 01	T/P 02	T/P 13	T/P 14	T/P 15	T/P 16
Type	Grain XXX	Fiber YYY	CBD Direct Seeded Floral WWW	CBD Direct Seeded Whole Plant XXX	CBD Transplant Floral YYY Non Irr. 003	CBD Transplant Whole Plant ZZZ
Practice	Non-Irrigated 003	Non-Irrigated 003	Non-Irr. 003	Non-Irr. .003		Non Irr. 003

Transitional Yields							
Sub County	Year	LBS	LBS	LBS	LBS	LBS	LBS
	2019	019A.00	019B.00	019C.00	019D.00	019E.00	019F.00
	2018	018A.00	018B.00	018C.00	018.00	018E.00	018F.00
	2017	017A.00	017B.00	017C.00	017D00	017E.00	017F.00
	2016	016A.00	016B.00	016C.00	016D.00	016E.00	016F.00
	2015	015A.00	015B.00	015C.00	015D.00	015E.00	015F.00
	2014	014A.00	014B.00	014C.00	014D.00	014E.00	014F.00
	2013	013A.00	013B.00	013C.00	013D.00	013E.00	013F.00
	2012	012A.00	012B.00	012C.00	012D.00	012E.00	012F.00
	2011	011A.00	011B.00	011C.00	011D.00	011E.00	011F.00
	2010	010A.00	010B.00	010C.00	010D.00	010E.00	010F.00
	2009	009A.00	009B.00	009C.00	009D.00	009E.00	009F.00
	2008	008A.00	008B.00	008C.00	008D.00	008E.00	008F.00
	2007	007A.00	007B.00	007C.00	007D.00	007E.00	007F.00
	2006	006A.00	006B.00	006C.00	006D.00	006E.00	006F.00
	2005	005A.00	005B.00	005C.00	005D.00	005E.00	005F.00
	2004	004A.00	004B.00	004C.00	004D.00	004E.00	004F.00
	2003	003A.00	003B.00	003C.00	003D.00	003E.00	003F.00
	2002	002A.00	002B.00	002C.00	002D.00	002E.00	002F.00
	2001 and Prior	001A.00	001B.00	001C.00	001D.00	001E.00	001F.00

**Transitional Yields
Selection Criteria**

Year: 2020

Commodity: Industrial Hemp (0XXX)

State: Kentucky (021)

Data: Released

Plan: APH (90)

County: Adair (001)

Types / Practices	T/P 03	T/P 04	T/P 17	T/P 18	T/P 19	T/P 20
Type Practice	Grain UUU Irrigated 002	Fiber VVV Irrigated 002	CBD Direct Seeded Floral WWW Irr. 002	CBD Direct Seeded Whole Plant XXX Irr. .002	CBD Transplant Floral YYY Irr. 002	CBD Transplant Whole Plant ZZZ Irr. 002

Transitional Yields							
Sub County	Year	LBS	LBS	LBS	LBS	LBS	LBS
	2019	019G.00	019H.00	019I.00	019J.00	019K.00	019L.00
	2018	018G.00	018H.00	018I.00	018J.00	018K.00	018L.00
	2017	017G.00	017H.00	017I.00	017J.00	017K.00	017L.00
	2016	016G.00	016H.00	016I.00	016J.00	016K.00	016L.00
	2015	015G.00	015H.00	015I.00	015J.00	015K.00	015L.00
	2014	014G.00	014H.00	014I.00	014J.00	014K.00	014L.00
	2013	013G.00	013H.00	013I.00	013J.00	013K.00	013L.00
	2012	012G.00	012H.00	012I.00	012J.00	012K.00	012L.00
	2011	011G.00	011H.00	011I.00	011J.00	011K.00	011L.00
	2010	010G.00	010H.00	010I.00	010J.00	010K.00	010L.00
	2009	009G.00	009H.00	009I.00	009J.00	009K.00	009L.00
	2008	008G.00	008H.00	008I.00	008J.00	008K.00	008L.00
	2007	007G.00	007H.00	007I.00	007J.00	007K.00	007L.00
	2006	006G.00	006H.00	006I.00	006J.00	006K.00	006L.00
	2005	005G.00	005H.00	005I.00	005J.00	005K.00	005L.00
	2004	004G.00	004H.00	004I.00	004J.00	004K.00	004L.00
	2003	003G.00	003H.00	003I.00	003J.00	003K.00	003L.00
	2002	002G.00	002H.00	002I.00	002J.00	002K.00	002L.00
	2001 and Prior	001G.00	001H.00	001I.00	001J.00	001K.00	001L.00

**Transitional Yields
Selection Criteria**

Year: 2020

Commodity: Industrial Hemp (0XXX)

State: Kentucky (021)

Data: Released

Plan: APH (90)

County: Adair (001)

Types / Practices	T/P 05	T/P 06	T/P 21	T/P 22	T/P 23	T/P 24
Type Practice	Grain UUU Organic (Certified) Non-Irr. 713	Fiber VVV Organic (Certified) Non-Irr. 713	CBD Direct Seeded Floral WWW Organic (Certified) Non-Irr. 713	CBD Direct Seeded Whole Plant XXX Organic (Certified) Non-Irr. 713	CBD Transplant Floral YYY Organic (Certified) Non-Irr. 713	CBD Transplant Whole Plant ZZZ Organic (Certified) Non-Irr. 713

Transitional Yields							
Sub County	Year	LBS	LBS	LBS	LBS	LBS	LBS
	2019	019A.00	019B.00	019C.00	019D.00	019E.00	019F.00
	2018	018A.00	018B.00	018C.00	018.00	018E.00	018F.00
	2017	017A.00	017B.00	017C.00	017D.00	017E.00	017F.00
	2016	016A.00	016B.00	016C.00	016D.00	016E.00	016F.00
	2015	015A.00	015B.00	015C.00	015D.00	015E.00	015F.00
	2014	014A.00	014B.00	014C.00	014D.00	014E.00	014F.00
	2013	013A.00	013B.00	013C.00	013D.00	013E.00	013F.00
	2012	012A.00	012B.00	012C.00	012D.00	012E.00	012F.00
	2011	011A.00	011B.00	011C.00	011D.00	011E.00	011F.00
	2010	010A.00	010B.00	010C.00	010D.00	010E.00	010F.00
	2009	009A.00	009B.00	009C.00	009D.00	009E.00	009F.00
	2008	008A.00	008B.00	008C.00	008D.00	008E.00	008F.00
	2007	007A.00	007B.00	007C.00	007D.00	007E.00	007F.00
	2006	006A.00	006B.00	006C.00	006D.00	006E.00	006F.00
	2005	005A.00	005B.00	005C.00	005D.00	005E.00	005F.00
	2004	004A.00	004B.00	004C.00	004D.00	004E.00	004F.00
	2003	003A.00	003B.00	003C.00	003D.00	003E.00	003F.00
	2002	002A.00	002B.00	002C.00	002D.00	002E.00	002F.00
	2001 and Prior	001A.00	001B.00	001C.00	001D.00	001E.00	001F.00

**Transitional Yields
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Types / Practices	T/P 07	T/P 08	T/P 25	T/P 26	T/P 27	T/P 28
Type Practice	Grain UUU Organic (Certified) Irr. 702	Fiber VVV Organic (Certified) Irr. 702	CBD Direct Seeded Floral WWW Organic (Certified) Irr. 702	CBD Direct Seeded Whole Plant XXX Organic (Certified) Irr. 702	CBD Transplant Floral YYY Organic (Certified) Irr. 702	CBD Transplant Whole Plant ZZZ Organic (Certified) Irr. 702

Transitional Yields							
Sub County	Year	LBS	LBS	LBS	LBS	LBS	LBS
	2019	019G.00	019H.00	019I.00	019J.00	019K.00	019L.00
	2018	018G.00	018H.00	018I.00	018J.00	018K.00	018L.00
	2017	017G.00	017H.00	017I.00	017J.00	017K.00	017L.00
	2016	016G.00	016H.00	016I.00	016J.00	016K.00	016L.00
	2015	015G.00	015H.00	015I.00	015J.00	015K.00	015L.00
	2014	014G.00	014H.00	014I.00	014J.00	014K.00	014L.00
	2013	013G.00	013H.00	013I.00	013J.00	013K.00	013L.00
	2012	012G.00	012H.00	012I.00	012J.00	012K.00	012L.00
	2011	011G.00	011H.00	011I.00	011J.00	011K.00	011L.00
	2010	010G.00	010H.00	010I.00	010J.00	010K.00	010L.00
	2009	009G.00	009H.00	009I.00	009J.00	009K.00	009L.00
	2008	008G.00	008H.00	008I.00	008J.00	008K.00	008L.00
	2007	007G.00	007H.00	007I.00	007J.00	007K.00	007L.00
	2006	006G.00	006H.00	006I.00	006J.00	006K.00	006L.00
	2005	005G.00	005H.00	005I.00	005J.00	005K.00	005L.00
	2004	004G.00	004H.00	004I.00	004J.00	004K.00	004L.00
	2003	003G.00	003H.00	003I.00	003J.00	003K.00	003L.00
	2002	002G.00	002H.00	002I.00	002J.00	002K.00	002L.00
	2001 and Prior	001G.00	001H.00	001I.00	001J.00	001K.00	001L.00

**Transitional Yields
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Types / Practices	T/P 09	T/P 10	T/P 29	T/P 30	T/P 31	T/P 32
Type Practice	Grain UUU Organic (Transitional) Non-Irr. 714	Fiber VVV Organic (Transitional) Non-Irr. 714	CBD Direct Seeded Floral WWW Organic (Transitional) Non-Irr. 714	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Non-Irr. 714	CBD Transplant Floral YYY Organic (Transitional) Non-Irr. 714	CBD Transplant Whole Plant ZZZ Organic (Transitional) Non-Irr. 714

Transitional Yields							
Sub County	Year	LBS	LBS	LBS	LBS	LBS	LBS
	2019	019A.00	019B.00	019C.00	019D.00	019E.00	019F.00
	2018	018A.00	018B.00	018C.00	018D.00	018E.00	018F.00
	2017	017A.00	017B.00	017C.00	017D.00	017E.00	017F.00
	2016	016A.00	016B.00	016C.00	016D.00	016E.00	016F.00
	2015	015A.00	015B.00	015C.00	015D.00	015E.00	015F.00
	2014	014A.00	014B.00	014C.00	014D.00	014E.00	014F.00
	2013	013A.00	013B.00	013C.00	013D.00	013E.00	013F.00
	2012	012A.00	012B.00	012C.00	012D.00	012E.00	012F.00
	2011	011A.00	011B.00	011C.00	011D.00	011E.00	011F.00
	2010	010A.00	010B.00	010C.00	010D.00	010E.00	010F.00
	2009	009A.00	009B.00	009C.00	009D.00	009E.00	009F.00
	2008	008A.00	008B.00	008C.00	008D.00	008E.00	008F.00
	2007	007A.00	007B.00	007C.00	007D.00	007E.00	007F.00
	2006	006A.00	006B.00	006C.00	006D.00	006E.00	006F.00
	2005	005A.00	005B.00	005C.00	005D.00	005E.00	005F.00
	2004	004A.00	004B.00	004C.00	004D.00	004E.00	004F.00
	2003	003A.00	003B.00	003C.00	003D.00	003E.00	003F.00
	2002	002A.00	002B.00	002C.00	002D.00	002E.00	002F.00
	2001 and Prior	001A.00	001B.00	001C.00	001D.00	001E.00	001F.00

**Transitional Yields
Selection Criteria**

Year: 2020
Data: Released

Commodity: Industrial Hemp (0XXX)
Plan: APH (90)

State: Kentucky (021)
County: Adair (001)

Types / Practices	T/P 11	T/P 12	T/P 33	T/P 34	T/P 35	T/P 36
Type Practice	Grain UUU Organic (Transitional) Irr. 712	Fiber VVV Organic (Transitional) Irr. 712	CBD Direct Seeded Floral WWW Organic (Transitional) Irr. 712	CBD Direct Seeded Whole Plant XXX Organic (Transitional) Irr. 712	CBD Transplant Floral YYY Organic (Transitional) Irr. 712	CBD Transplant Whole Plant ZZZ Organic (Transitional) Irr. 712

Transitional Yields							
Sub County	Year	LBS	LBS	LBS	LBS	LBS	LBS
	2019	019G.00	019H.00	019I.00	019J.00	019K.00	019L.00
	2018	018G.00	018H.00	018I.00	018J.00	018K.00	018L.00
	2017	017G.00	017H.00	017I.00	017J.00	017K.00	017L.00
	2016	016G.00	016H.00	016I.00	016J.00	016K.00	016L.00
	2015	015G.00	015H.00	015I.00	015J.00	015K.00	015L.00
	2014	014G.00	014H.00	014I.00	014J.00	014K.00	014L.00
	2013	013G.00	013H.00	013I.00	013J.00	013K.00	013L.00
	2012	012G.00	012H.00	012I.00	012J.00	012K.00	012L.00
	2011	011G.00	011H.00	011I.00	011J.00	011K.00	011L.00
	2010	010G.00	010H.00	010I.00	010J.00	010K.00	010L.00
	2009	009G.00	009H.00	009I.00	009J.00	009K.00	009L.00
	2008	008G.00	008H.00	008I.00	008J.00	008K.00	008L.00
	2007	007G.00	007H.00	007I.00	007J.00	007K.00	007L.00
	2006	006G.00	006H.00	006I.00	006J.00	006K.00	006L.00
	2005	005G.00	005H.00	005I.00	005J.00	005K.00	005L.00
	2004	004G.00	004H.00	004I.00	004J.00	004K.00	004L.00
	2003	003G.00	003H.00	003I.00	003J.00	003K.00	003L.00
	2002	002G.00	002H.00	002I.00	002J.00	002K.00	002L.00
	2001 and Prior	001G.00	001H.00	001I.00	001J.00	001K.00	001L.00



Industrial Hemp Crop Insurance Program

Training Module

2020 Crop Year



Industrial Hemp Crop Insurance Program

■ Overview:

- Insured crop – all IH (grain, fiber, and CBD; see the CP for additional qualifiers)
- APH based program
- County T-Yields applicable
- Basic units, optional units by section, section equivalent, and FN
- Enterprise units (see enterprise unit qualifiers in the CP)
- Whole farm units are not applicable
- No quality adjustment



Industrial Hemp Crop Insurance Program

- Overview (*Continued*):
 - Program options available
 - Yield substitution
 - Cups
 - Program options not available
 - Late and prevented planting
 - Replanting
 - Written agreements
 - Yield exclusion
 - Yield trending



Objectives

- Review the Industrial Hemp (IH) Crop Provisions including
 - Definitions unique to IH crop insurance program
 - Unit structure
 - Minimum insurability requirements
 - Important dates
 - Causes of loss
 - Acreage reporting and other duties
 - Claims provisions
 - Quality adjustment
- Liability, premium, and loss calculation examples



IH Crop Provisions

Section 1. Definitions

Definitions:

- **Base contract price** – The price stipulated on the processor contract without regard to discounts or incentives that may apply.
- **CBD** – Cannabidiol



IH Crop Provisions

Section 1. Definitions

Definitions (*continued*):

- **Good farming practices** – The cultural practices generally in use for the county for the crop to make normal progress toward maturity and produce at least the yield used to determine the production guarantee and any requirements contained in the processor contract.

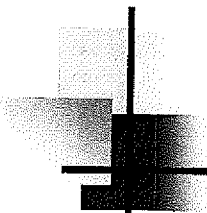


IH Crop Provisions

Section 1. Definitions

Definitions (*continued*):

- **Harvest** – The combining or threshing the insured crop for grain or cutting the insured crop for fiber or CBD. A grain crop which is swathed prior to combining or a fiber crop cut for the purpose of retting and not baled will not be considered harvested.
- **Industrial hemp** – Plants of the *Cannabis sativa* species, by type, grown for the production of industrial and consumer products.



IH Crop Provisions

Section 1. Definitions

Definitions *(continued)*:

- **Processor contract** – A legal contractual written agreement executed between the producer and processor engaged in the production and processing of industrial hemp containing at a minimum:
 - (a) The producer's promise to plant and grow industrial hemp and to deliver all industrial hemp to the processor;



IH Crop Provisions

Section 1. Definitions

- (b) The processor's promise to purchase the industrial hemp produced by the producer; and;
- (c) A base contract price, or method to derive a value that will be paid to the producer for the production as specified in the processor's contract.

Multiple contracts with the same processor that specify amounts of production will be considered as a single processor contract unless the contracts are for different types of hemp.



IH Crop Provisions

Section 1. Definitions

Definitions (*continued*):

- **Pound** – 16 ounces avoirdupois.
- **Processor** – Any business enterprise regularly engaged in processing industrial hemp that possesses all licenses and permits for processing industrial hemp required by the applicable governing authority in the state in which it operates, and that possesses facilities, or has contractual access to such facilities with enough equipment to accept and process contracted industrial hemp within a reasonable amount of time after harvest.



IH Crop Provisions

Section 1. Definitions

- **Retting** – The process for separating the different fibers of the hemp plant and involves leaving the crop in the field to allow decomposition.
- **THC** – Tetrahydrocannabinol (also known as delta-9 tetrahydrocannabinol).



IH Crop Provisions

Section 1. Definitions

Definitions (*continued*):

Type – A category of industrial hemp identified as a type on the Special Provisions and shown below:

- (a) **CBD** – CBD produced from the flowers, leaves, and stems of industrial hemp plants containing not more than 0.3 percent THC on a dry weight basis;
- (b) **Dual-purpose** – A type of industrial hemp that is grown to produce grain and fiber in the same crop year;
- (c) **Fiber**- The fiber produced from the stems and stalk of the industrial hemp plant;
- (d) **Grain** - Grain produced by the industrial hemp plant;
- (e) **Oil** - Oil produced from industrial hemp grain;
- (f) **Other** - Other types of industrial hemp contained in the Special Provisions.



Section 2. Unit Division

- Units are established by:
 - In addition to the BP, basic units by type
 - Optional units by section, section equivalent, and FN
 - Enterprise units (see enterprise unit qualifiers in the BP)
- Whole-farm units are not applicable



Section 3. Insurance Guarantees, Coverage Levels,...

Insurance Guarantees,...

- (a) The insured may select a different coverage level for each insured type, grain, fiber, and CBD (multiple CBD types are contained in the SP) in the county
- Within the insured IH crop, 75 percent for 1 type (grain); 65 percent for a different type (fiber); 75 percent CBD transplant-floral; 65 percent CBC transplant-whole plant

In addition to (a), the insured may elect for the insured IH crop:

- (b) Different price elections (percentage) by type
- even if the price elections are the same
 - 100% price election for 1 type (grain); 75% for a different type (fiber); 100 percent CBD transplant-floral; 75 percent CBC transplant-whole plant
- (c) Notwithstanding section 3(a) and (b), if the insured elects the Catastrophic Risk Protection (CAT) plan of insurance coverage, the CAT level of coverage and price election will be applicable to all insured IH acreage of the insured crop in the county



Sections 4 and 5.

- Contract Change Date
 - The contract change date is November 30
- Cancellation and Termination Dates
 - The sales closing, cancellation and termination dates are
 - California, North Carolina February 28
 - Colorado, Illinois, Indiana, Kentucky, Minnesota, Montana, New York, North Dakota, Oregon, Pennsylvania, Tennessee, Virginia, Wisconsin March 15
- Other Dates
 - Acreage Reporting – July 31
 - Production Reporting
 - California, North Carolina April 14
 - Colorado, Illinois, Indiana, Kentucky, Minnesota, Montana, New York, North Dakota, Oregon, Pennsylvania, Tennessee, Virginia, Wisconsin April 29
 - Billing – August 30 (following SCD)

Slide 15

DC11

Dave Clauser, 7/15/2019



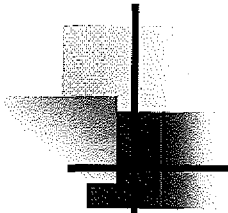
Section 6. Report of Acreage

- In addition to the requirements of section 6 of the BP, the insured must:
 - (a) Report the applicable land identifier contained in section 6(c) of the BP, including Global Positioning System (GPS) coordinates;
 - (b) Submit on or before the acreage reporting date a copy of:
 - (1) The certification form or official license issued by the applicable governing authority authorizing the insured to produce IH; and
 - (2) Each processor contract.



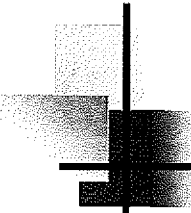
Section 7. Insured Crop

- (a) The Insured Crop is industrial hemp in that is grown in the county on insurable acreage, and for which premium rates are provided by the actuarial documents:
 - (1) In which the insured has a share;
 - (2) That is a type of IH designated in the SP;
 - (3) That is grown under a processor contract executed by the applicable acreage reporting date;
 - (4) That is grown under an official certification or license issued by the applicable governing authority that permits the production of the IH;



Section 7. Insured Crop (*Continued*)

- Insured Crop (*Continued*)
 - (5) That is planted for harvest as IH in accordance with the requirements of the processor contract and the production management practices of the processor;
 - (6) That is planted to an approved variety contained in a list issued by the applicable governing authority in the State in which the IH is grown or a proxy State contained in the SP; and
 - (7) That is not (unless allowed by the SP):
 - (i) Is planted for any purpose other than IH;
 - (ii) Interplanted with another crop;



Section 7. Insured Crop (Continued)

■ Insured Crop (Continued)

- (iii) Planted into an established grass or legume;
 - (iv) Planted in a confined space such as a greenhouse or other physical structure;
 - (v) Planted to a variety not contained in the list of varieties issued by the State, other applicable governing authority in the State, or a proxy State as contained in SP; or
 - (v) Does not contain the minimum acreage contained in the SP.
- (b) An IH producer who is also a processor may be able to insure the IH crop (see CP requirements).

Note: A single administrative fee is applicable to the insured IH crop.



Section 8. Insurable Acreage

- (a) In additions to the provisions of section 9 of the BP, the AIP will not insure any acreage of the insured crop not in compliance with the rotation requirements contained in the SP or, if applicable, required by the processor contract.
- (b) If the processor contract specifies an amount of acreage or production, insurable acreage for the unit will not exceed:
 - (1) The contracted acreage specified in the insured's processor contract(s) for the unit; or
 - (2) The result of dividing amount of production specified in the insured's processor contract(s) for the unit by the insured's approved yield for the unit.



Section 8. Insurable Acreage *(Continued)*

■ Insurable Acreage *(Continued)*

- (c) Any acreage of the insured crop damaged before the final planting date, to the extent that the majority of growers in the area would normally not further care for the crop, must be replanted unless the AIP agrees that replanting is not practical. The AIP will not require the insured to replant if it is not practical to replant to the same type of IH as originally planted.



Section 9. Insurance Period

In accordance with the provisions contained in section 11(b) of the BP, the calendar date for the end of the insurance period is:

October 31.



Section 10. Causes of Loss

- (a) In addition to the provisions of section 12 of the BP, any loss covered by this policy must occur within the insurance period. The specific causes of loss for IH are:
- (1) Adverse weather conditions
 - (2) Fire;
 - (3) Insects, but not damage allowed because of insufficient or improper application of pest control measures;
 - (4) Plant disease but not damage allowed because of insufficient or improper application of disease control measures and the failure to follow applicable rotation requirements contained in section 8(a)(1) of the CP;
 - (5) Wildlife;
 - (6) Earthquake;
 - (7) Volcanic eruption;
 - (8) Failure of the irrigation water supply due to a cause of loss specified in sections 10(a)(1) through (7) that also occurs during the insurance period.

Section 10. Causes of Loss (Continued)

■ Causes of Loss (Continued)

- (b) In addition to the causes of loss excluded in section 12 of the BP, the AIP will not insure against any loss of production that is due to:
- (1) Levels of THC in excess of 0.3 percent or more on a dry weight basis except as otherwise specified on the Special Provisions;
 - (2) The insured's failure to follow the requirements contained in the processor contract;
 - (3) Any mature harvested production infected by mold, yeast, fungus, or other microbial organisms after harvest except as specified in section 12(c)(4) of the CP; or
 - (4) Any damage or loss of production due to the inability to market the IH for any reason other than actual physical damage to the IH from an insurable cause specified in this section. For example, the AIP will not pay the insured an indemnity if the insured is unable to market due to quarantine, boycott, or refusal of any person to accept production.



Section 11. Duties in the Event of Damage or Loss

- (a) In accordance with the section 14 of the BP, representative samples are required.
- (b) If insured acreage of the CBD type is damaged during the insurance period by an insured cause of loss and the insured intends to harvest the acreage before the final THC level is determined by the applicable governing authority, the insured must provide the AIP notice so the AIP may inspect the damaged acreage to determine the appraised production to count. If the insured harvests the acreage before the AIP inspection and the insured is required to destroy such harvested production due to a THC level in excess of the level specified in section 10(b)(1) of the CP, the acreage will be considered acreage destroyed without consent and will result in an appraisal of production to count of not less than the production guarantee per acre for the unit.



Section 12. Settlement of Claim

- (a) Indemnities are determined on a unit basis (basic, optional, enterprise)
 - (1) Any optional units will be combined if separate records are not provided for such units
 - (2) Commingled production for basic units will be allocated proportionately to such units based on the AIP's liability on the harvested acreage for the units



Section 12. Settlement of Claim (Continued)

Settlement of Claim (Continued)

(b) Claim Calculation Steps - On a unit basis

Step 1: Multiply the insured acres for each type and practice, as applicable, by the respective production guarantee

Step 2. Multiply each result of Step 1 X the respective price election

Step 3. Total the result of Step 2;

Step 4. Multiply the production to count for each type and practice, as applicable, by the respective price election;

Step 5. Total the results of Step 4

Step 6. Subtract Step 5 from Step 3

Step 7. Multiply the result of Step 6 by the insured share



Section 12. Settlement of Claim *(Continued)*

Settlement of Claim *(Continued)*

(c) Production to Count

- (1) Appraised production (standard appraisal types)
Additionally, production lost due to uninsured causes
will include production that exceeds THC limit specified
in section 10(b)(1) of the CP
- (2) All harvested production

No quality adjustment applies



Example, Assumptions

Example:

The insured has 100 percent share in a unit of grain containing 50 acres with a production guarantee per acre of 1,200 pounds (1,600 pound approved yield per acre x 75% coverage level), the insured's production guarantee for the unit is 60,000 pounds (50 acres x 1,200 pounds/acre guarantee), the insured's price election is \$0.50 per pound (\$0.50 published price election x 100% price percentage), and the insured's production to count is 50,000 pounds. The insured's premium rate is 7.0 percent.

The premium due is \$2,100 (1,200 lbs./ac. production guarantee X \$0.50/lb. price election X 50 acres X .07 premium rate X 100 % share).



Example, Calculations

Example: Indemnity Calculation

- (1) $50 \text{ acres} \times 1,200 \text{ pound production guarantee/acre} = 60,000 \text{ pound production guarantee};$
- (2) $60,000 \text{ pound production guarantee} \times \$0.50 \text{ price election} = \$30,000 \text{ value of the production guarantee};$
- (4) $50,000 \text{ pound production to count} \times \$0.50 \text{ price election} = \$25,000 \text{ value of the production to count};$
- (6) $\$30,000 - \$25,000 = \$5,000; \text{ and}$
- (7) $\$5,000 \times 1.000 \text{ share} = \$5,000 \text{ indemnity}.$



Example, Assumptions

Example:

The insured has 100 percent share in a unit of transplant-whole plant CBD containing 30 acres with a production guarantee per acre of 1,200 pounds (1,600 pound approved yield per acre x 75% coverage level), the insured's production guarantee for the unit is 36,000 pounds (30 acres x 1,200 pounds/acre guarantee), the insured's price election is \$5.00 per pound (\$5.00 published price election x 100% price percentage), and the insured's production to count is 25,000 pounds. The insured's premium rate is 7.0 percent.

The premium due is \$12,600 (1,200 lbs./ac. production guarantee X \$5.00/lb. price election X 30 acres X .07 premium rate X 100 % share).



Example, Calculations

Example: Indemnity Calculation

- (1) $30 \text{ acres} \times 1,200 \text{ pound production guarantee/acre} = 36,000 \text{ pound production guarantee};$
- (2) $36,000 \text{ pound production guarantee} \times \$5.00 \text{ price election} = \$180,000 \text{ value of the production guarantee};$
- (4) $25,000 \text{ pound production to count} \times \$5.00 \text{ price election} = \$125,000 \text{ value of the production to count};$
- (6) $\$180,000 - \$125,000 = \$55,000; \text{ and}$
- (7) $\$55,000 \times 1.000 \text{ share} = \$55,000 \text{ indemnity}.$



Underwriting and Approved Yield Determinations

- IH is a
 - APH based crop – Plan 90
 - Category B crop
- Procedures governing the underwriting and coverage and yield determinations are contained in
 - IH CISH and
 - Crop Insurance Handbook (CIH)
 - Other related procedures are contained in the Document and Supplemental Standards Handbook (DSSH), General Standards Handbook (GSH) and Loss Adjustment Manual (LAM)



IH Crop Insurance Program

- Questions:

2020 APH Industrial Hemp Program

M-13 Requirements

General Summary (not inclusive)

1. Standard APH based crop – Plan 90.
2. Standard Type 11, 14, 15, and 21 M-13 records and calculations for Plan 90 crops apply for Industrial Hemp.
2. Allows enterprise units in accordance with the Basic Provisions.
3. Allows coverage levels and price elections (price election percentages) by type.
4. Establishes spring-based sales closing/cancellation/termination dates consistent with similar existing crop programs in the target states and counties.
5. Provides standard causes of loss.
6. Unit structure = BU, OP, EU (no whole farm units or written agreement units).
7. Prevented and late planting and replanting do not apply.
8. Written agreements do not apply.
9. Added county election does not apply.
10. Adjustment for quality does not apply.
11. Organic contract prices per the Contract Price Addendum
12. Trend adjustment and yield exclusion do not apply
- 13- Yield substitution and cups allowed
14. Enterprise units by irrigated and non-irrigated practices are not applicable.

2020 APH Industrial Hemp Program

M-13 Requirements (continued)

Acresage Record – P11

Record Number	Field Number	Field Name	Data Type	Max Length	Format	BUS Key	Req?	Rules
P11	24	WA Number	Character	9	9999999999			WA Number must be empty when Commodity Code equal Industrial Hemp "0XXX"

Insurance in Force – P14

Record Number	Field Number	Field Name	Data Type	Max Length	Format	BUS Key	Req?	Rules
P14	11	Type Code	Character	3		Y		Type Code is required if necessary to allow multiple Coverage Level Percent's or Price Election Percent's for the Location State Code/Location County Code/Commodity Code.

Record Number	Field Number	Field Name	Data Type	Max Length	Format	BUS Key	Req?	Rules
P14	34	Coverage Level Percent	Numeric	6	9.9999		Y	Multiple Coverage Level Percent(s) by Type Code apply when the Commodity Code equal Industrial Hemp, "0XXX" and the Insurance Plan Code equal "90". Edit with the Coverage Level ICE, "D00024".
P14	35	Price Election Percent*	Numeric	6	9.9999		Y	Multiple Price Election Percent(s) by Type Code apply when the Commodity Code equal Industrial Hemp, "0XXX" and the Insurance Plan Code equal "90". Price Election Percent must be valid; edit with Price Election Percent ICE, "D00007".

Premium Calculation Exhibit – P11-9, Plan 90

Add Industrial Hemp (XXXX) to the list of commodities.

Section 1: Liability Calculation						
Calculations	Field Name	Record Number	Field Number	Field Format	Field Rounding	Rules
Liability and Premium Calculations under P11-9 will apply to APH Industrial Hemp, Plan 90						

Indemnity Calculations – P21-9, Plan 90

Add Industrial Hemp (XXXX) to the list of commodities.

Section 1: Stage Guarantee Calculations						
Calculations	Field Name	Record Number	Field Number	Field Format	Field Rounding	Rules
Stage Guarantee and Indemnity Calculations under P21-9 apply to APH Industrial Hemp, Plan 90						

**Expert Review Of
Proposed Industrial Hemp APH Plan of Insurance
Confidential Submission 0083**

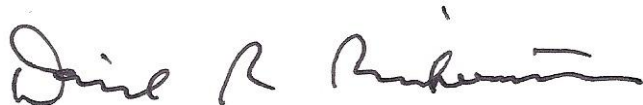
**BPA No.: 12FPC319A0006
Call Order 12FPC320F0002**

Prepared for

Federal Crop Insurance Corporation
Risk Management Agency

Prepared by

Bickerstaff Actuarial Consultants, LLC.
12 Savannah Ridge Drive
Frisco, TX 75034



November 23, 2019

David R. Bickerstaff, FCAS MAAA
Consulting Actuary



Executive Summary

The proposed product is an APH plan for Industrial Hemp. The product was developed by Agrilogic Consulting LLC of College Station, Texas. The proposed program will provide coverage for Industrial Hemp producers similar to coverage currently provided for other APH programs, specifically grain and oil seed crops. No revenue program is being proposed. The established price or contract price is established prior to the sales closing date.

There are three basic subdivisions of the industrial hemp commodity: Grain, Fiber, and Cannabidiol (CBD), which is by far the most popular of the three, primarily due to its purported medicinal qualities. As far as planting, harvesting, and, as a result, rating for the proposed insurance plan, the CBD division is further divided by planting practice (direct seeded and transplanted) and by harvest type (floral material and whole plant). Also for rating purposes there are the practice categories of irrigated and non-irrigated as well as organic and organic transitional.

The first keynote assumption stated in the ratemaking methodology section of the documentation was that “yield variations will coincide with those of other Spring-planted crops.” For the proposed hemp plan, a weighted average of several spring-planted crops was used, supplemented with actual hemp yield history compiled in Manitoba, Canada.

The rating methodology proposed for the product introduces a Biomass Growth model from which a 19-year history of hemp yields are simulated along with yields of various comparable crops which are grown in the 15 states contemplated for the new plan. The Coefficients of Variation (CV's) are calculated for each state/county/hemp type/practice combination and are compared to the simulated CV's for the comparable crops (weighted average) in that same state/county. The ratio of these CV's is then applied the corresponding base rate for the comparable crops for that county to get the preliminary hemp base rate. As detailed in my narrative, this ratio actually understates the ratio (up or down) of the Loss Cost Ratio of hemp to the comparable crop. A 5% difference in the CV (up or down) would translate to a 10 or 15% difference in the LCR. However, according to the submission, the overall average CV ratio appears to be about .95 which should translate to an appropriate adjustment in the range of .85 or .90 to be applied to the comparable crop base rate. Nevertheless, if this CV ratio is applied as is for the new plan, the net effect is to temper the downward adjustment for the majority of the counties, which would introduce a measure of conservatism in the proposed hemp rates. Even though I am not qualified to opine directly on the efficacy of the Biomass model, the discussion in the submission was comprehensive and persuasive.

As far as the Manitoba data is concerned, which included three other crops along with hemp, the submitter's analysis made some inferences regarding trend, CV's, and correlations, which I found to be inappropriate and I presented an alternative analysis. However, it wasn't clear if this apparent discrepancy would have much, if any, impact on the final proposed hemp rates for the 15 states contemplated for the plan.

For pricing purposes, as is the case for all APH plans, an established price per unit is required to determine the value of production lost due to an insurable cause of loss. Unlike most crops with a single intended use, the hemp plant can be harvested for CBD, grain, or fiber. The CBD harvest can be subdivided into four subsets: Direct Seeded Floral, Direct Seeded Whole Plant, Transplant Floral, and Transplant Whole Plant. Under the proposed insurance plan, the insured producer must elect a single type. Accordingly, price projection is required for each of these six types.

For CBD, after considering several methodologies and several sources of price information, the final recommendations are

CBD – Direct Seeded – Floral	\$4.54/lb
CBD – Direct Seeded – Whole Plant	\$2.27/lb
CBD – Transplant – Floral	\$10.17/lb
CBD – Transplant – whole plant	\$5.08/lb

For both the Fiber and Grain types the final price proposals were based on the lesser of

- (a) the 3-year moving average of growers as reported to the most viable reporting resource
- and
- (b) the mean price provided by industry resources for the current crop year

Conclusions

The formulation of the proposed APH plan for Industrial Hemp presented some significant challenges for Agrilogic, due to the volatility and uncertainty associated with this new commodity. From my review, I believe the documentation was comprehensive and logical with ample detail spreadsheets with which I could extract samples for testing and validation purposes. There were, however, three areas with which I would take issue with the submitters: (a) the inferences taken from the Manitoba data, (b) the use of the CV scores directly to translate from current comparable crop base rates to preliminary hemp rates, and (c) the coverage level relativities for the .75 and .50 coverage levels in the final rates. There are, however, mitigating factors: As for (a), it didn't appear that the difference in my own inferences would have much, if any, impact on the final rate tables. For (b), I noted that if the CV ratios were used as is for the final rates the translated hemp rates would have a measure of conservatism built in. For (c), coverage level relativities proposed generally followed those in use for other commodities so, despite their variance from what I would characterize as "more accurate" relativities, their use cannot be criticized in this submission. So, taking everything into consideration, I would go ahead and recommend approval of this new plan

Expert Review of the Proposed APH Industrial Hemp Plan of Insurance

I was engaged on November 4, 2019 by the Federal Crop Insurance Corporation (FCIC) of the U.S. Department of Agriculture (USDA) to prepare a review of a proposed product developed by Agrilogic Consulting LLC of College Station, Texas. The proposed product is an Actual Production History (APH) program for Industrial Hemp to be marketed in 15 states for the 2020 crop year. The proposed program will provide coverage for Industrial Hemp producers similar to coverage currently provided for other APH programs, specifically grain and oil seed crops. No revenue program is being proposed. The established price or contract price is established prior to the sales closing date.

The 2014 Farm Bill legalized the growing of industrial hemp by universities and state departments of agriculture for research purposes and then the 2018 Farm Bill removed it from the controlled substance list and made it eligible for crop insurance. Thus, industrial hemp has a very short production history in the U.S., but, as well described in the submission documentation, the number of acres across the country with this commodity has skyrocketed in the past 3-4 years.

There are three basic subdivisions of the industrial hemp commodity: Grain, Fiber, and Cannabidiol (CBD), which is by far the most popular of the three, primarily due to its purported medicinal qualities (I even noted just the other day that Tiger Woods and Phil Mickelson have lent their names to one of the many new CBD-related products, claiming its benefits in treating their back and arthritis problems, respectively). As far as planting, harvesting, and, as a result, rating for the proposed insurance plan, the CBD division is further divided by planting practice (direct seeded and transplanted) and by harvest type (floral material and whole plant). Also for rating purposes there are the practice categories of irrigated and non-irrigated as well as organic and organic transitional.

With sparse production data for hemp to date, the Agrilogic team faced a challenge which has been shared with a large majority of past proposals for new plans of insurance: which, if any, existing commodities can be used as a reference point to determine expected yields and, more importantly, expected year-to-year variation of yields? In fact, the first keynote assumption stated in the ratemaking methodology section of the documentation was that “yield variations will coincide with those of other Spring-planted crops.” I can recall three of my own past reviews of proposed new plans in which “surrogate” crops were selected as points of reference for the new commodity: for camelina, barley was selected as the proxy crop; for clary sage, cotton was selected from a list of possible candidates; and for pulse crops, wheat and soybeans were determined to have the best “fit” for estimating price volatility. For the proposed hemp plan, a weighted average of several spring-planted crops was used, supplemented with actual hemp yield history compiled in Manitoba, Canada.

Our Approach to this Review

Our approach to this review can essentially be broken down into seven phases:

1. Review in general the goals and objectives of the proposal, the marketing plan, estimated production, liability, and premiums.
2. Review ratemaking methodology in general (Section 6), starting with analysis of the Manitoba hemp yield data.
3. Review the properties of the beta distribution, as it was selected by the submitters as the best fit to represent yield distributions for hemp and three comparable crops using the Manitoba data.
4. Review the Biomass Model (from a layperson's perspective) employed to simulate the yield experience of hemp plus a cross section of comparable crops.
5. Review the procedure employed in the submission to determine preliminary hemp rates using "CV scores" derived from the simulated yield data from the Biomass model.
6. Review the derivation of the final rates, starting with the base (.65 coverage level) and the relativities for the other coverage levels.
7. Review the pricing proposals

Basic Background

The first sections of the Agrilogic documentation provided background information that was quite comprehensive and very enlightening. From the listening session summaries and endorsement letters from trade associations, it is clear that the demand for this new product is substantial. There is no need for me to reiterate this basic information in this review.

The Manitoba Data

To address the dearth of hemp yield data in the U.S., the submitters looked to several foreign countries for usable information. After rejecting data derived from France and other European nations, they found a set of reliable data from Manitoba which included yield data for hemp and three other comparable crops: red spring wheat, sunflower oil, and rapeseed. This yield data, which included years 2000 through 2018, was useful in measuring year-to-year yield variability of the four crops plus, for purposes of later modifying the simulated results from the Biomass model, the US counties at or near the US/Canada border could be reconciled with the Manitoba actual yield data.

In my attached Exhibit 1 I have restated the basic Manitoba data used in the submission. First, the 19-year yield histories of the four crops are displayed, from which means, standard deviations, and slopes are calculated from which a linear line-of-best fit is determined. For example, for hemp the

slope of the fitted line is 20.82 units per year. Also the correlations between the four crops are calculated. Using the regression results, a second set of yields are displayed, representing the linear trends. Up to this point, my calculations match 100% those shown in the submission.

I think it is universally recognized that (a) the APH loss cost ratios (from which rates are a direct calculation) are based on the expected coefficient of variation (CV) of annual yields (standard deviation divided by the mean) and (b) the proper way to determine the CV from a time series of yield data is to first “take out” any measurable annual trend (“detrending”). However, it appears that there is more than one way of “detrending” a time series and I have shown in Exhibit 1 the method employed in the submission plus an alternative method (highlighted) which I believe is more logical. The formulas used for both detrending methods are shown in the exhibit’s notes. For my detrended yields the revised standard error (using the sum of the squares of the distances from the trend line) is the same as the untrended yields, as it should be, noting that the “trend” line for the detrended yields is flat, as it should be. Not so for the submitter’s detrended yields. Then, my CV’s from the detrended yields – which is, after all, the main reason for doing the detrending in the first place – are considerably lower than those from the submitter’s. I would argue that the adjusted CV’s in the submission would be excessive, although it is not entirely clear how these results work their way into later calculations.

A graph depicting the hemp yields, the trend line, and the detrended yields (my method) is shown in Exhibit 2.

The Beta Distribution

As a valuable byproduct of the Manitoba analysis, the submitters determined which of 17 (seventeen!) possible defined probability distributions provided the “best fit” to the 19-year yield data. To make this determination, they used their own excel add-on product Simetar©. Because of time constraints I did not get a copy of the program to do any validation, so I am accepting their initial conclusion at face value. The distribution that was found to provide the best fit – for all four Manitoba crops in the analysis --- was the beta distribution.

From my prior reviews and general studies I have found that there is some consensus among academics and others that the beta distribution is the best one to depict yield distribution at the grower level, but I wouldn’t call it an overwhelming consensus. The analysis performed on the Manitoba data provides more corroboration for the beta advocates. However, in trying to reconcile the parameters they calculated for the beta with measured means and CV’s of the actual data, I have run into a problem:

First, we need to review the basic properties the beta distribution, with a domain between 0 and 1:

For the beta distribution, α and β are the shape parameters and

$$\mu = \frac{\alpha}{\alpha + \beta} \text{ [defined mean of beta distribution with min = 0 max = 1]}$$

$$\beta = \frac{\alpha(1 - \mu)}{\mu}$$

then let

$$C = \text{coefficient of variation (CV)} = \sigma / \mu$$

$$\sigma^2 = \frac{\alpha\beta}{(\alpha + \beta)^2(\alpha + \beta + 1)} \text{ [defined variance of beta distribution]}$$

$$C^2 = \frac{\sigma^2}{\mu^2} = \frac{\beta}{\alpha(\alpha + \beta + 1)} \text{ after substituting for } \mu \text{ and clean up}$$

then substituting for β and much more clean up:

$$C^2 = \frac{1 - \mu}{\alpha + \mu}$$

then by setting the max = the mean + 2 standard deviations,

$$\mu = 1 / (1 + 2C)$$

and then

$$\alpha = \frac{2 - C}{C(1 + 2C)}$$

or

$$\alpha = \frac{\mu(2 - C)}{C}$$

As shown above, there is a relationship between the CV and the two shape parameters alpha and beta in the basic definition of the beta distribution. In my attached Exhibit 3 I am showing that there is a discrepancy between the alpha and beta parameters they calculated and the observed CV of the distribution. For example, for hemp, with alpha = 1.75671 and beta = 1.06395, the CV should equal .398, but the actual CV from the data (using their detrended data) is .2452. Similar discrepancies exist for the other three crops. This leads one to wonder if the beta is, in fact, the best fitting distribution or perhaps the shape parameters are wrong. As an alternative, I used the CV's resulting from my detrended yields and determined a new alpha and beta where the CV would reconcile.

If we accept the beta as the best depiction of yield variability, I have retrieved from my archives a table of Loss Cost Ratios (LCR's) corresponding to CV's ranging from 0 to .70, using the beta distribution. In addition to the shape parameters noted above, the beta distribution requires setting minimum and maximum values. I have set zero as the obvious minimum and a then a maximum of the mean plus two standard deviations. My table, which is shown in Exhibit 4, shows LCR's for five coverage levels. These LCR's are then depicted in graphical form in Exhibit 5.

The LCR's from Exhibits 4 and 5 can be converted to coverage level relativities (using the .65 coverage level as the base), as shown in Exhibit 6 and 7.

The Biomass Model

One of the main highlights of this submission is the employment of a biomass model to simulate crop growth (hemp plus an assortment of comparable crops) and, ultimately, yields over a period of 19 years. The model uses weather and environmental information – temperature, drought indicators, solar radiation, etc. – over the growing seasons from 2000 forward. These factors were used to estimate the biomass growth of hemp and the other crops over that period. These estimates were reconciled to actual Manitoba hemp yields by type for locations in or around the US/Canada border. The simulated yields were determined by state, county, hemp type (one of the six noted earlier) and practice (irrigated vs. non-irrigated).

I don't claim to be an expert in Agronomy or Meteorology so I didn't attempt to validate any of the biomass simulation results. However, the documentation provided for this model was very persuasive.

The CV Scores

Using the Biomass Growth Simulation model, CV Risk Scores were compiled for Industrial Hemp and comparable crops by state, county, type, and irrigation practice. The CV's were compiled from the simulated 19-year yield history. The CV's for industrial hemp relative to each comparable crop were determined as a ratio to develop the "score factors." Then the industrial hemp preliminary base rates (.65 coverage level) were formulated by applying the CV Risk Scores to the 2019 Commodity Year base rates for each comparable crop, with the weighted average based on the inverse of the square root of the 10-year average of NASS acreage for 2019 for each comparable crop and county.

To get a sample of how this process was done, I identified two counties in Kentucky and then drilled down to a specific type/practice combination. I extracted this data from three tabs of the "Industrial Hemp Rates" excel file which was supplied with the submission. The counties I selected for extraction were Davies and Carlisle. I used data from three tabs of this spreadsheet: the "risk score" tab, the "rate component" tab, and the "preliminary rate" tab. The details of my validation procedure are shown in Exhibit 8. Using the column headings in each tab we first picked up the CV scores of the

comparable crop and then the CV of industrial hemp. The comparable crops were corn, grain sorghum, and soybeans for both counties. For Davies county the hemp CV score (according to the column heading) was 10.4 and the comparable crop CV was 9.6, resulting in a ratio shown of .92. But, *according to the column headings, this would be the ratio of the comparable crops to hemp.* This would be the ratio that would ultimately be applied to the current base rates of the comparable crops. Isn't this flip side (the reciprocal) of the ratio that we want to use? Sure enough, in the rate component tab a weighted average of this ratio is computed and then in the preliminary rate tab that ratio is applied to the comparable crop base rate to get the preliminary rate.

I went back and revisited the above process several times to make sure I was reading those tabs correctly. I was. But then it dawned on me that a simple explanation of this apparent anomaly is that the column headings on the Risk Score tab had been inadvertently reversed and that the CV's displayed for the comparable crops were actually the hemp CV's and vice versa. To test this explanation I was able to go back to the full detail "county yield" tab in the reference amount excel file, which displayed Biomass-simulated hemp yields for each state/county/type/practice combination for the 19-year period 2000-2018. Digging out the counties in question, I was then able to calculate the CV's from the 19 year data and I was relieved to discover that the hemp CV for Davies County by my independent calculation was, in fact, the 9.6 which was erroneously displayed as the comparable crop CV. Also, for Carlisle County the 11.2 CV applied to the hemp simulation, not the comparable crop. So it turns out that the CV score ratios were correct but the column heading identifiers were reversed.

Preliminary Rate Calculation

Given the calculation of the CV scores, what about the process of applying this ratio to the current base rates for the comparable crops in a state/county/type/practice cell to come up with a preliminary base rate for hemp? Is the ratio of a hemp LCR (from which the rate is derived) to the comparable crop LCR equal to the ratio of their CV's? Clearly, the answer to this one is a definite no. To shed more light on what this relationship is I can refer back to my Exhibit 4, where LCR's at various coverage levels are displayed next to the underlying CV's of the yield distribution (again, using the beta). Then, to get more specific, I have displayed in Exhibit 9 what change (up or down) is expected in the base LCR (.65 coverage level) if the underlying CV is changed (up or down) 10 per cent. I have shown this for four separate "price points". At the highest CV point (base of .50), a 10% change (up or down) would translate to an approximate 20% change in the LCR. The lower you go in the base CV, the more pronounced this difference is, at three-to-one or even close to four-to-one in the comparison.

The obvious conclusion from the above exercise is that the application of the CV score ratios to comparable crop base rates will grossly understate the adjustment, up or down.

In order to derive an accurate translation from current comparable rates to hemp rates (by county/type/practice), the following procedure might be considered:

1. Take the CV's from the comparable crops from the Biomass simulation (already done and available) for each county/type/practice cell.
2. Compare the CV's from (1) to *the implied* CV's of the current comparable crop rates for the same cells.
3. Apply the ratio from (2) to the hemp CV's from the Biomass simulation (already available)
4. Develop base rates for hemp by cell using the adjusted CV's from (3)
5. Apply appropriate coverage level relativities to the base rates developed in (4)

In steps (2) and (4) of the above procedure, a table is required to translate from CV to LCR or vice versa (similar to my Exhibit 4).

Notwithstanding the discrepancies brought about by using the CV ratios themselves to determine the preliminary hemp rates, there is one possible rationale that could be considered to go ahead and use the CV scores as proposed in the submission. In Table 4 of their methodology writeup, they show that the overall average CV scores, covering all comparable crops, is in the neighborhood of .95 (assuming that for this averaging process the numerator and denominator weren't flipped again). Based on the foregoing analysis of mine, a decrease of 5 percent in the CV would translate to a decrease of anywhere from 10 to 15 percent in the expected hemp LCR. So, in effect, using the CV scores as proposed would work as a dampening factor against the reduction from the current comparable crop rates, or, put another way, infusing a bit of conservatism for a new product. On the other hand, if the average CV score ratio were, say, 1.05, then we would be looking at a possible deal breaker.

Credibility Weighting and Coverage Level Relativities

The final hemp rates are calculated after credibility weighting (smoothing) the preliminary rates, discussed above, with the average rates for the Agricultural Statistical District (ASD) to which the specific county belongs. This process is used for many property and casualty lines of business in which territory rating is an integral part, so it is certainly appropriate for this submission.

After the final smoothed base rates (.65 coverage level) are derived, the rates for the other coverage levels are determined using a set of coverage level relativity factors. Using strictly Kentucky counties, I extracted the rates for the 50% and 75% coverage levels, along with the base rate (65 coverage level), to compare those final relativities with the theoretical relativities derived from my exhibit 8, using the beta distribution. This process went like this:

1. From the base rate, determine the underlying LCR (multiply by .88)
2. Using my table in Exhibit 8, find the corresponding CV matching this LCR (interpolating)

3. Record the indicated relativities for the 50% and 75% coverage levels
4. Plot these relativities on a graph (individual markers)
5. Plot the line representing the theoretical relativities versus the CV

This graph is shown in Exhibit 10. From this exhibit it appears that the final relativities proposed are more contained around the 65 coverage level base than the beta distribution would call for. In other words, the 75 coverage level relativity is generally too low and the 50 coverage level is generally too high. Of course, these conclusions start with the assumption that the beta distribution is an accurate depiction of the actual coverage level loss costs, which was posited by the submitters in their Manitoba analysis.

Pricing Proposals

As is the case for all APH plans, an established price per unit is required to determine the value of production lost due to an insurable cause of loss. Unlike most crops with a single intended use, the hemp plant can be harvested for CBD, grain, or fiber. The CBD harvest can be subdivided into four subsets: Direct Seeded Floral, Direct Seeded Whole Plant, Transplant Floral, and Transplant Whole Plant. Under the proposed insurance plan, the insured producer must elect a single type. Accordingly, price projection is required for each of these six types.

For CBD, after considering several methodologies and several sources of price information, the final recommendations are

CBD – Direct Seeded – Floral	\$4.54/lb
CBD – Direct Seeded – Whole Plant	\$2.27/lb
CBD – Transplant – Floral	\$10.17/lb
CBD – Transplant – whole plant	\$5.08/lb

These were based on a 3-year moving average from Kentucky Department of Agriculture data. The final prices for the direct seeded types reflect an adjustment factor of .75 to temper the price election to more closely reflect expected values.

The submitters advise that from their research on pricing this relatively new industry is undergoing rapid changes and that experts predict significant price fluctuations in the coming years. Moreover, there is even some concern with the significant production increases in just the past 2-3 years that the supply could greatly exceed the demand and even the Secretary of Agriculture has voiced concern over a possible market “crash”.

As for the Fiber type, which has a relatively small market at present, the final price proposals were based on the lessor of

- and
- (a) the 3-year moving average of growers as reported to the most viable reporting resource
 - (b) the mean price provided by industry resources for the current crop year

After incorporating a 15% reduction factor to reflect expected market decreases in 2020, the final proposed price is \$0.08/pound

For the Grain type, the final price selection was also the lesser of the two sources noted for the Fiber type. For Grain – conventional the selection is \$0.57/pound and for Grain – Organic, \$1.13/pound. These final selections incorporated reductions of 5% and 10%, respectively, to reflect expected 2020 market conditions.

There is obviously a great deal of uncertainty involved with projecting 2020 prices for this new commodity, but from my perspective, the submitters have made the necessary judgment calls to come up with conservative selections

Questions and Answers Prescribed by RMA

(1) Protection of the Interests of Agricultural Producers and Taxpayers

(a) Meaningful Coverage: Does the policy provide meaningful coverage that is of use to many producers, and is the coverage provided in a cost-efficient manner?

The only coverage available to hemp producers at present is the Whole Farm Revenue Protection plan and my sense from this review is that they have a strong desire for more direct coverage. From what I can tell, the Hemp APH plan would provide coverage in a cost-efficient manner.

(b) Policy: Is the policy clearly written so that producers will be able to understand the coverage that they are being offered? Does the policy language permit actuaries to form a clear understanding of the payment contingencies for which they will set rates? Is it likely that an excessive number of disputes or legal actions will arise from misunderstandings over policy language?

I believe the policy language is clear. The APH procedures are well established and clearly laid out in the IH Crop Insurance Standards Handbook. From my limited legal perspective I cannot foresee any likelihood of legal actions over the policy language.

(c) Calculations: Is the calculation for determining liability (i.e., the amount of coverage) clearly stated and supported by an example? Is the calculation for determining the amount of premium clearly stated and supported by an example? Is the calculation for determining the amount of indemnity clearly stated and supported by an example?

The examples in the submission and in the proposed Standards Handbook are clear and are very useful.

- (d) *Marketplace Issues: Could the product adversely affect the agricultural economy or the general marketplace of the crop that is proposed for coverage, or of other crops or areas? Does the product exclude or discourage participation of any portion of the industry? Does the product contain a consultation report that supports this conclusion?*

This question is a little out of my area of expertise, but the submission documents acknowledge that with the significant increase in planted hemp acreage over the past 2-3 years the equilibrium between supply and demand for the hemp product(s) may be in jeopardy.

(2) *Actuarial Appropriateness*

(a) *Rates*

- (i) *Data: Is adequate, credible, and reliable rate-making data available? Is the data used for the analyses appropriate, reliable, and the best available? Is it likely that the data will continue to be available? Is the data vulnerable to tampering if the proposed policy is approved?*

As stated in my narrative, with only 2 or 3 years of yield data available for hemp in the US, the submitters had to rely on data from Canada and from a selection of comparable US crops which had the same planting and harvest dates, coming from the same 15 states earmarked for marketing of this new insurance plan. The submitter's innovative approach to bridge the data gap included a sophisticated Biomass Growth model, from which a 19-year yield history could be simulated for hemp and a selection of comparable crops. This data will continue to be available and updated until actual experience from the new plan is compiled in quantities that are adequate to determine rates.

- (ii) *Assumptions: Are the explicit and implicit assumptions used in the rating process reasonable?*

The major assumption – that the hemp yield variability can be estimated or translated from similar experience from comparable crops – is one that is necessary for any new program and I believe is reasonable.

- (iii) *Rating Methodology: Is the actuarial methodology for the rates correct and appropriate for the policy? Will the methodology result in actuarially sound rates? Are the proposed premium rates likely to cover anticipated losses and a reasonable reserve?*

The rating methodology proposed for the product introduces (to me, anyway) a Biomass Growth model from which a 19-year history of hemp yields are simulated along with yields of various comparable crops which are grown in the 15 states contemplated for the new plan. The Coefficients of Variation (CV's) are calculated for each state/county/hemp type/practice combination and are compared to the simulated CV's for the comparable crops (weighted average) in that same state/county. The ratio of these CV's is then applied the corresponding base rate for the comparable crops for that county to get the preliminary hemp base rate. As detailed in my narrative, this ratio actually understates the ratio (up or down) of the Loss Cost Ratio of hemp to the comparable crop. A 5% difference in the CV (up or down) would translate to a 10 or 15% difference in the LCR. However, according to the submission, the overall average CV ratio appears to be about .95 which should translate to an adjustment in the range of .85 or .90 to be applied to the comparable crop base rate. Nevertheless, if this CV ratio is applied as is for the new plan, the net effect is to temper the downward adjustment for the majority of the counties, which would introduce a measure of conservatism in the proposed hemp rates. Even though I am not qualified to opine directly on the efficacy of the Biomass model, the discussion in the submission was comprehensive and persuasive.

(iv) Experience: Does experience from prior years and relevant crops and areas support the validity of the proposed rates? Is the relation to any reference crop or area supported and logical?

As this is new commodity, there is very little past experience from any source, but I believe the manner in which the comparable crops were selected (similar planting and harvesting dates, etc.) was appropriate.

(v) Do models or simulations validate the proposed rates for the risk to be covered?

I was not able to replicate the submission's models *per se*, but their conclusions appear to be valid.

(b)Prices

(i) Price Data: Is adequate, credible, and reliable pricing data available? Is the data used for pricing appropriate, reliable, and the best available? Is it likely that the data will continue to be available? Is the data available when it is needed and does it represent an appropriate price for the product? Is the data vulnerable to tampering if the proposed policy is approved?

The pricing question for industrial hemp is more complex than a "garden variety" row crop, as there are six possible intended uses for the crop, each of which has an expected price. For more details, see my narrative. No tampering vulnerability that I can ascertain.

(ii) Pricing Methodology: Is the methodology or method used to determine the prices appropriate for the proposed policy? In the

case of price or revenue policies, are the mechanisms for establishing price clearly stated in the materials? Is the proposed methodology or procedures for establishing prices feasible?

The pricing methodology is complex, as noted in my narrative, but considering these complexities, I believe the methodology is appropriate.

(3) *Recognized Insurance Principles*

(a) *Over-insurance: Does the policy avoid providing coverage in excess of the expected value of the insured crop?*

In the process of coming up with a price for each of the six subsets of hemp products, the submitters applied downward adjustment factors in anticipation of possible price adjustments in 2020. With a maximum offered coverage level of .75, it would be highly unlikely that the coverage would exceed the crop's expected value, even as uncertain as its markets are.

(b) *Losses: Does the policy contain indemnity or other provisions that can be objectively verified by loss adjusters, underwriters, or auditors? If applicable, does the loss adjustment manual provide all the information needed to determine losses consistent with the policy provisions?*

I believe the indemnity calculations are very clear.

(c) *Equal Treatment: Is the policy likely to treat all producers equally?*

Yes.

(d) *Reasonable Requirements: Will insured's be able to comply with all requirements of the policy?*

Yes

(e) *Waste/Fraud/Abuse: Does the policy create vulnerabilities to waste, fraud, or abuse?*

I believe so.

(f) *Shifting Risk: Does the submission increase or shift risk to another FCIC-reinsured policy?*

Not that I can tell.

4) *Requirements of the Act*

(a) *Available Coverage: Does this policy provide coverage that, in whole or in part, is generally available from the private sector?*

No.

(b) *Legal Authority: Does the policy propose to insure a peril that is not*

authorized by the Act?

No.

- (c) *Requirements/Current Direction: To the extent of the reviewer's knowledge, does the policy comply with all requirements of the Act and the public policy goals of FCIC?*

Yes

(5) *Excessive Risk*

Are the risks proposed to be covered excessive such that they encourage adverse selection, moral hazard, or premium rates cannot be adequately or appropriately determined?

None that I can discern.

(6) *Underwriting Principles*

- (a) *Does the product follow sound, reasonable, and appropriate underwriting principles?*

Yes, the same principles that apply to existing APH plans

- (b) *If applicable, does the underwriting guide contain all the information needed to determine eligibility for insurance and amount of coverage?*

The same guidelines that apply to the existing APH coverages.

(7) *New and Improved Coverage*

- (a) *Will the plan of insurance provide a new kind of coverage that is likely to be viable and marketable?*

The plan is the well established APH plan and is viable and marketable.

- (b) *Will the plan of insurance provide crop insurance coverage in a manner that addresses a clear and identifiable flaw or problem in an existing policy?*

Not applicable.

- (c) *Will the plan of insurance provide a new or improved coverage for a commodity that previously had no available crop insurance, or has demonstrated a low level of participation or coverage level under existing coverage?*

The Whole Farm plan is the only coverage now available to hemp producers and they have, through their trade associations expressed a strong desire for this direct APH plan.

(8) *Delivery System*

- (a) *Does the policy place an unreasonable administrative burden on the insureds, AIPs, or the Federal crop insurance program?***

Administrative burden includes time, effort, or financial resources expended by persons to generate, maintain, or provide information to or for a Federal agency, including the resources expended for reviewing instructions; acquiring, installing, and utilizing technology and systems; adjusting the existing ways to comply with any previously applicable instructions and requirements; searching data sources; completing and reviewing the collection of information; and transmitting or otherwise disclosing the information.

There will be some increase in the administrative burden to keep track of the projected prices, but I don't see this as an unreasonable burden.

- (b) *If applicable, are training plans reasonable and appropriate?***

I believe the submitters have set forth adequate plans for training with a Power Point presentation, a copy of which was included in the submission..

- (c) *Are the submitter conclusions on administrative requirements and costs supported by a marketability assessment?***

The documentation on marketability from focus groups, etc., was persuasive, in my opinion.

(9) *Marketability*

- (i) *Is the submitter's determination of marketability reasonable and supported by the marketability assessment, market research studies, focus group results, and other evidence?***

There is ample documentation demonstrating a demand for the product for a significant segment of the hemp producers in many of the select 15 states.

- (ii) *Is the proposed policy or plan of insurance likely to result in a viable and marketable policy that can reasonably attain levels of participation similar to other like policies?***

Yes

- (iii) *Does the information gathered in the focus groups regarding what the producers are willing to pay support that producers will be willing to purchase the product at the proposed rates.***

For the most part, yes.

(iv) Will the product have a significant adverse impact on the crop insurance delivery system? Is this supported by information contained in the marketability assessment?

No. Yes.

(v) Is evidence provided that AIPs and their agents will sell and service the product?

Yes

(10) Other Review Areas

(a) Special Questions: Questions specific to this review provided by FCIC.

- *What new insurance challenges might the emerging market for industrial hemp create that the Federal crop insurance program has not encountered before?*

As stated in my narrative, if the huge increases in hemp planted acreage over the past 2-3 years continues into 2020 and beyond, the selection of projected prices for the six subsections of the hemp crop will be a challenge I don't think FCIC has encountered before.

- *Would it be appropriate to limit the scope of initial availability of the product due to factors like limited data availability and market volatility? If so, what might the most appropriate method(s) be (e.g. requiring a contract that includes a price for insurability, limiting the product to counties with industrial hemp production history, establishing a cap on acreage eligible for coverage, requiring producer production history for insurability, and/or other methods)?*

This is little beyond my expertise, but my opinion would be

Contractual price: yes, as most producers apparently operate with one at present

Production history requirement: perhaps a little stringent, but should be considered

Cap on acreage: Not sure about this one

- *Could significant variations in the ways industrial hemp types are planted, cultivated, and harvested across the country, and/or the lack of site-adapted good farming practices (GFPs), impact the likelihood of the development of a viable and marketable product?*

Again, beyond my level of expertise

- *Could significant geographic differences and/or volatility in prices of the proposed types (i.e. fiber, seed, and/or CBD) impact the submitter's ability to develop adequate pricing or rating methodology for the product, and are the proposed market adjustment factors appropriate?*

The submitters duly acknowledged this challenge in setting prices, but from my reading, their methodology and selected sources (e.g., Kentucky Department of Agriculture) and their adjustment factors were appropriate, perhaps even on the conservative side.

- *Is the methodology for establishing transitional yields (T-Yields) for the product sound, and are differences in yield between varieties within a type sufficient to create a situation of over-insurance when lower yielding varieties are planted follow higher yielding varieties?*

Beyond my level of expertise, but this second question is certainly valid and I don't believe it was addressed in the submission.

- *Are yield substitution and cups appropriate, given the yield volatility for cannabidiol (CBD)?*

Quite possibly inappropriate, and I don't see how the program would necessarily require either to be viable and marketable.

- *Since the product submitted has rotation requirements and industrial hemp is a new crop to the agricultural landscape, would master yields be more appropriate for the insured to more quickly accumulate their own yield history, versus longer reliance on T-Yields?*

I think the answer is probably yes, but this is a bit beyond my level of expertise.

- *Does the product include adequate appraisal methods for the different planting patterns? Are differences in the various planting patterns and/or seed germination rates significant enough to warrant acreage adjustment consideration?*

From my review I believe the answer to first question is yes but I don't feel qualified to address the second one.

- *Are the minimum acreage requirements (e.g. 5 acres for CBD and 20 acres for grain and fiber) appropriate, or should they be adjusted upward or downward for any*

type(s)? Is the proposed minimum distance of 5 miles between CBD fields and other industrial hemp fields appropriate for insurability?

I believe both would be appropriate.

- *Is interplanting industrial hemp with another crop considered a good farming practice in any of the areas proposed for coverage eligibility?*

Can't opine on this one.

- *For CBD production, some processors pay on a converted basis of pounds multiplied by CBD percentage. For loss adjustment and/or APH purposes, should a conversion factor to pounds of production be established for CBD processed on the basis of pounds multiplied by CBD percentage?*

From my reading of the price section of the submission, there was a strong implication if not an out-and-out recommendation that this type of conversion would be necessary.

Conclusions

The formulation of the proposed APH plan for Industrial Hemp presented some significant challenges for Agrilogic, due to the volatility and uncertainty associated with this new commodity. From my review, I believe the documentation was comprehensive and logical with ample detail spreadsheets with which I could extract samples for testing and validation purposes. There were, however, three areas with which I would take issue with the submitters: (a) the inferences taken from the Manitoba data, (b) the use of the CV scores directly to translate from current comparable crop base rates to preliminary hemp rates, and (c) the coverage level relativities for the .75 and .50 coverage levels in the final rates. There are, however, mitigating factors: As for (a), it didn't appear that the difference in my own inferences would have much, if any, impact on the final rate tables. For (b), I noted that if the CV ratios were used as is for the final rates the translated hemp rates would have a measure of conservatism built in. For (c), coverage level relativities proposed generally followed those in use for other commodities so, despite their variance from what I would characterize as "more accurate" relativities, their use cannot be criticized in this submission. So, taking everything into consideration, I would go ahead and recommend approval of this new plan.

Manitoba grain hemp and comparable crop annual yields

	average annual trends				yield trends				percent deviation from trend				my detrended yields				submitter's detrended yields			
	hemp	red spring wheat	oil sunflower	rape seed	hemp	red spring wheat	oil sunflower	rape seed	hemp	red spring wheat	oil sunflower	rape seed	hemp	red spring wheat	oil sunflower	rape seed	hemp	red spring wheat	oil sunflower	rape seed
2000	426	42.2	1,510	29.5	369.42	36.01	1,210.46	27.47	0.153	0.172	0.247	0.074	821.57	65.96	2186.03	35.19	882.16	70.05	2353.33	35.61
2001	488	33.1	1,543	24.4	390.24	37.26	1,246.04	27.77	0.251	-0.112	0.238	-0.121	862.75	55.61	2183.45	29.79	956.63	53.10	2336.09	29.14
2002	561	38.1	1,439	27.4	411.05	38.51	1,281.62	28.07	0.365	-0.011	0.123	-0.024	914.93	59.36	2043.87	32.49	1044.03	59.13	2118.15	32.37
2003	559	47.3	1,370	32.1	431.87	39.76	1,317.20	28.37	0.294	0.190	0.040	0.131	892.11	67.31	1939.29	36.89	990.16	71.10	1962.11	37.52
2004	266	46.5	488	28.1	452.69	41.01	1,352.78	28.67	-0.412	0.134	-0.639	-0.020	578.29	65.26	1021.71	32.59	449.50	67.77	680.53	32.50
2005	300	33.3	1,097	20.7	473.51	42.27	1,388.36	28.97	-0.366	-0.212	-0.210	-0.285	591.47	50.81	1595.13	24.89	484.66	47.10	1490.59	23.70
2006	530	43.6	1,797	37.2	494.33	43.52	1,423.94	29.27	0.072	0.002	0.262	0.271	800.65	59.86	2259.55	41.09	820.18	59.89	2380.73	42.15
2007	442	39.8	1,566	36.5	515.15	44.77	1,459.52	29.57	-0.142	-0.111	0.073	0.234	691.83	54.81	1992.97	40.09	656.36	53.14	2024.12	40.94
2008	492	50.0	1,526	35.8	535.97	46.02	1,495.10	29.87	-0.082	0.087	0.021	0.199	721.01	63.76	1917.39	39.09	702.22	64.95	1925.48	39.75
2009	567	51.8	1,389	36.6	556.79	47.27	1,530.68	30.17	0.018	0.096	-0.093	0.213	775.19	64.31	1744.81	39.59	779.01	65.51	1711.87	40.23
2010	225	41.2	1,241	21.6	577.61	48.52	1,566.26	30.47	-0.610	-0.151	-0.208	-0.291	412.37	52.46	1561.23	24.30	297.99	50.76	1494.73	23.51
2011	613	39.0	1,286	22.4	598.43	49.77	1,601.85	30.77	0.024	-0.216	-0.197	-0.272	779.55	49.01	1570.65	24.80	783.61	46.84	1514.52	24.14
2012	649	47.8	1,859	19.6	619.25	51.02	1,637.43	31.07	0.048	-0.063	0.135	-0.369	794.74	56.55	2108.06	21.70	801.74	56.00	2141.77	20.92
2013	691	61.1	2,059	28.8	640.07	52.27	1,673.01	31.37	0.080	0.169	0.231	-0.082	815.92	68.60	2272.48	30.60	825.86	69.87	2321.74	30.45
2014	792	49.7	1,652	29.7	660.89	53.52	1,708.59	31.67	0.198	-0.071	-0.033	-0.062	896.10	55.95	1829.90	31.20	916.75	55.51	1824.01	31.10
2015	792	51.1	1,539	40.2	681.71	54.77	1,744.17	31.97	0.162	-0.067	-0.118	0.258	875.28	56.10	1681.32	41.40	888.75	55.77	1664.58	41.71
2016	724	51.6	1,606	25.5	702.52	56.02	1,779.75	32.26	0.031	-0.079	-0.098	-0.210	786.46	55.35	1712.74	26.40	788.37	55.06	1702.32	26.21
2017	718	67.3	2,021	43.0	723.34	57.27	1,815.33	32.56	-0.007	0.175	0.113	0.320	759.64	69.80	2092.16	43.60	759.33	70.24	2100.22	43.79
2018	744	63.6	2,095	34.1	744.16	58.52	1,850.91	32.86	-0.000	0.087	0.132	0.038	764.82	64.85	2130.58	34.40	764.81	64.96	2135.27	34.41
2019					764.98	59.78	1,886.49	33.16												
mean	556.79	47.27	1,530.68	30.17									764.98	59.78	1886.49	33.16	768.01	59.83	1888.53	33.17
Std Dev	171.59	9.45	373.60	6.88									125.37	6.31	315.41	6.67	188.32	8.04	416.78	7.22
CV	0.3082	0.1999	0.2441	0.2280									0.1639	0.1055	0.1672	0.2011	0.2452	0.1345	0.2207	0.2177
intercept	(41,269.18)	(2,465.39)	(69,950.95)	(571.47)									764.98	59.78	1886.49	33.16	6184.12	193.35	7775.29	50.88
srd error	129.00	6.49	324.56	6.86									129.00	6.49	324.56	6.86	193.15	8.27	428.53	7.43
r square	0.4662	0.5546	0.2872	0.0600									-0.00	-0.00	-0.00	0.00	0.01	0.00	0.00	0.00
slope	20.82	1.25	35.58	0.30									0.00	0.00	0.00	0.00	-2.70	-0.07	-2.93	-0.01
correlation matrix		0.623	0.706	0.368					0.254	0.630	0.275			0.234	0.551	0.283		0.254	0.630	0.275
			0.577	0.552						0.225	0.563				0.316	0.571			0.225	0.563
				0.339							0.249					0.254				0.249

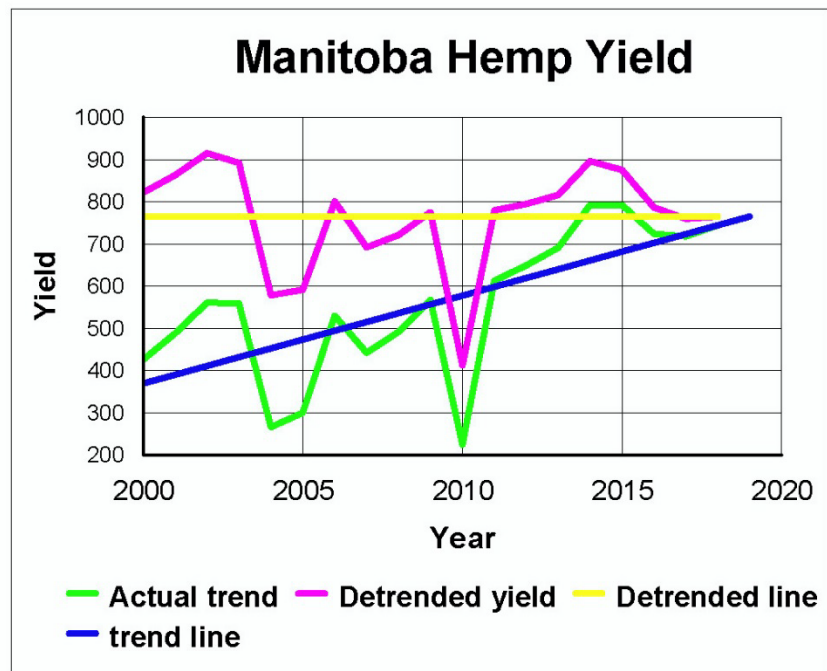
Notes:

Trended yield = intercept + year*slope

percent deviation = (actual yield - trended yield)/trended yield

My detrended yield = actual yield + (2019 - year)*slope

Submitter's detrended yield = 2019 trended yield * (1 + deviation percent)



**Comparison Of CV's derived in Submission
with CV's Derived Directly from Beta Distribution Parameters in Submission**

		hemp	Red Spring Wheat	Oil Sunflower	rapeseed
(a)	alpha	1.75671	0.78938	1.8309	0.87011
(b)	beta	1.06394	0.70316	0.7777	0.77302
(c)	CV^2	0.159	0.357	0.118	0.336
(d)	CV	0.398	0.598	0.343	0.580
(e)	mean	0.623	0.529	0.702	0.530
(f)		0.159	0.357	0.118	0.336
(g)	their CV	0.2452	0.1345	0.2207	0.2177

Alternative derivation of alpha and beta parameters,
using two alternative calculations:

Calculated CV's from alternative detrended data

Assumed max point = mean + 2 standard deviations

(h)	alternative CV	0.1639	0.1055	0.1672	0.2011
(i)	mean	0.753	0.826	0.749	0.713
(j)	alpha	8.437	14.829	8.215	6.379
(k)	beta	2.766	3.129	2.747	2.566
(m)	mean	0.753	0.826	0.749	0.713

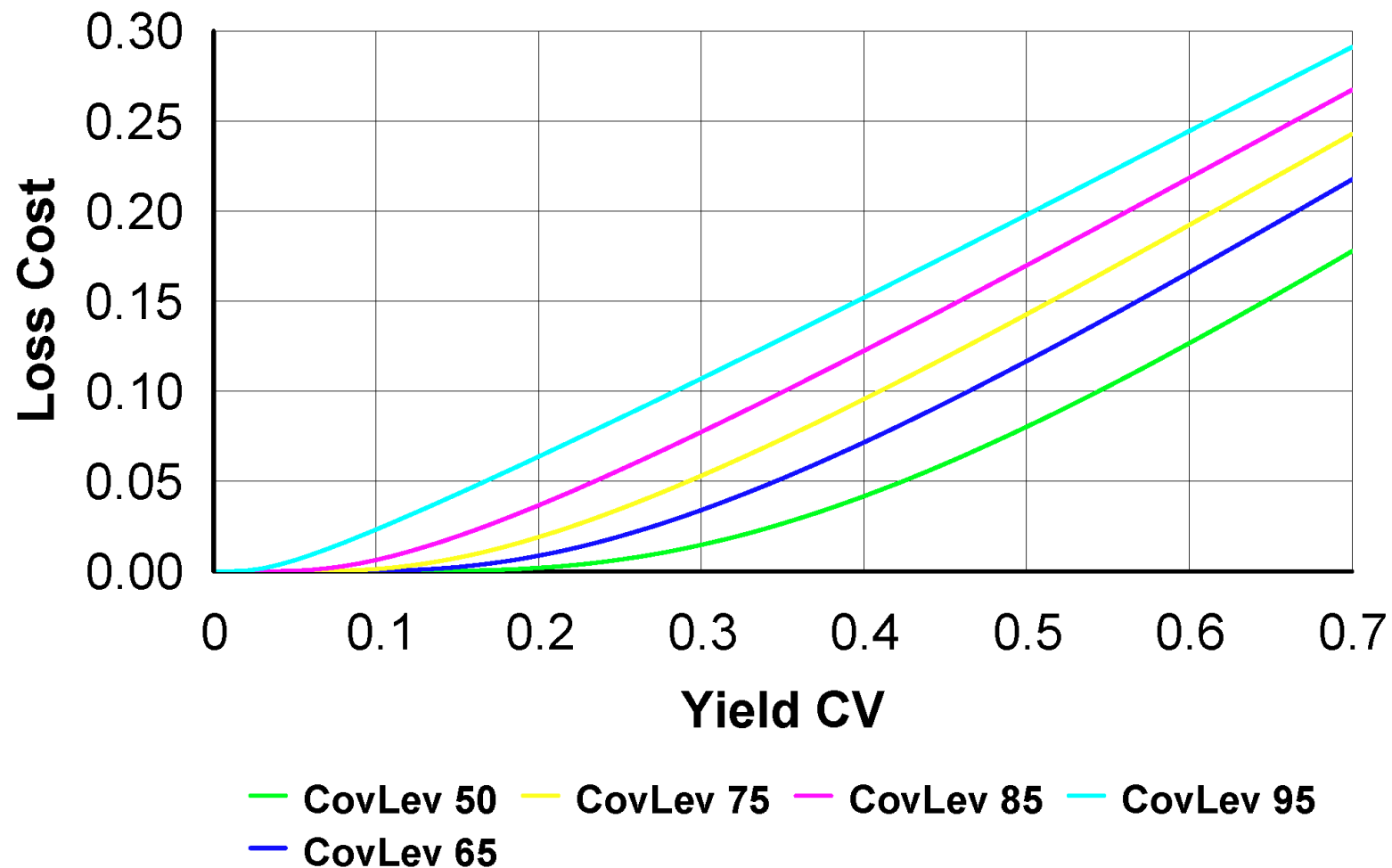
Notes:

- (a) & (b) beta distribution parameters derived in submission
 (c) $(b) / \{(a) * [(a) + (b) + 1]\}$ by definition for the beta distribution
 (d) $(c) ^ .5$
 (e) $(a) / [(a) + (b)]$ also by definition for the beta distribution for domain between 0 and 1
 (f) $[1 - (e)] / [(a) + (e)]$ another way to calculate CV^2. matches (c)
 (g) CV derived by submitters from detrended data and used in 1000 sample simulation
 Compare to (d)
 (h) Actual CV calculated from alternative detrended data
 (i) $1 / [1 + 2 * (h)]$
 (j) $(i) * [2 - (h)] / (h)$
 (k) $(j) * [1 - (i)] / (i)$
 (m) $= (j) / [(j) + (k)]$ alternate formula for mean

APH Loss Cost per Guarantee by Coverage Level by Yield CV
Beta Distribution (max = mean + 2 standard deviations, min = 0)

Yield CV	Coverage Level				
	0.50	0.65	0.75	0.85	0.95
0.00	0.00000	0.00000	0.00000	0.00000	0.00000
0.01	0.00000	0.00000	0.00000	0.00000	0.00001
0.02	0.00000	0.00000	0.00000	0.00000	0.00035
0.03	0.00000	0.00000	0.00000	0.00001	0.00157
0.04	0.00000	0.00000	0.00000	0.00007	0.00359
0.05	0.00000	0.00000	0.00001	0.00032	0.00618
0.06	0.00000	0.00000	0.00004	0.00084	0.00918
0.07	0.00000	0.00001	0.00014	0.00170	0.01245
0.08	0.00000	0.00003	0.00036	0.00291	0.01592
0.09	0.00000	0.00008	0.00073	0.00447	0.01953
0.10	0.00000	0.00019	0.00129	0.00635	0.02326
0.11	0.00001	0.00037	0.00207	0.00852	0.02708
0.12	0.00003	0.00067	0.00308	0.01094	0.03097
0.13	0.00008	0.00109	0.00433	0.01360	0.03493
0.14	0.00015	0.00165	0.00580	0.01645	0.03893
0.15	0.00026	0.00238	0.00751	0.01949	0.04299
0.16	0.00043	0.00329	0.00943	0.02268	0.04708
0.17	0.00068	0.00437	0.01156	0.02602	0.05121
0.18	0.00100	0.00564	0.01388	0.02948	0.05537
0.19	0.00142	0.00709	0.01639	0.03305	0.05956
0.20	0.00195	0.00872	0.01907	0.03673	0.06378
0.21	0.00260	0.01054	0.02191	0.04050	0.06803
0.22	0.00337	0.01253	0.02490	0.04435	0.07229
0.23	0.00428	0.01469	0.02803	0.04828	0.07658
0.24	0.00533	0.01701	0.03129	0.05229	0.08089
0.25	0.00652	0.01950	0.03467	0.05635	0.08522
0.26	0.00786	0.02213	0.03816	0.06047	0.08957
0.27	0.00935	0.02492	0.04176	0.06465	0.09393
0.28	0.01099	0.02784	0.04546	0.06888	0.09832
0.29	0.01278	0.03090	0.04925	0.07316	0.10272
0.30	0.01471	0.03408	0.05313	0.07748	0.10713
0.31	0.01680	0.03739	0.05709	0.08184	0.11156
0.32	0.01903	0.04081	0.06113	0.08624	0.11601
0.33	0.02140	0.04433	0.06524	0.09067	0.12047
0.34	0.02392	0.04797	0.06941	0.09514	0.12494
0.35	0.02657	0.05170	0.07365	0.09964	0.12942
0.36	0.02935	0.05553	0.07795	0.10417	0.13392
0.37	0.03226	0.05944	0.08230	0.10873	0.13843
0.38	0.03531	0.06344	0.08671	0.11331	0.14296
0.39	0.03847	0.06752	0.09116	0.11792	0.14749
0.40	0.04176	0.07168	0.09567	0.12256	0.15203
0.41	0.04515	0.07591	0.10021	0.12721	0.15659
0.42	0.04866	0.08022	0.10480	0.13189	0.16115
0.43	0.05228	0.08458	0.10943	0.13658	0.16573
0.44	0.05600	0.08901	0.11410	0.14130	0.17031
0.45	0.05982	0.09350	0.11880	0.14603	0.17490
0.46	0.06374	0.09804	0.12353	0.15078	0.17950
0.47	0.06775	0.10264	0.12830	0.15555	0.18411
0.48	0.07185	0.10729	0.13309	0.16032	0.18873
0.49	0.07604	0.11198	0.13792	0.16512	0.19335
0.50	0.08030	0.11672	0.14277	0.16992	0.19798
0.51	0.08464	0.12151	0.14764	0.17474	0.20262
0.52	0.08906	0.12633	0.15253	0.17957	0.20726
0.53	0.09355	0.13119	0.15745	0.18441	0.21190
0.54	0.09811	0.13609	0.16238	0.18925	0.21655
0.55	0.10273	0.14102	0.16734	0.19411	0.22121
0.56	0.10741	0.14598	0.17231	0.19897	0.22587
0.57	0.11215	0.15097	0.17729	0.20384	0.23053
0.58	0.11695	0.15599	0.18229	0.20872	0.23519
0.59	0.12180	0.16103	0.18731	0.21360	0.23986
0.60	0.12669	0.16609	0.19233	0.21848	0.24452
0.61	0.13164	0.17118	0.19736	0.22337	0.24919
0.62	0.13663	0.17628	0.20240	0.22826	0.25385
0.63	0.14165	0.18141	0.20745	0.23316	0.25852
0.64	0.14672	0.18655	0.21251	0.23805	0.26319
0.65	0.15182	0.19170	0.21757	0.24294	0.26785
0.66	0.15695	0.19687	0.22264	0.24783	0.27251
0.67	0.16212	0.20204	0.22771	0.25272	0.27717
0.68	0.16731	0.20723	0.23278	0.25761	0.28182
0.69	0.17253	0.21242	0.23785	0.26250	0.28647
0.70	0.17777	0.21762	0.24292	0.26738	0.29112

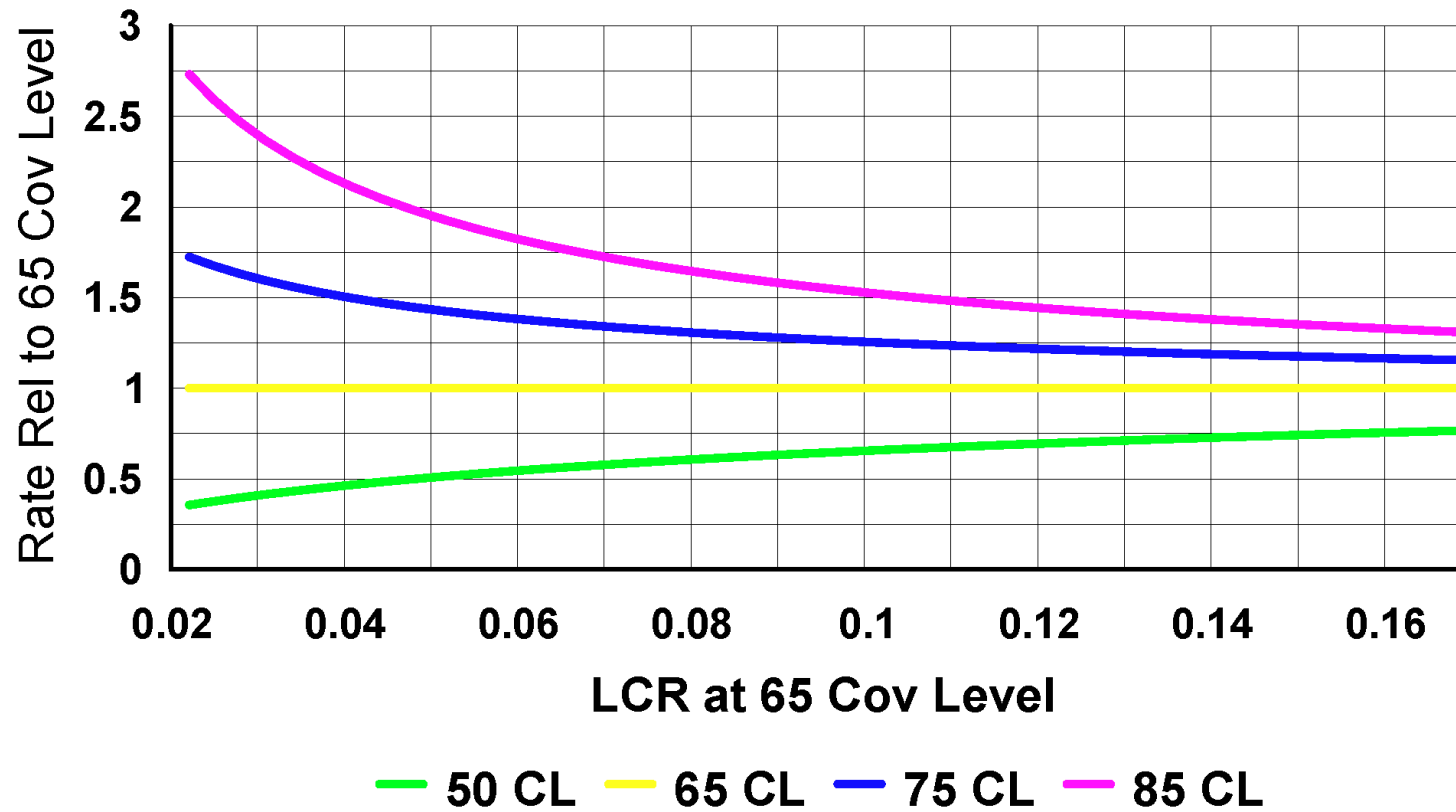
APH Loss Cost per Guarantee by Coverage Level by Yield CV
Beta Distribution: max=mean + 2 std deviations, min = 0



Rate Relativities to Cov Level 65
Given LCR at Cov Level 65 -- Beta Distribution

LCR@CL65	Relativity to Cov Level 65			
	Cov Lev 50	Cov Lev 65	Cov Lev 75	Cov Lev 85
0.01054	0.247	1.000	2.079	3.844
0.01253	0.269	1.000	1.988	3.541
0.01469	0.292	1.000	1.908	3.288
0.01701	0.313	1.000	1.839	3.073
0.01950	0.335	1.000	1.778	2.890
0.02213	0.355	1.000	1.724	2.732
0.02492	0.375	1.000	1.676	2.595
0.02784	0.395	1.000	1.633	2.474
0.03090	0.414	1.000	1.594	2.368
0.03408	0.432	1.000	1.559	2.273
0.03739	0.449	1.000	1.527	2.189
0.04081	0.466	1.000	1.498	2.113
0.04433	0.483	1.000	1.471	2.045
0.04797	0.499	1.000	1.447	1.984
0.05170	0.514	1.000	1.425	1.927
0.05553	0.529	1.000	1.404	1.876
0.05944	0.543	1.000	1.385	1.829
0.06344	0.557	1.000	1.367	1.786
0.06752	0.570	1.000	1.350	1.746
0.07168	0.583	1.000	1.335	1.710
0.07591	0.595	1.000	1.320	1.676
0.08022	0.607	1.000	1.307	1.644
0.08458	0.618	1.000	1.294	1.615
0.08901	0.629	1.000	1.282	1.587
0.09350	0.640	1.000	1.271	1.562
0.09804	0.650	1.000	1.260	1.538
0.10264	0.660	1.000	1.250	1.515
0.10729	0.670	1.000	1.241	1.494
0.11198	0.679	1.000	1.232	1.474
0.11672	0.688	1.000	1.223	1.456
0.12151	0.697	1.000	1.215	1.438
0.12633	0.705	1.000	1.207	1.421
0.13119	0.713	1.000	1.200	1.406
0.13609	0.721	1.000	1.193	1.391
0.14102	0.728	1.000	1.187	1.376
0.14598	0.736	1.000	1.180	1.363
0.15097	0.743	1.000	1.174	1.350
0.15599	0.750	1.000	1.169	1.338
0.16103	0.756	1.000	1.163	1.326
0.16609	0.763	1.000	1.158	1.315
0.17118	0.769	1.000	1.153	1.305

Rate Relativities to Cov Level 65 Given LCR at Cov Level 65 Beta Distribution



Samples to Illustrate How Preliminary Hemp Rates were derived from Comparable Crops and the CV Score Ratio

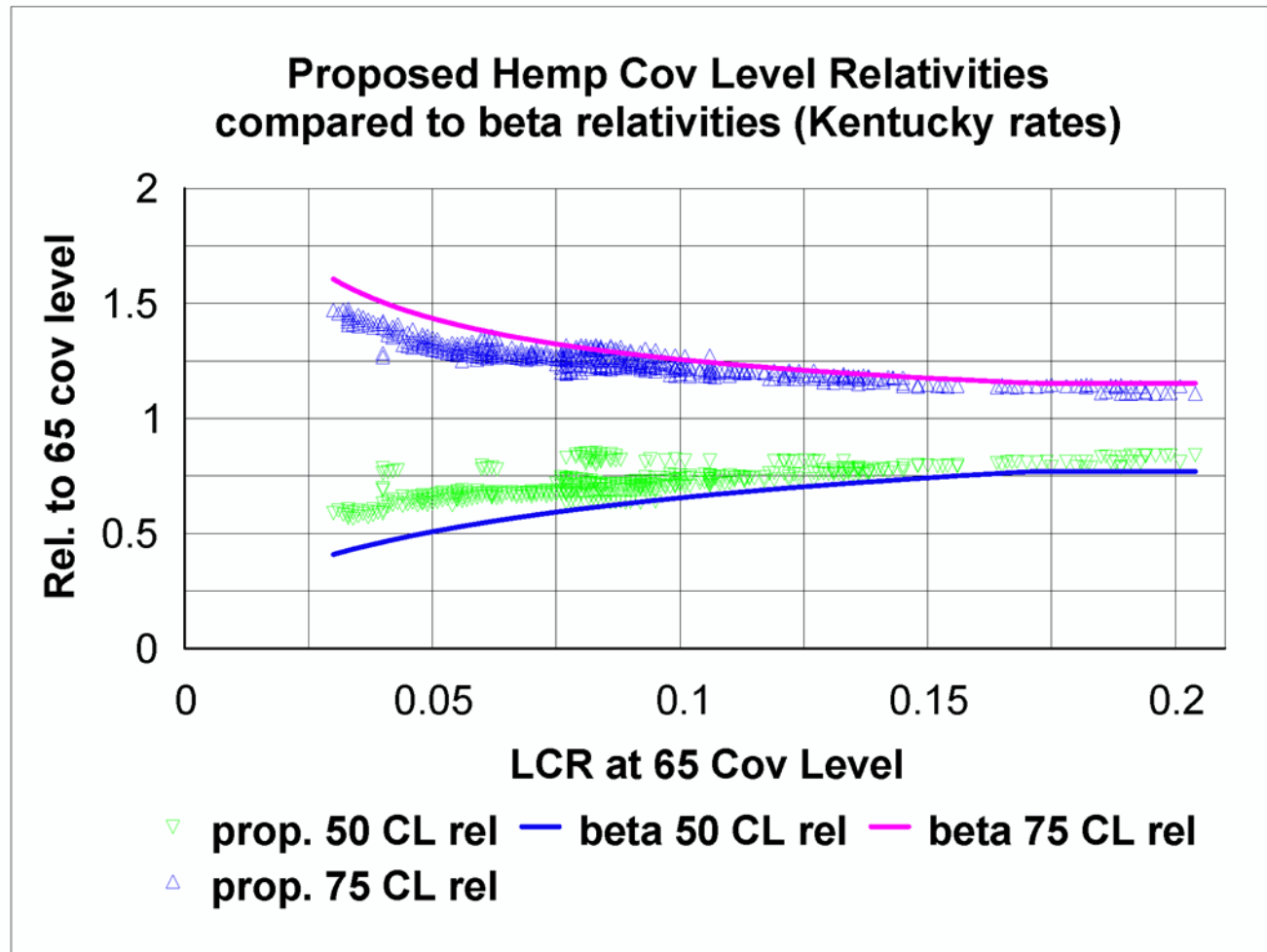
						(a)	(b)	(c)	(d)	(e)	(f)	(g)
	State	county	type	practice	comparable crop	comp crop CV score	ind. hemp CV score	ratio CV score	cov level	comp crop base rate	weight	ind hemp rate
from Risk Score tab:	Kentucky	Davies	grain	irrigated	corn	9.6	10.4	0.920				
					g. sorgham	9.6	10.4	0.920				
					soybeans	9.6	10.4	0.920				
from rate component tab	Kentucky	Davies	grain	irrigated	corn			0.920	0.65	0.054	0.105	
					g. sorgham			0.920	0.65	0.109	0.799	
					soybeans			0.920	0.65	0.028	0.096	
					weighted avg			0.920		0.095		0.088
from Preliminary rate tab	Kentucky	Davies	grain	irrigated					0.65			0.088
from Risk Score tab:	Kentucky	Carlisle	CBD transFl	irrigated	corn	11.2	10.1	1.108				
					g. sorgham	11.2	10.1	1.108				
					soybeans	11.2	10.1	1.108				
from rate component tab	Kentucky	Carlisle	CBD transFl	irrigated	corn			1.108	0.65	0.044	0.161	
					g. sorgham			1.108	0.65	0.109	0.691	
					soybeans			1.108	0.65	0.035	0.147	
					weighted avg			1.108		0.088		0.097
from Preliminary rate tab	Kentucky	Carlisle	CBD transFl	irrigated					0.65			0.088

Notes:

All data taken from "06.07 Industrial Hemp Rates.xlsx" file provided in submission documents
 The Coefficient of Variation scores in (a) and (b) developed by submitters from Biomass Growth Simulation.
 The yields were normalized to a mean annual average yield of 100, and the annual variation was adjusted accordingly.
 The CVs for industrial hemp relative to each comparable crop were utilized as a ratio to develop the Score Factors (c).
Note, however, that the ratios shown in this file are the ratios of the comp crop CV's to the hemp CV's.
 Comp crop base rates and weights (e) and (f) taken directly from the spreadsheet tabs indicated
 Preliminary hemp base rate (g) is a weighted average from comp crop rates multiplied by the CV score ratio (c)
 Note that the hemp rate in the Preliminary Rate tab for Carlisle County (.088) differs from the weighted average from the Rate Component tab (.097).
 This difference is ostensibly due to credibility weighting the county rate with the aggregate average rate for the applicable Agricultural Statistical District (ASD).

Change in LCR relative to Change in Yield CV (+- 10%)
 Beta Distribution (max = mean + 2 standard deviations, min = 0)

	CV	ratio to base CV	cov lev 65 LCR	LCR ratio to base
base	0.18	0.90	0.00564	0.646
	0.20	1.00	0.00872	1.000
	0.22	1.10	0.01253	1.436
base	0.27	0.90	0.02492	0.731
	0.30	1.00	0.03408	1.000
	0.33	1.10	0.04433	1.301
base	0.36	0.90	0.05553	0.775
	0.40	1.00	0.07168	1.000
	0.44	1.10	0.08901	1.242
base	0.45	0.90	0.09350	0.801
	0.50	1.00	0.11672	1.000
	0.55	1.10	0.14102	1.208



CURRICULUM VITAE
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Membership in Professional Societies: • Fellow, Casualty Actuarial Society
• American Academy of Actuaries

Education: University of Mississippi – B.A. Mathematics

Employment Record:

2018 – present **Bickerstaff Actuarial Consultants, Frisco, TX.**

Position: President

1990 – 2018 **Bickerstaff, Whatley, Ryan & Burkhalter, Inc.,** Indian Wells, California and Richardson, TX (since 2009). Former names: *Bickerstaff & Associates; Bickerstaff & Whatley, Inc.*

Position: Chairman

1974 – 1990 **Milliman & Robertson, Inc.,** Pasadena, CA (now known as Milliman USA)

Position: Consulting Actuary; Principal

1965 – 1974 **Southern Farm Bureau Casualty Insurance Company,** Jackson, MS

Position: Vice President and Actuary

1963 – 1965 **State Farm Mutual Insurance Company,** Bloomington, IL

Position: Senior Actuarial Assistant

1960 – 1963 **United States Navy**

Rank: Lieutenant Junior Grade

Key Qualifications and Career Highlights:

In his 40 years as a consulting actuary, Mr. Bickerstaff's areas of specialization include a wide range of property-liability topics. Much of his practice has been concentrated in medical professional liability engagements, having served physician and hospital clients in every area of

the U.S, as well as some assignments in the UK. For the first 11 years of his career, Mr. Bickerstaff's main area of concentration was private passenger automobile insurance rate levels and rating plans. He has since had extensive experience in personal lines pricing and loss reserves, and in the development of risk models and actuarial information systems. His clients have included insurance companies, managing general agents, captives, self-insurance trusts, risk retention groups, trade associations, law firms, and regulatory bodies.

Mr. Bickerstaff's experience in crop insurance ratemaking dates back more than 40 years. In the early 1970's, as Vice-President and Actuary at Southern Farm Bureau Casualty Insurance Company in Jackson, Mississippi, he performed periodic studies on crop hail programs underwritten in Texas (cotton, soybeans) and South Carolina (tobacco). In 1983, as a Principal with Milliman & Robertson (Pasadena, California, office), he was one of four co-authors of a comprehensive analysis and review of the procedures used by the Federal Crop Insurance Corporation (FCIC) of Kansas City, Missouri. Mr. Bickerstaff was the principal author of two of the nine separate reports resulting from that engagement: "Analyzing the Effects of Unitizing on Loss Costs and Related Issues" and "Analysis of Procedures to Determine Rating Areas and Classifications." He was also a major contributor to a third report in that series, "Analysis of Area Average Yield and Individual Yield Programs."

Since 2002, Mr. Bickerstaff has been engaged by the Risk Management Agency (RMA), the operational wing of FCIC, to perform actuarial reviews of proposed new crop insurance products. In 2002-2003 he reviewed a Livestock Risk Protection product. In 2005, he reviewed the Pasture, Rangeland, and Forage Rainfall Index and NDVI Index pilot programs. In 2006, he reviewed the Experience Based Producer Discount Program. In 2007, reviews were performed for the Apiculture Vegetation Index and the Apiculture Rainfall Index programs. In 2008, he reviewed three other proposals, one involving a Crop Technology Discount Program, another dealing with Trout and Catfish farms, and a third involving a new Named Peril Weather Program. In 2009 he reviewed an Actual Revenue History program for navel oranges and a Maximum Indemnity Factor amendment to the existing Apiculture program. In 2010 he contributed to the report "Feasibility Research Report for Insuring Honey Bees", prepared for RMA by AgForce of Perryton, Texas. Then, in later 2010, he prepared a review of a proposed County ACRE program. In 2011 Mr. Bickerstaff provided a review for a proposed APH product for Camelina. In 2012 he prepared reviews for a Pulse Crop program and a proposed Downed Rice Endorsement. In 2013 he prepared a review for a proposed ARPI program for rice. In 2014 he reviewed a product for Sprinkler Irrigated Rice.

As a subcontractor for AgForce, Inc., of Perryton, Texas, he recently completed a pricing study for a proposed Drought Monitor Endorsement for the existing Pasture, Rangeland, and Forage program. In 2015 he provided a review of a proposed APH plan for Clary Sage. In 2016 he did a review of the proposed Caneberry ARH plan of insurance. In 2017 he provided a review of the proposed Multi-Year plan of insurance for Iowa corn and soybeans.

When feasible, in most of Mr. Bickerstaff's reviews he designs and implements an independent model to test the reasonableness of the results and conclusions drawn from the models included in the proposal, rather than simply attempting to replicate the models in the proposal. In designing

these independent models, care is taken to use the parameters and assumptions used in the submitter's model, if they are deemed reasonable and actuarially sound. If not, alternative parameters and assumptions are used.

Mr. Bickerstaff was a speaker at the November 2006 CAS Meeting in San Francisco on the subject of GRP programs.

The design and construction of client-specific actuarial models has been an integral part of a large number of Mr. Bickerstaff's engagements for at least 25 years. Some notable examples are as follows:

- A three-dimensional loss projection model, utilizing the "loss tetrahedron", the 3-D extension (accident year by report year by calendar year) of the ubiquitous "loss triangle" (two-dimensional) concept.
- A client-specific Monte Carlo simulation model to construct the probability distribution of ceded losses and ceded premium under a swing-rated excess-of-loss reinsurance treaty (with graphical illustration).
- A simulation model to determine the Risk Transfer score of a set of swing-rated reinsurance terms, utilizing the well-recognized Expected Reinsurer Deficit (ERD) criterion. This model is a companion to the one previously mentioned above.
- A risk-specific deductible credit model for four combinations of deductible definitions: with or without inclusion of loss expense in the deductible and with or without an aggregate limit on annual deductible charges to the risk.
- A *minimum bias* model in 1999 to analyze statewide Texas automobile physical damage loss data in five dimensions (driver class, territory, symbol, model year, and deductible). As a result of this study, deductible relativities were modified (additive rather than multiplicative) for the state's benchmark rate structure.
- Another version of the minimum bias model has been used to determine rating relativities for a five-dimensional rating structure for used car Vehicle Service Contracts (warranties).
- An independent Whole Farm Revenue Protection product, sampling yields from two or more crops from correlated yield distributions. More recently, a producer-specific model to calculate the true "diversification factor" to compare with the one used in the procedure in place in the current WFRP product.
- A Drought Monitor Endorsement pricing model, drawing from two correlated probability distributions (Rain Index and Drought Monitor category)
- Loss Reserve probability distribution (many clients)
- Pricing model for Death, Disability, and Retirement extended reporting endorsement (tail) for medical liability carriers.
- Model to determine impact of raising Medical Liability cap (or doing away with it altogether) in Louisiana (Monte Carlo simulation model)
- Effect of caps on non-economic damages in medical professional liability (state-specific simulation model)

- “Adverse Case” proforma projections for initializing new captives or Risk Retention Groups, simulating the probability distribution of fifth year ending surplus, including the “learning” feature.
- Used Car GAP coverage pricing model
- A risk-specific Retrospective Rating model (using several input parameters to define coverage, size of entity, claim limits, etc.)
- A merit rating model which predicts future claim frequency of an individual risk based on number of claims in previous three years or five years or the number of claim-free years. Uses the well-recognized Negative Binomial distribution, given an overall claim frequency

None of these models are of the “off the shelf” variety, but, rather, were custom designed and implemented by Mr. Bickerstaff. Most of the above listed models have been designed and implemented since 2013.

Highlights of other past assignments include:

- Extensive Expert Testimony in insurance-related litigation and rate hearings
- Designed pricing models for vehicle service contract and GAP products for carrier in western states
- Consultant to the Insurance Council of Texas (formerly Texas Automobile Insurance Service Office and Texas Insurance Organization), annually preparing proposals for private passenger benchmark rates.
- Developed Surety Bond product for one of the largest bail bondsman in Nevada
- Assisted in the development of a Patent Infringement Liability product
- Consultant to General Accounting Office for Medical Malpractice study
- Designed and implemented Actuarial Information System for major Southeastern personal lines carrier
- Assisted in the formation of nine medical society sponsored professional liability carriers.
- Consultant to major HMO in Southern California
- Prepared initial loss costs estimates for a Cattle Risk Multicover Program for a western carrier
- Developed proposed funding levels for a western captive’s Health Care Providers’ Income Replacement Program (Business Interruption) for Medicare/Medicaid Reimbursement suspensions
- Provided extensive oral and written testimony for five cases in Louisiana for defendant Attorney General’s office in which constitutionality of \$500,000 medical malpractice cap was challenged.
- Preparation of rate filings and year end Actuarial Statements of Opinion for several commercial carriers
- Assisted in formation of a risk retention group (RRG) for emergency physicians and designed its innovative two-dimensional per-visit rating structure.
- Extensive Workers' Compensation studies for large Midwestern state insurance department
- Consultant in 1980’s to nation's largest extended automobile warranty carrier

- Consultant to Louisiana's largest non-profit, multi-specialty healthcare delivery system (Ochsner)
- Consultant to New Orleans Regional Transit Authority (auto and general liability loss reserves)
- Special projects for two prominent Lloyd's syndicates
- As Chairman of the Actuarial Committee of the National Association of Independent Insurers (1970's), assisted in the analysis of proposed No-Fault plans for private passenger auto.

Awards and Publications:

Mr. Bickerstaff has served on the Board of Directors of the Casualty Actuarial Society (1975-78). In 1972 he received the Woodward-Fondiller Prize for his paper in the Society's Proceedings. He has also made frequent contributions to the C.A.S. Call Paper program and the annual loss reserve and ratemaking seminars sponsored by the Society.

He is the author of the following published papers:

"Automobile Collision Deductibles and Repair Cost Groups: The Lognormal Model" in *Proceedings of the Casualty Actuarial Society*, 1972.

"Hospital Self-Insurance Funding: A Monte Carlo Approach", *Casualty Actuarial Society Forum*, Fall 1989.

"Evaluating Contingent Premium Liabilities for Excess-of-Loss Swing Plans", *C.A.S. Discussion Paper Program*, 1988.

"How Your Free Tail Liability Policy is Funded," *Medical Practice Management*, September/October, 2000.

**Underwriting Expert Review
508(H) Confidential Submission 0083
Industrial Hemp**

BPA No. 12645S18A0005

Submitted to:

United States Department of Agriculture
Risk Management Agency

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SECTION I. EXECUTIVE SUMMARY

This review is focused on 508(h) proposal submission #0083 that proposes a crop insurance product to insure industrial hemp producers against yield losses in production. The proposed product is partially-based on other APH-based insurance products for commodities that produce multiple end products, such as corn and sunflowers. Notable departures from existing crop insurance offerings stem from a lack of price and production history, coupled with existing and anticipated explosive growth. These issues are navigated with the use of a biomass production model and using existing relationships with other spring-planted crops to augment existing production history and provide sufficient information for rate development.

Currently, the only option for producers of industrial hemp to insure against production losses is through Whole Farm Revenue Protection (WFRP). The proposed product would provide industrial hemp producers with a single crop policy, which is not currently available. Six letters of support are provided that highlight the importance of the proposed crop insurance product to assist in sustaining and growing hemp production in the U.S. Based on the marketing assessments and listening session analysis provided, a new insurance product for industrial hemp would meet the growing demand from producers of industrial hemp to manage production risk.

While there is typically a reliance on production histories and production expertise prior to establishing new crop insurance products, the proposed industrial hemp crop insurance program lacks a typical amount of data for both of these items. The submitters navigate this shortcoming through the use of a scientific biomass model and by using related crops to establish rates for hemp. The scientific biomass model appears to be an appropriate way to estimate historical hemp yields by following established literature on plant biomass modeling procedures. Additionally, the use of other spring-planted crops in establishing hemp rates, through the use of a coefficient of variation ratio, again seems appropriate and is a valid rating procedure when presented with a lack of historical data. While these methods are appropriate and valid, the need for these methods is somewhat unique to the proposed product. Because these methods are somewhat new in the methodology for rating and pricing crop insurance policies by the RMA, it is recommended that the rates and prices be periodically evaluated to ensure the program is working as it is intended.

While the data for rating and pricing shortcomings are notable in this submission, the rate of expansion within industrial hemp with the passing of the 2018 farm bill and across the U.S. is also unprecedented. Because of the high value in production and excessive amount of risk presently involved in growing hemp, including regulatory, financial, and production risks, the proposed crop insurance product will very likely provide a substantial amount of

value to producers and consumers of hemp and hemp products. Letters from AIPs and the provided listening sessions indicate a substantial demand for a single-commodity insurance program that insures hemp, as well as a willingness by insurance agents and companies to train and sell the proposed product.

Additional efforts are made improve the viability of the proposed product with four requirements for producer eligibility, which include the use of a processor contract, rotation requirements, minimum acreage requirements, and the exclusion of “hot” hemp (occurs when THC is found to be higher than 0.3 in the harvested crop) as an insurable peril. There are a couple of concerns with these requirements. First, the data included in the proposal suggests that the minimum acreage requirements would exclude 57.1% of the CBD hemp producers and 74.0% of the grain/fiber hemp producers in the U.S. Data were also included from France and Canada, though the average acreage was substantially higher in those production systems. Thus, the acreage requirements may limit the amount of participation in the proposed product. A second concern with these requirements is in the rotational requirement and making sure that the RMA provides enough flexibility for hemp farmers to adopt good farming practices and incorporate rotations that are supported by local extension research offices and science, as they are developing.

It is clear that the industrial hemp proposal has moved forward faster than other product submissions and also includes a product that is still in its infant stage in the U.S. agricultural system. There is much to be learned about hemp production from the collection of producer data, the development of field trials at university extension and research centers, and the establishment of hemp supply chains and markets. It is unique for a product to be proposed without full development of these items, though the current and anticipated widespread and explosive adoption of hemp production supports the demand for the proposed product. However, there are notable regional differences in the production and supply of hemp, which are not really captured in this proposal. These differences need to be better identified in order for the proposed product to be an efficient use of taxpayers’ funds while providing an effective tool in risk management. It is recommended that the RMA retain flexibility with this product until the product is further refined to more confidently address the risks faced by hemp producers and allows for the policy to be more adaptable and flexible in addressing these changes in an efficient manner.

SECTION II. INTRODUCTION AND OVERVIEW

This review is focused on 508(h) proposal submission #0083 that proposes an industrial hemp crop insurance program to insure against losses in the production of industrial hemp. The 2014 farm bill provided the opportunity for certain research institutions and state departments of agriculture to grow hemp under pilot programs (Johnson, 2018). The production of hemp has increased from 3,933 acres across four states in 2015 to 78,176 acres in 2018. This growth is anticipated to increase rapidly with the passage of the 2018 farm bill and the declaration of “hemp” as an agricultural commodity (Economic Research Service, 2000; Hudak, 2018).

Industrial hemp can be grown for a variety of outputs. Estimates show that hemp-based products are mostly used in the production of personal care products, Hemp CBD, industrial applications, food, and textiles (Johnson, 2018). These products are developed from distinct parts of the hemp plant, which include the stalk, seeds, and leaves. Each of these elements of the hemp plant are sold for substantially different prices, which is largely due to the value placed on the final goods.

In response to this anticipated growth of the U.S. industrial hemp industry, this proposal is submitted to provide insurance for hemp producers to insure against yield losses. The product is anticipated to be consistent with a yield-based APH product, with an established price election/contract price determined to establish the price. Given the current limitations of established producer histories, a plant biomass growth model, used along with more established crops, are used to estimate hemp production to establish initial rates. The actual mechanics of the insurance product appears to work similarly to other established crop insurance products.

A description of the methodology used by the expert reviewer.

In order to provide a comprehensive review of this proposal submission of the proposed industrial hemp crop insurance program, the listed reviewer worked independently. The process began with multiple readings of the concept proposal submission, including all the submitted materials. This review of the submitted proposal are based on (1) a review of relevant literature related to industrial hemp; (2) a review of the data and methods provided in the submission materials; and (3) the reviewer’s *a priori* knowledge and judgement of the proposed industrial hemp crop insurance program.

SECTION III. REVIEW ITEMS

(1) Protection of the Interests of Agricultural Producers and Taxpayers.

a. Meaningful Coverage: Does the policy provide meaningful coverage that is of use to many producers, and is the coverage provided in a cost-efficient manner?

The proposed product does provide meaningful coverage that would be useful for many producers. Currently, there are many risks associated with growing hemp, making it a risky prospect for farmers to adopt. Some of these risk factors associated with hemp production that does not as commonly occur with other crops include third-party risk and producer bottlenecks (Chicago Business, 2019; Hemp Industry Daily, 2019), little known and established growing procedures from university extension offices (K-State Research and Extension, 2019; Russell et al., 2015), and considerable price uncertainty. While these risk factors are likely to diminish as hemp is established in cropping systems and marketing channels are established, the current state of hemp farming is very risky. Hemp farmers also face production risks in the same way as other crop producers who are growing a new crop. Because of this large degree of risk, the proposed crop insurance program will provide a reduction of risk to hemp farmers that is meaningful to stabilize farm incomes and provide banks with assurances for investment in new farming technology. This coverage is also provided in a cost-efficient manner in the same way that other crop insurance products provide meaningful risk management in a cost-effective manner.

b. Policy: Is the policy clearly written so that producers will be able to understand the coverage that they are being offered? Does the policy language permit actuaries to form a clear understanding of the payment contingencies for which they will set rates? Is it likely that an excessive number of disputes or legal actions will arise from misunderstandings over policy language?

The policy language provided for much of the submission is fairly standard for new APH products. However, there are some notable departures, which include the following requirements: (1) a processor contract; (2) rotation requirements; (3) minimum acreage requirements; and (4) the mandatory destruction of a hemp crop due to higher than legal THC levels is not included as an insurable loss. These departures are implemented in order to make this particular crop insurance offering more viable. However, I am concerned about the rotation requirement and what would be described as “good farming practices” for a product where those practices are likely to change substantially as university extension and private research companies expand for this crop. It is also not clear to me how a hemp crop that is destroyed due to higher than legal THC levels will be incorporated into the yield guarantee and rating, if not an insurable aspect of business.

c. Calculations: Is the calculation for determining liability (i.e., the amount of coverage) clearly stated and supported by an example? Is the calculation for determining the amount of premium clearly stated and supported by an example? Is the calculation for determining the amount of indemnity clearly stated and supported by an example?

Yes, these calculations are provided in the training presentation provided and examples throughout the submission. While I didn't find an explicit example for determining liability, the calculations in the simulation calculation are consistent with liability calculations. Example calculations for premiums and indemnities were included in the training presentation and mandatory documents provided.

d. Marketplace Issues: Could the product adversely affect the agricultural economy or the general marketplace of the crop that is proposed for coverage, or of other crops or areas? Does the product exclude or discourage participation of any portion of the industry? Does the product contain a consultation report that supports this conclusion?

Based on conversations I've had with farmers in Montana, the main deterrent to adopting hemp production is that it is very risky. Given the relatively new marketplace that is developing rapidly, there is a lack of knowledge and assurances within the supply channel. The proposed coverage would help to eliminate some of this risk and potentially allow more producers to adopt hemp production. The continued expansion of hemp production would likely result in lower prices, which would adversely impact farmers currently growing the crop. However, I also believe this influence is unavoidable and likely will place prices more in line with an efficient price where the market increases total surplus.

(2) Actuarial Appropriateness.

a. Rates

(i) Data: Is adequate, credible, and reliable rate-making data available? Is the data used for the analyses appropriate, reliable, and the best available? Is it likely that the data will continue to be available? Is the data vulnerable to tampering if the proposed policy is approved?

The availability of data is the biggest obstacle in constructing a viable hemp crop insurance product at this early stage in the market. The submitters have made a valiant effort to collect data from many different sources. These data include production information from more established markets in Canada and France, as well as information from

producers across the U.S., which was retrieved through various means, including FOIA requests and through working with hemp producer organization groups. The lack of data led the submitters to utilize a weather biomass modeling process to establish rates. While this linkage might provide a quick way to insure hemp when sufficient data are lacking, it is recommended that this system is replaced with a more traditional use of production histories to estimate rates and ultimately replace the biomass modeling system with one that is more accurate by making use of actual production data. It is also recommended that the rating procedures and methodologies are re-evaluated periodically as new data arrive to ensure the crop insurance program is viable and makes any necessary improvements.

(ii) Assumptions: Are the explicit and implicit assumptions used in the rating process reasonable?

The assumptions made in the rating process are reasonable and innovative for a product that lacks sufficient production information to derive rates under traditional crop insurance rating methodologies.

(iii) Rating Methodology: Is the actuarial methodology for the rates correct and appropriate for the policy? Will the methodology result in actuarially sound rates? Are the proposed premium rates likely to cover anticipated losses and a reasonable reserve?

The hemp industry is developing very quickly and without the establishment of more production histories, it is difficult to say with confidence that the given methodology will result in actuarially sound rates. The submitters applied caution where appropriate, which may help to limit any bias in the derived rates. However, it is recommended that the methodology is re-evaluated periodically, especially since the actuarial methodology is somewhat unique for the federal crop insurance program. The largest component of uncertainty surrounds the estimation of yield histories for purposes of the loss cost ratio analysis.

(iv) Experience: Does experience from prior years and relevant crops and areas support the validity of the proposed rates? Is the relation to any reference crop or area supported and logical?

The proposed methodology links rates for hemp production variability with that of other spring-planted crops in the regions of production. This results in a ratio of coefficient of variations between hemp and other related crops, which seems to be a logical approach, particularly given the lack of hemp-specific production data and the reliance on crop rotations.

(v) Do models or simulations validate the proposed rates for the risk to be covered?

A simulation analysis is used to evaluate the sensitivity of hemp yield risk to distributional and correlational assumptions. The simulation seems to be conducted in a reasonable way and provides validity to the approach through the utilization of Canadian data.

b. Prices

(i) Price Data: Is adequate, credible, and reliable pricing data available? Is the data used for pricing appropriate, reliable, and the best available? Is it likely that the data will continue to be available? Is the data available when it is needed and does it represent an appropriate price for the product? Is the data vulnerable to tampering if the proposed policy is approved?

Price information for industrial hemp is very limited, particularly prior to 2018. While the submitters made a valiant effort to obtain as much price information as possible, there were only two states (Kentucky and Wisconsin) that provided a series of hemp data. Additionally, there are a couple of benchmark price series and trading platforms that started collecting information within the last two years. The assumption in the proposal seems to be that these series would continue to expand their series, though given the relatively short nature of the series, this assumption is somewhat uncertain. This data collection is critical for the viability of the given crop insurance product.

The regional nature of hemp markets also demands regional breakdowns of prices. Given the expansion of hemp in different regions, including the mountain west, west, northern plains, south, Midwest, and mid-Atlantic states, these price series are likely to arise, but there needs to be a concerted effort to collect this type of data as the proposed product moves forward. So, while the methods used in pricing are appropriate, there is little confidence in the established prices, due to the limited price series available. The submitters do use caution in establishing prices by using the lower of the average and anticipated prices. The exclusive use of marketing contracts helps to mitigate the reliance of highly variable established prices.

(ii) Pricing Methodology: Is the methodology or method used to determine the prices appropriate for the proposed policy? In the case of price or revenue policies, are the mechanisms for establishing price clearly stated in the materials? Is the proposed methodology or procedures for establishing prices feasible?

The methodology for establishing prices seems to be a reasonable approach. However, there is a substantial degree of variance in estimating the established price. For this reason, the requirement of a marketing contract is likely more accurate in establishing the price coverage. With the continuation of existing price series, it may become more likely to rely on industry and market data to establish prices.

(3) Recognized Insurance Principles.

a. Over-insurance: Does the policy avoid providing coverage in excess of the expected value of the insured crop?

The submission acknowledges taking a conservative approach when considering uncertain assumptions, such as with price guarantees, which are inspired by developing a viable insurance product. Though there is plenty of uncertainty in prices, there does seem to be an effort to maintain a conservative approach in all aspects. With the high variance in prices and the potential for prices to fall in response to increased supply over the next few years, over-insurance may be possible in the short run. However, allowing for the lower of more recent prices and average prices may mitigate this impact.

b. Losses: Does the policy contain indemnity or other provisions that can be objectively verified by loss adjusters, underwriters, or auditors? If applicable, does the loss adjustment manual provide all the information needed to determine losses consistent with the policy provisions?

The submitted Loss Adjustment Standards Handbook carefully documents the provisions for loss adjusters, underwriters, and auditors and documents the identification of indemnities. Indemnities can be objectively verified in a way similar to many other federal crop insurance policies.

c. Equal Treatment: Is the policy likely to treat all producers equally?

It is possible that acreage limitations may exclude some producers of. That being said, it is important that any insurance policy is written with an adequate amount of data. Producers who qualify for the proposed insurance product appear to be treated equally. Given that best farming practices for hemp are likely to change rapidly over the next few years, it is

recommended that there are flexible standards placed on producers to allow for good farming practices to be employed and not excluded from enrolling in this program.

d. Reasonable Requirements: Will insured's be able to comply with all requirements of the policy?

The requirements of the policy are clearly stated and should be within reasonable compliance for producers of hemp.

e. Waste/Fraud/Abuse: Does the policy create vulnerabilities to waste, fraud, or abuse?

No vulnerabilities to waste, fraud, or abuse are anticipated.

f. Shifting Risk: Does the submission increase or shift risk to another FCIC-reinsured policy?

This submission does not increase or shift risk to any other FCIC-reinsured policy.

(4) Requirements of the Act.

a. Available Coverage: Does this policy provide coverage that, in whole or in part, is generally available from the private sector?

There is no known product in the private market that this submission would be replacing. As the submitters suggest, the only coverage for producers of industrial hemp includes WFRP. There are many limitations with WFRP, which might not make the use of WFRP as a risk management tool less appealing to producers of hemp as the proposed insurance product. Many of the letters of support note support for WFRP, but also suggest that hemp producers would be better served with a single-commodity policy.

b. Legal Authority: Does the policy propose to insure a peril that is not authorized by the Act?

All insured perils listed in the proposal are consistent with the authorization in the Act. I also support of the exclusion of “hot” hemp as an insured peril.

c. Requirements/Current Direction: To the extent of the reviewer’s knowledge, does the policy comply with all requirements of the Act and the public policy goals of FCIC?

As part of the public policy goals of the FCIC, the following policy would “...promote the economic stability of agriculture through a sound system of crop insurance...” Based on my review, and the reading of the certification from the legal counsel, the proposed insurance product appears to comply with all requirements of the Act.

(5) Excessive Risk.

a. Are the risks proposed to be covered excessive such that they encourage adverse selection, moral hazard, or premium rates cannot be adequately or appropriately determined?

There is no indication that the proposed product would introduce any excessive amounts of adverse selection or moral hazard. By maintaining flexibility in the program and balancing the viability of the program with increasing participation in the program, it will likely limit any adverse selection issues.

(6) Underwriting Principles.

a. Does the product follow sound, reasonable, and appropriate underwriting principles?

The underwriting principles and methods that are used are fairly standard with other products. Underwriting principles are developed throughout the proposal with plenty of details and appear to follow sound, reasonable, and appropriate underwriting.

b. If applicable, does the underwriting guide contain all the information needed to determine eligibility for insurance and amount of coverage?

Information regarding eligibility for insurance and coverage, including the requirements for coverage are included in the materials.

(7) New and Improved Coverage.

a. Will the plan of insurance provide a new kind of coverage that is likely to be viable and marketable?

Yes. The only current crop insurance coverage for hemp producers is Whole Farm Revenue Protection. The proposed product would be the first single-crop policy offered to producers of hemp, which would be a substantial improvement in crop insurance offerings. Demand for the proposed insurance product is likely to provide a viable pool of insureds, given the large amount of risk in hemp production and the explosive market expansion.

b. Will the plan of insurance provide crop insurance coverage in a manner that addresses a clear and identifiable flaw or problem in an existing policy?

The lack of a single commodity policy for insuring hemp production is the biggest flaw in the current offerings for hemp producers. This flaw is addressed in this proposal.

c. Will the plan of insurance provide a new or improved coverage for a commodity that previously had no available crop insurance, or has demonstrated a low level of participation or coverage level under existing coverage?

Yes, the proposed plan offers new coverage for a commodity that previously could only be insured under Whole Farm Revenue Protection, which likely limited the usage of crop insurance as a means of risk management.

(8) Delivery System.

a. Does the policy place an unreasonable administrative burden on the insureds, AIPs, or the Federal crop insurance program? Administrative burden includes time, effort, or financial resources expended by persons to generate, maintain, or provide information to or for a Federal agency, including the resources expended for reviewing instructions; acquiring, installing, and utilizing technology and systems; adjusting the existing ways to comply with any previously applicable instructions and requirements; searching data sources; completing and reviewing the collection of information; and transmitting or otherwise disclosing the information.

Given the overlap with hemp production and rotation with other crops, it is very likely that farmers who participate in the proposed policy will have a history of utilizing FCIC crop insurance policies with other crops with a more established program. Because of this, it is likely that insurance delivery systems will already exist in areas where hemp production

takes place. For this reason, it is likely that the current policy will not place an unreasonable burden on resources to maintain a viable insurance product.

b. If applicable, are training plans reasonable and appropriate?

Yes, the training presentation provided include the relevant material needed for insurance providers to deliver the proposed product and for insured agents to understand their insurance policy. Additionally, two letters from AIPs suggest that training programs for agents can be realistically implemented.

c. Are the submitter conclusions on administrative requirements and costs supported by a marketability assessment?

Yes, two marketability assessments are provided that document realistic requirements and costs.

(9) Marketability.

a. Is the submitter's determination of marketability reasonable and supported by the marketability assessment, market research studies, focus group results, and other evidence?

Yes, the marketability assessments and focus group results are consistent with the submitter's assumptions.

b. Is the proposed policy or plan of insurance likely to result in a viable and marketable policy that can reasonably attain levels of participation similar to other like policies?

Based on the focus group discussions, there appears to be considerable interest from hemp producers to have access to a viable crop insurance product. Also, the amount of value in hemp production will likely drive the need for appropriate risk management tools in order to sustain that industry. For these reasons, the proposed policy is likely to result in a viable and marketable policy that can attain reasonable levels of participation.

c. Does the information gathered in the focus groups regarding what the producers are willing to pay support that producers will be willing to purchase the product at the proposed rates?

While producers participating in the focus group did not explicitly state how much they would be willing to pay for such an insurance product, they did appear to indicate that there was a strong interest in the proposed product.

d. Will the product have a significant adverse impact on the crop insurance delivery system? Is this supported by information contained in the marketability assessment?

I do not anticipate any adverse impact on the crop insurance delivery system given the regions existing participation in crop insurance in a range of commodities. No assessment that discusses this particular aspect was identified, though it is not a concern of mine.

e. Is evidence provided that AIPs and their agents will sell and service the product?

Letters of support provided by Crop Risk Services and Diversified Crop Insurance Services indicate a willingness to sell and service the proposed insurance product.

(10) Other Review Areas

a. Special Questions: Questions specific to this review provided by FCIC.

(i) What new insurance challenges might the emerging market for industrial hemp create that the Federal crop insurance program has not encountered before?

There are a few challenges that are unique to the current submission. First, there is typically a reliance on production histories and production expertise prior to establishing new crop insurance products. In this case, hemp production lacks both of these items. The submitters navigate these shortcomings through the use of a scientific biomass model and by using the covariance with hemp and related crops to establish rates for hemp. While these methods are appropriate, the need for these methods is somewhat unique to the proposed product. Because these methods are somewhat new in the methodology for rating crop insurance policies, as far as I can tell, it is recommended that the rate and price methodologies be periodically evaluated to ensure the program is working as it is intended. Second, there is a quickly moving set of federal regulations and a variety of regulations for each state (Cherney and Small, 2016; NCSL, 2019). Hemp is quickly evolving market that is will develop supply chains over the next few years. This regulatory uncertainty poses another layer of risk to hemp producers, but also presents uncertainty for the proposed product. The regulatory uncertainty is unique to hemp, relative to other federally

insurance commodities. Third, there are three separate crop types identified in the proposal (fiber, grain, and CBD), which is more than nearly all crops that have federal crop insurance. The submission established clear delineations between these end uses in rating and pricing methodologies. However, this delineation also warrants future attention to ensure the product is working as intended.

(ii) Would it be appropriate to limit the scope of initial availability of the product due to factors like limited data availability and market volatility? If so, what might the most appropriate method(s) be (e.g. requiring a contract that includes a price for insurability, limiting the product to counties with industrial hemp production history, establishing a cap on acreage eligible for coverage, requiring producer production history for insurability, and/or other methods)?

There is an argument for limiting the scope of initial availability, given the lack of input and production/price data outside of Kentucky, until data are provided in other areas of production. For example, there are already large commitments to producing hemp in Montana and North Carolina, though these states were not represented in the supplied data or listening sessions. This process of data collection would typically precede a new crop insurance offering. However, there is a notable difference in this offering since production is already occurring in other areas where data are scanty or not provided. I would caution against providing insurance in only the markets that have provided production and price data as it would likely provide an unfair advantage to those regions that have crop insurance. Rather than not offering crop insurance in areas where production histories are established, this offering should focus on how to incorporate other crop histories into establishing producer histories. This incorporation of other crops is one strategy utilized in the proposal, which I find to be a preferred method to a limited crop insurance offering. Given the lack of price data and lack of geographical representation of those prices, the use of and requirement of contracts is recommended.

(iii) Could significant variations in the ways industrial hemp types are planted, cultivated, and harvested across the country, and/or the lack of site-adapted good farming practices (GFPs), impact the likelihood of the development of a viable and marketable product?

There is a clear lack established set of good farming practices for hemp production. For example, many land grant universities are establishing hemp production plots for the first or second year. Further, many producers are fairly new to growing hemp. The lack of agreement on how to define good farming practices will complicate the job of the insurance adjuster and claims process for indemnity collection. It is recommended that the RMA provide flexibility regarding good farming practices until more accurate and established

advise can be provided by private and academic research to support site-specific good farming practices. If the regulations around farming practices are less flexible, then there is concern that the proposed product would not present a viable option for hemp producers.

(iv) Could significant geographic differences and/or volatility in prices of the proposed types (i.e. fiber, seed, and/or CBD) impact the submitter's ability to develop adequate pricing or rating methodology for the product, and are the proposed market adjustment factors appropriate?

The price information provided suggests a large amount of regional variation and volatility. Additionally, there is a concentration in the regional source of much of the data, as the majority of both price and production information comes from Kentucky. As long as supply chains remain regional and expanding, these dynamics are likely to persist. Over the long run, it likely that supply chains will become more integrated nationally and volatility will decrease as the market becomes more established. Until such time, the price projections seem to carry substantial volatility and basis. For these reasons, the use and requirement of a marketing contract will help to reduce these concerns. However, past use of marketing contracts has been capped at a percentage of the national established price. Given the large amount of variability and regional distinctions in price, it is recommended that if these caps are established that they allow for premiums to be insured.

(v) Is the methodology for establishing transitional yields (T-Yields) for the product sound, and are differences in yield between varieties within a type sufficient to create a situation of over-insurance when lower yielding varieties are planted follow higher yielding varieties?

The typical process for establishing T-Yields is through the calculation of historical county-level production data. For most counties, this level of hemp production data is not currently available. Thus, the proposed method for establishing T-Yields incorporates a 10-year moving average of the yield estimates coming from the biomass growth model. This process is consistent with the estimation of yields used in the rating process. Most likely, the use of a biomass growth model is inferior to using actual production data. In the early stages of this program, it is likely that the estimates for T-Yields will be estimated with a large amount of variability, during which time it is somewhat likely to result in over-insurance. To prevent against this phenomenon continuing in the future, it would be prudent to replace these T-Yield estimates with actual data, as it becomes available, which is the plan in the proposal.

(vi) Are yield substitution and cups appropriate, given the yield volatility for cannabidiol (CBD)?

The practice of yield substitution and cups seems to be consistent with crop insurance offerings in other crops that also possess a high amount of production variance and would thus be appropriate in the proposed hemp policy.

(vii) Since the product submitted has rotation requirements and industrial hemp is a new crop to the agricultural landscape, would master yields be more appropriate for the insured to more quickly accumulate their own yield history, versus longer reliance on T-Yields?

It is my understanding that nearly all hemp will be produced under a crop rotation system. Given that rotational emphasis in production and the limitation in production histories, it is recommended that master yields are more appropriate for the proposed policy than the longer reliance on T-yields, particularly given the concerns about T-yield calculations that were previously discussed.

(viii) Does the product include adequate appraisal methods for the different planting patterns? Are differences in the various planting patterns and/or seed germination rates significant enough to warrant acreage adjustment consideration?

The proposed product does not appear to distinguish between different planting patterns and methods. It is recommended that as data becomes available that an assessment is made whether different planting patterns warrant a unique production practices and rates. Under the current rating procedure, I don't see enough information to distinguish between those possible production types, nor do I see sufficient existing research that would support such a distinction. As university extension plots develop more field trials and provide possible scientific support for distinctions in production types and farming practices, the RMA should work with this product to maintain a viable insurance product.

(ix) Are the minimum acreage requirements (e.g. 5 acres for CBD and 20 acres for grain and fiber) appropriate, or should they be adjusted upward or downward for any type(s)? Is the proposed minimum distance of 5 miles between CBD fields and other industrial hemp fields appropriate for insurability?

The data provided suggests that the average acreage for CBD and grain/fiber hemp production are 9.78 and 24.54 acres. Using the acreage requirements above, 57.1% of the CBD hemp producers and 74.0% of the grain/fiber hemp producers have smaller operations than the minimum acreage requirements listed above. It is likely that these

plots grow with size as hemp production becomes more established. It is also likely that smaller operations are less likely to purchase crop insurance, even in more established crop insurance markets (Morris, Belasco, and Schahczenski, 2019). However, it is likely that these minimum acreage requirements would exclude a large portion of current hemp producers. For this reason, it is suggested that those acreage requirements are reduced in order to allow for larger adoption of the proposed product.

(x) Is interplanting industrial hemp with another crop considered a good farming practice in any of the areas proposed for coverage eligibility?

The practice of interplanting is recommended by some research outlets, though the ultimate benefits are currently unknown. It is recommended that the RMA consult with university extension offices and await the results of first- and second-year hemp plots to assess the validity of good farming practice claims.

(xi) Should any additional crops be included in the rotation requirements (e.g. crambe, dry beans, safflowers, mustard, or rapeseed)?

I am not aware of any additional crops that should be included in the crop rotation, though I want to reiterate that the RMA should broadly define good farming practices and rotational qualifications until sufficient evidence are provided.

(xii) For CBD production, some processors pay on a converted basis of pounds multiplied by CBD percentage. For loss adjustment and/or APH purposes, should a conversion factor to pounds of production be established for CBD processed on the basis of pounds multiplied by CBD percentage?

It is my understanding that the most common CBD price contracts are based on a fixed amount per percent of CBD per pound of material. For loss adjustment, and to make the unit simpler for calculation, converting the amount of CBD pounds of production would be preferred and more consistently links with measures that can be used for fiber and grain contracts, albeit with different rates. This unit conversion would theoretically be perfectly correlated with the original measure of percent of CBD per pound of material. Thus, the suggested conversion is recommended.

b. Additional Reviewer Observations: The expert reviewer's written report may also include additional information at the discretion of the expert reviewer.

It is clear that the given proposal has moved forward faster than other product submissions and also includes a product that is still in its infant stage in the U.S.

agricultural system. There is much to be learned about hemp production from the collection of producer data, the development of field trials at university extension and research centers, and the establishment of hemp supply chains and markets. It is unique for a product to be proposed without full development of these items, though the current and anticipate widespread and explosive adoption of hemp production supports the demand for the proposed product. However, there are notable shortcomings in the proposal that need to be addressed as the product develops. For example, there are notable regional differences, which are not really captured in this proposal, they need to be better identified in order for the proposed product to be an efficient use of taxpayers' funds while providing and effective tool in risk management. It is recommended that the RMA retain flexibility with this product until the product is further refined to more confidently address the risks faced by hemp producers and allows for the policy to be more adaptable and flexible in addressing these changes in an efficient manner.

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SECTION V. SHORT BIOGRAPHY

Eric J. Belasco, Ph.D.

Eric J. Belasco is currently an associate professor in the Department of Agricultural Economics and Economics at Montana State University. He was previously an assistant professor at Texas Tech University in the Department of Agricultural and Applied Economics. He earned a B.S. degree in Economics from Saint Mary's College of California in 2001, and his M.S. and Ph.D. degrees in Economics from North Carolina State University in 2005 and 2007, respectively.

For his dissertation research, which focused on modeling risk in livestock production systems, Belasco was the recipient of the 2007 Kenneth R. Keller Award for Excellence in Doctoral Dissertation Research and the 2008 Nancy Pollock Graduate School Dissertation Award for the College of Agricultural and Life Sciences. Since then, Belasco has published over 30 peer-reviewed articles that evaluate risk management within the context of livestock marketing, crop insurance performance, moral hazard, financial risk management, insurance markets, and cancer prevention. These articles appear in top agricultural economics and economics journals, including *American Journal of Agricultural Economics* (2009, Forthcoming), *Applied Economic Perspectives and Policy* (2019), *Journal of Agricultural Science* (2012), *Journal of Agricultural and Resource Economics* (2008, 2010, 2013, 2015), *Agricultural and Resource Economics Review* (2012, 2013), *Agricultural Finance Review* (2010, 2015), *Journal of Agricultural and Applied Economics* (2009), and *Managerial Finance* (2012). Additionally, Belasco has managed over \$1 million in grants that focus on individual decisions related to uncertain outcomes within areas of risk management education, risk management in organic and specialty crop production systems, high tunnel production, as well as developing commercially viable bio-based products.

Belasco has also served as a reviewer for various USDA grant programs, including the Specialty Crop Research Initiative and AFRI Economics, Markets, and Trade, as well as continually serves as a reviewer for top agricultural economics journals on papers related to crop insurance and risk management. Belasco also has served in various leadership roles in the SCC-76 multi-state research group focused on risk management research, is the incoming president for the AAEA section Applied Risk Analysis, and President-Elect for the Western Agricultural Economics Association.

**Expert Review Report (Underwriting)
of
Docket No. CI–Section 508(h)
Confidential Submission 0083 10-29-19 03**

**Industrial Hemp
Crop Insurance Program**

**by
William C. (Bill) Jones
Expert Reviewer**

**for the
Federal Crop Insurance Corporation (FCIC)
Board of Directors**

November 25, 2019

Executive Summary

Confidential Submission 0083 10-29-19 03 for the research and development of an Industrial Hemp Crop Insurance Program was submitted by AgriLogic Consulting, LLC, hereafter referred to as “AgriLogic.”

AgriLogic proposes to complete the research and development of an Industrial Hemp Crop Insurance Program that will provide insurance for industrial hemp similar to coverage currently provided for other Actual Production History (APH) yield-based programs. No revenue protection will be provided. Industrial hemp producers currently do not have an insurance program to cover their investments beyond the current Whole Farm Revenue Program (WFRP) which was approved to include industrial hemp beginning with the 2020 crop year. The initial program will be offered in fifteen States where the majority of industrial hemp is being grown currently. The program was designed with future expansion in mind as more information and data become available. All insurable types and varieties of industrial hemp are proposed to be covered. Practices proposed for coverage are irrigated, non-irrigated, organic (transitional) irrigated, organic (transitional) non-irrigated, organic (certified) irrigated, and organic (certified) non-irrigated. AgriLogic proposes the program to be available beginning the 2020 crop year.

The yield-based crop insurance program would provide coverage for the standard perils available for most crop insurance programs and address the risks currently confronted by industrial hemp producers in the United States. The proposal excludes loss of production due to:

- (1) Levels of Tetrahydrocannabinol (THC) in excess of 0.3 percent on a dry weight basis except as otherwise specified in the Special Provisions;
- (2) The insured’s failure to follow the requirements contained in the processor contract;
- (3) Any mature harvested production infected by mold, yeast, fungus, or other microbial organisms after harvest except as specified in section 12(c)(4) of the Crop Provisions (production destroyed in accordance with section 15(j) of the Basic Provisions; i.e., because it contains a substance, or has a condition, that is injurious to human or animal health in excess of the maximum amounts allowed by the Food and Drug Administration, other public health organizations of the United States or an agency of the applicable State);
- (4) Any damage or loss of production due to the inability to market the industrial hemp for any reason other than actual physical damage to the industrial hemp from an insurable cause specified in the Crop Provisions. For example, an insured will not be paid an indemnity if the insured is unable to market due to quarantine, boycott, or refusal of any person to accept production.

AgriLogic’s proposed fifteen program States contain the majority of U.S. hemp acreage (87% of Farm Service Agency (FSA) reported planted acres in 2019). The proposed States are California, Colorado, Illinois, Indiana, Kentucky, Minnesota, Montana, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Tennessee, Virginia, and Wisconsin. Although AgriLogic conducted the actuarial analyses for a broader spectrum of counties in each State, they propose limiting the ultimate offering to those that are authorized by the regulatory authority to grow the crop as specified in the policy provisions. AgriLogic envisions expanding the program to additional areas as they expand the modeling effort to other production regions and as the industrial hemp industry continues to evolve.

Significant weaknesses of the submission are listed below.

(1) An excessive number of errors and inconsistencies with RMA-issued standards required an inordinate number of comments and recommendations for changes to be made to the submission documents. That is reflected in the size of this research report. Although a large number of the recommendations contained in this review were not highly significant, the number of significant errors, omissions, inconsistencies, and overall deficiencies was alarming. Granted, many others could be overlooked, but they ultimately would seriously jeopardize the quality of the product.

(2) Section 7(a)(5) of the Crop Provisions specify that the crop insured is industrial hemp that is planted in accordance with the requirements of the processor contract, and “the production management practices of the processor.” The production management practices don’t appear to be required to be in writing, unlike the processor contract requirements. As a result, toward the end of the insurance period, after most of the risk has been run, it might be determined that the producer failed to comply with a specific production management practice of the processor, and therefore be determined to have grown a crop that is not insured. Processor contract written requirements are one thing to administer; but unwritten production management practices are likely far more difficult to administer and control, particularly when a producer is a processor.

(3) The Crop Provisions (CP) address non-compliance with the rotation requirements specified in the Special Provisions or, if applicable, required by the processor contract, in two separate manners. Section 8(a) of the CP states “we will not insure any acreage of the insured crop not in compliance with the rotation requirements contained in the Special Provisions or, if applicable, required by the processor contract.” Section 10(a) states that the policy covers losses due to “(4) Plant disease, but not damage allowed because of insufficient or improper application of disease control measures and the failure to follow applicable rotation requirements contained in section 8(a)(1) of these Crop Provisions.” If the crop is lost due to disease (but not insufficient or improper application of disease control measures) and the failure to follow applicable rotation requirements contained in the CPs, is it an uninsured loss or uninsured acreage?

(4) Section 10(b)(3) of the CPs state that the policy will not insure against any loss of production due to “Any harvested production infected by mold, yeast, fungus, or other microbial organisms after harvest except as specified in section 12(c)(4) of these Crop Provisions.” Sec. 12(c)(4) states “Any production destroyed in accordance with section 15(j) of the Basic Provisions will not be considered production to count (excludes production that exceeds the THC levels specified in section 10(b)(1) of these Crop Provisions). The CPs don’t address how we handle production that has both conditions; e.g., mandatory destruction due to toxins or mold AND the production has greater than .3 percent THC on a dry weight basis.

(5) Price election provisions in section 3(b) of the CPs were inadequately written,

(6) Provisions were not included that address multiple contracts for a unit type,

(7) There were no references to bypassed acreage, and

(8) Allowing separate basic units by type with different coverage level and price election percentages gives producers a lot of flexibility that may be at the program’s expense.

In summary, significant work is needed to clean up the details, but it can be done.

Research Report

TABLE OF CONTENTS:

- 1 Methodology**
(A description of any methodology used by the expert reviewer to check rates, prices, marketability, or anything else in the submission.)
- 2 Discussion of items in C.4 Description of Work**
(A discussion regarding each of the items listed in C.4 Description of Work. These issues should be clearly discussed, including the rationale for any “yes” or “no” answers and any strengths or weaknesses.)
- 3 Appendix**
(An appendix that includes any supporting material or data. All relevant discussions and analysis should be contained in the body of the report.)
- 4 Biographies**
(Short biographies [not to exceed one page] for each person who took substantial part in the expert review.)

1 Methodology

- (A) My methodology to check rates, prices, marketability, or anything else in the submission included the following specific methods employed in addition to my general review methodology described in (B) below.

(1) I reviewed the USDA's November 5, 2019 recorded webinar that discussed differences between hemp-related provisions of the 2014 Farm Bill and the 2018 Farm Bill and provides details of the requirements included in the interim final rule for hemp published on October 31, 2019. I was seeking information to help determine if the hemp insurance program should be titled "Industrial Hemp" or "Hemp" after seeing the definition of Industrial Hemp in the proposed policy as reading "Plants of the Cannabis sativa species, by type, grown for the production of industrial and consumer products." Because the definition allows the crop to be grown for the production of industrial and consumer products (not just industrial products), and because the 2018 Farm Bill language specifically states "Sec. 518 of the Federal Crop Insurance Act (7U.S.C. 1518) is amended by inserting 'hemp' before 'aquacultural species'," I believe the crop provisions should be identified as "Hemp Crop Provisions" rather than "Industrial Hemp Crop Provisions."

(2) I researched the following Crop Provisions to determine whether all major section headings (designated by a number and period in bold print) should end with a period or not. I discovered this discrepancy while using the Green Pea CP and Sunflower CP to compare language used for other purposes in the Industrial Hemp CP. My quick review of somewhat recent CPs showed the following discrepancies:

<u>CPs With a Period</u>	<u>CPs Without a Period</u>
2017 Green Pea CP	2017 Coarse Grains CP
2020 Texas Citrus Tree CP	2017 Sunflower Seed CP
2019 Cultivated Clam Crop Insurance Provisions	2017 Small Grains CP

(3) I researched the Crop Provisions for a number of processing crops to compare with specific language in the Industrial Hemp CP as appropriate, including the CPs for at least the following crops:

2011 Cabbage, 2014 Camelina, 2016 Clary Sage, 2009 Cultivated Wild Rice, 2017 Dry Peas, 2017 Green Peas, 2020 Hybrid Vegetable Seed, 2017 Mustard, 2017 Machine Harvested Pickling Cucumbers, 2017 Onions, 2017 Popcorn, 2017 Processing Beans, 2010 Pilot Processing Chile Pepper, 2009 Processing Pumpkins, 2005 Processing Tomatoes, and 2019 Sesame.

Specific language that was reviewed included insured crop provisions addressing

(1) the definitions for processor and processor contract, (2) producers who are also a processor, (3) how various CPs for APH crops address multiple contracts within a unit, and (4) insurable acreage for processor contracts that specify an amount of acreage or production (i.e., Cabbage, Camelina, Mustard, and Sesame [acreage-only based, acreage- and production-based which specify a maximum number of acres, and production-only based], Clary Sage and Machine Harvested Pickling Cucumbers [the number of acres planted to fulfill the processor contract], Onions [no such acreage limitations], Cultivated

Wild Rice [Replanting Payments], and Hybrid Vegetable Seed [Uninsurable acreage provisions regarding minimum guaranteed payment for female plant acreage exceeding female plant acreage times amount of insurance per acre, and processor contracts allowing payments to insured without responsibility for costs and financial risk]). This large a number of CPs would not as likely need to be reviewed if the submitter would inform reviewers which crop(s)' CPs were used to develop the submission's CPs.

I reviewed the following APH crops to determine if they specifically (1) require a Base Contract Price (BCP) or similar price in the Processor Contract (PC), (2) address multiple contracts within a **unit**, (3) allow separate units by type, and (4) contain text regarding determining guarantees and prices or price elections (PE) when multiple processor contracts are involved. This would help me determine any existing appropriate provisions that should apply to IH, and whether the proposed CPs contain adequate provisions as submitted. It would also provide information that would be helpful in answering the Special Questions in this review, including "What new insurance challenges might the emerging market for industrial hemp create that the Federal crop insurance program has not encountered before?"

S Recommendation: The FCIC Board of Directors should instruct submitters to identify which crops were used to guide their development of various submission materials, including the Crop Provisions, Special Provisions of Insurance, Loss Adjustment Standards Handbook, and Crop Insurance Standards. This would facilitate the review process and might enhance consistency as appropriate. It should not result in reviewers failing to research other crop materials that they deem are appropriate to review if they are familiar enough with various crops and their relevant insurance policies, procedures, and other materials. I generally choose to lean toward using materials of crops that are more similar to the submission crop in comparing text, followed by crops with more recently revised crop provisions than crops with older crop provisions, because the language tends to evolve over time (and hopefully improve), as provisions are updated over time.

(4) I researched the Special Provisions of Insurance (SPOI) for a number of crops, including processing crops, to compare with specific language in the Industrial Hemp SPOI as appropriate, including the SPOI for at least the following crops:

Green Peas, Sesame, Fresh Market Tomatoes (Dollar Plan) in Palm Beach, FL with 36 T/P's, the same as Industrial Hemp. I also looked at Canola SPOI's for Daviess County, Kentucky, to look at appropriate Type/Practice provisions and crop rotation text since the example SPOI's in the submission were for Adair County, Kentucky, and since Canola is one of the crops the rotation requirements address.

(5) I researched the Camelina SPOI's and CP's to determine (a) if CP language used for producers with more than one base contract price for camelina (and thus receiving a weighted average base contract price) should apply to Industrial Hemp as well if a producer has more than one base contract price, and (b) if language in the Camelina SPOI's regarding price should be used for the Industrial Hemp SPOI's.

(6) I referred to the Risk Management Agency External Standards Handbook (RMA-14050) in my review of the appropriate handbooks contained in this submission, to ensure the submitted handbooks are, as required, consistent with those RMA standards.

(7) I referred to the Camelina CISH, the APH Sesame (Pilot) CISH, and Caneberry CISH while reviewing the Industrial Hemp CISH, because Camelina and Sesame had some similarities to industrial hemp regarding contract requirements, and generally used the Caneberry CISH because it was developed by AgriLogic and appeared to be the crop they might have used as a model, or shared common text with the Industrial Hemp CISH. An example why this is important is in my 6th comment for the Industrial Hemp Crop Insurance Standards Handbook. In this case, looking at the Caneberry CISH, instead of the Camelina CISH and Sesame (Pilot) CISH, their error was more obvious (and thus my recommendation for resolution) when I could see their intent in their previous use of the same text, that wasn't used in the text of the developers of the Sesame CISH and Camelina CISH.

(8) I checked the current LAM and DSSH handbooks to verify the accuracy of the reference to those handbooks for irrigated standards and irrigated practice guidelines on page 1 of the IH LASH, because the DSSH wasn't referred to in the Caneberry LASH.

(B) The general approach I used in this review is as follows:

(1) I conduct a cursory review of the material to:

- (a) become familiar with the primary intent of the product and the nature of the submitted material;
- (b) ensure that none of the material appears to be missing or miscopied;
- (c) determine if additional support may be needed to properly complete the review; and
- (d) estimate if adequate time and resources are available to complete the review without making significant adjustments to resources and schedules.

(2) I prepare a draft review report and other materials that may be necessary to complete and transmit the review based upon templates I have used on other reviews. The template contains all questions and some expected general responses for efficiency gains. The draft report template portions that will not change for specific reviews (such as most of the cover page, the general review methodology, the review questions, and my biography) are in black (automatic) font. The rest of the template is in red font, and as I conduct the review and update the report I change the font color to automatic (black) for text that I am confident will not change as I progress toward a final copy of the report. If issues come up that may impact a portion of the report, I may change the font back to red until those issues are resolved, then the text is changed back to black. This helps considerably to sort through a number of issues

as is often needed, and yet stay organized. I often have to develop a prioritized Task List section at the end of the report to ensure that important tasks or questions that become apparent during the review are not forgotten or overlooked because I am concentrating on other issues at the time. I generally prioritize the tasks to ensure that the most critical tasks will be completed in the event time or other resource constraints do not allow all tasks to be completed. More critical or time-sensitive tasks are given higher priority as tasks are added, and tasks are removed when they are completed. When I finalize the report for submission I delete the Task List, although the Task Lists would be available on earlier versions of the report if needed for some reason. I save numerous versions of the report as I conduct the review, and this particularly helps if portions change because of something discovered or determined later in the review.

- (3) I identify the anticipated order of review of the material, depending upon the nature of the product and materials and the relative importance of the components of the material. This usually results in the general information being the first component to review, followed by a cursory review of the supporting documentation and data analysis to determine which material will likely need greater emphasis or time. This also facilitates requesting in advance, any data or information that will have to be obtained from other parties.
- (4) I make comments and recommendations regarding the submitted material as I review the entire package in the order I determine to be appropriate for the submission. The comments and recommendations are later used in addressing the requirements of Section C.4. (Description of Work) of the Task Order (found in section 2 of the report). Subsection 2A(10)(b)(i) of the report is where I include comments and recommendations on the actual material included in the submission. Some comments found in this subsection may overlap or duplicate information provided in response to the questions from Section C.4. (Description of Work) of the Task Order (found in the earlier subsections of section 2 of the report).

Page references identify the page number printed in the lower right corner of each page of the text as it appears in the specified submission documents that were made available through SharePoint, unless otherwise specified herein.

- (5) In addition to reviewing the related policies and procedures included with the proposal, I will refer to and/or review others that might be impacted but were not included in the material that I received. Simply referring to related materials sometimes results in my finding errors or concerns with them. I address such concerns [in subsection 2A(10)(b)(ii) for this review] at the end of subsection 2A(10), Other Review Areas.
- (6) I contact appropriate parties and review appropriate material from various sources, including the internet, to obtain a better understanding of the industries and issues most relevant to the review (e.g., specific crop industries) and/or to obtain specific information that may be helpful in completing the review (e.g., acreage or production

- data that may not have been provided in the submitted material). I may not cite these contacts and this information in the review report even though they are instrumental in shaping the outcome of the review and the related recommendations. I carefully protect the confidentiality of the submission when contacting outside parties and obtaining information.
- (7) I spot-check or completely review, as appropriate, various tables and calculations to ensure an acceptable degree of comfort with their accuracy and/or reliability.
 - (8) I review any appropriate FCIC program experience relevant to the product.
 - (9) As I identify any concerns with tables or other information that are not resolved immediately, I flag those concerns and may add them to the Task List to ensure they are addressed before the review is completed.
 - (10) I update the Research Report as I review the material and apply a number of specific steps and techniques to ensure that I revise and validate material in the report throughout the process, without creating excessive redundancy or duplication due to the process. Upon completing the Research Report, I review the entire report, correct errors, resolve inconsistencies, and finalize and transmit the report and other appropriate documents.
 - (11) I organized this Research Report with items (1) through (10) in section C.4. (Description of Work of the Task Order) shown in bold print, followed immediately by my discussion of the issues.
 - (12) I follow many comments with recommendations preceded by “S Recommendation” or “NS Recommendation” descriptors for substantive recommendations or non-substantive recommendations, respectively, in the left margin preceding such recommendation statements throughout the report. In some cases the “S Recommendation” or “NS Recommendation” descriptor follows a number of recommendations with the same descriptor. In that case, that descriptor applies to all preceding recommendations up to the previous descriptor. If in question, recommendations are to be considered as “S Recommendations.” While some of the changes I recommend in a review are non-substantive, I include them in an effort to improve the overall product or the submitter’s presented material. Because I don’t fully know how or when the submitter’s material may be used (as in the development of presentations, procedures, and training or media material; or for subsequent submissions), I sometimes recommend corrections or identify deficiencies that may not be substantial to the review, but that I would prefer to be identified if it was my submission. I hope that identifying non-substantive recommendations in my reviews decreases the likelihood that future products will contain the same or similar errors, omissions, or other concerns, ultimately resulting in increased efficiency. While identifying non-substantive recommendations requires extra time and effort from me (and sometimes from other people involved in the process), I try to include only those

recommendations I expect to have greater total benefit than cost or that I expect the submitter would want to act upon for future use or for other reasons.

2 Discussion Regarding Each of the Items Listed in C.4. Description of Work

A Items within the scope of the expert reviewer's knowledge that are required to be addressed in the written report

Some comments or recommendations below may refer to material in the submission files. Page references to the submitted material are identified as shown on each page in the respective identified files. Any deviation from this will be identified with a reference to the specific material.

(1) Protection of the Interests of Agricultural Producers and Taxpayers

(a) Meaningful Coverage: Does the policy provide meaningful coverage that is of use to many producers, and is the coverage provided in a cost-efficient manner?

Yes, the policy provides meaningful coverage that should be of use to many industrial hemp producers, and provides it in a cost-efficient manner. Utilizing the APH plan is a relatively cost-efficient, logical, and universally-understood approach for providing this important protection. That in turn, should facilitate a fairly high degree of understanding of the program by agents, AIPs, RMA, and producers in the policies and procedures they will need to understand, implement, and work with.

(b) Policy: Is the policy clearly written so that producers will be able to understand the coverage that they are being offered?

Yes, in general, the policy is written in such a manner that producers will be able to understand the coverage that they are being offered. I have identified in my review, areas of concern regarding some of the policy provisions that need further clarification and in some cases, modification.

Does the policy language permit actuaries to form a clear understanding of the payment contingencies for which they will set rates?

Yes, the language is generally clear and should promote a clear understanding of the payment contingencies for which actuaries will set rates. Again, my review of the Crop Provisions identifies some areas of concern that need to be addressed.

Is it likely that an excessive number of disputes or legal actions will arise from misunderstandings over policy language?

No. I don't believe an excessive number of disputes or legal actions should arise from misunderstandings over the policy language; however, I have identified a number of concerns that, if appropriately addressed, should minimize the exposure to such concerns.

(c) Calculations: Is the calculation for determining liability (i.e., the amount of coverage) clearly stated and supported by an example?

Yes, the calculation for determining liability (i.e., the amount of coverage) is clearly stated and supported by examples.

Is the calculation for determining the amount of premium clearly stated and supported by an example?

Yes, the calculation for determining the amount of premium is clearly stated and supported by examples.

Is the calculation for determining the amount of indemnity clearly stated and supported by an example?

Not entirely. Although the calculation for determining the amount of indemnity is clearly stated and supported by examples in the Crop Provisions, the Industrial Hemp Loss Adjustment Standards Handbook failed to provide a completed production worksheet for fiber. The completed Production Worksheet for CBD did not contain complete information on the production to count (failed to show where a substantial amount of production came from). I addressed this in my report, along with a number of other concerns regarding form entries and completion instructions for the loss adjustment process.

(d) Marketplace Issues: Could the product adversely affect the agricultural economy or the general marketplace of the crop that is proposed for coverage, or of other crops or areas?

Yes. This product could adversely affect the agricultural economy or the general marketplace of industrial hemp, particularly in areas where significant increases in production might occur, as there has already been some downward pressure on prices. However, as the industry develops and more uses are in fact realized, the adverse impacts should be minimized by the market opportunities that continue to expand. There will be increases in producers choosing to grow industrial hemp, but most will not likely switch acreage entirely to industrial hemp; rather they will gradually move toward the crop as they learn more about it and gain experience on a smaller scale. Many factors will play into those determinations, so it should not have significant negative impacts.

Does the product exclude or discourage participation of any portion of the industry?

Yes. The minimum acreage requirements could, and likely will, exclude participation by smaller producers in the industry. However, the program should encourage participation, particularly for higher-cost operations.

Does the product contain a consultation report that supports this conclusion?

No. I found no reference to a consultation report that supports this conclusion.

(2) Actuarial Appropriateness

(a) Rates

Since this is an underwriting review I can only make the following statements within the scope of my knowledge, and within the limited hours of the task order for a significant amount of material to review, particularly with the 12 additional special questions.

(i) Data: Is adequate, credible, and reliable rate-making data available?

Yes, I believe adequate, credible, and reliable rate-making data is available from the different sources AgriLogic used in their methodology.

Is the data used for the analyses appropriate, reliable, and the best available?

Yes, the data appeared to be the best available, appropriate, and reliable.

Is it likely that the data will continue to be available?

Yes, the data will continue to be available, and additional sources will become available as the program gains experience.

Is the data vulnerable to tampering if the proposed policy is approved?

No, the data does not appear to be vulnerable to tampering if the proposed policy is approved.

(ii) Assumptions: Are the explicit and implicit assumptions used in the rating process reasonable?

This is not within the scope of my underwriting review, but the assumptions appeared to be reasonable.

(iii) Rating Methodology: Is the actuarial methodology for the rates correct and appropriate for the policy?

Not applicable for this underwriting review.

Will the methodology result in actuarially sound rates?

Not applicable for this underwriting review.

Are the proposed premium rates likely to cover anticipated losses and a reasonable reserve?

Not applicable for this underwriting review.

(iv) Experience: Does experience from prior years and relevant crops and areas support the validity of the proposed rates?

Not applicable for this underwriting review.

Is the relation to any reference crop or area supported and logical?

Yes, the relation to reference crops and areas is supported and logical.

(v) Do models or simulations validate the proposed rates for the risk to be covered?

Not applicable for this underwriting review.

(b) Prices

(i) Price Data: Is adequate, credible, and reliable pricing data available?

Although the data appeared to be credible and reliable, it was insufficient to be considered adequate.

Is the data used for pricing appropriate, reliable, and the best available?

Yes, I believe the data used for determining the prices is appropriate, reliable, and the best available.

Is it likely that the data will continue to be available?

It is highly likely that the data that was used to determine the prices will continue to be available, and even more likely that the data sources and volume will increase significantly as the program gains experience .

Is the data available when it is needed and does it represent an appropriate price for the product?

Yes, it appears the data will be available when it is needed and represents an appropriate price for the product.

Is the data vulnerable to tampering if the proposed policy is approved?

No, I do not believe the data is vulnerable to tampering if the proposed policy is approved.

(ii) Pricing Methodology: Is the methodology or method used to determine the prices appropriate for the proposed policy?

Yes, the methodology appears to be appropriate for the proposed policy.

In the case of price or revenue policies, are the mechanisms for establishing price clearly stated in the materials?

Although this is an APH yield policy, the mechanisms for establishing price elections are clearly stated in the materials.

Is the proposed methodology or procedures for establishing prices feasible?

Yes, the proposed methodology or procedures for establishing the prices is feasible.

(3) Recognized Insurance Principles

(a) Over-insurance: Does the policy avoid providing coverage in excess of the expected value of the insured crop?

Yes, I believe the coverage levels, price election percentages, contract price provisions, and market adjustment factors, in combination, avoid providing coverage in excess of the expected value of the insured crop.

(b) Losses: Does the policy contain indemnity or other provisions that can be objectively verified by loss adjusters, underwriters, or auditors?

Yes, it appears that the appropriate indemnity and other provisions can be objectively verified by loss adjusters, underwriters, or auditors. This program does not introduce new indemnity or other provisions that loss adjusters, underwriters, or auditors will be unable to objectively verify.

If applicable, does the loss adjustment manual provide all the information needed to determine losses consistent with the policy provisions?

Yes, all the necessary information is provided to determine losses consistent with the policy provisions.

(c) Equal Treatment: Is the policy likely to treat all producers equally?

No. The minimum acreages for insurability can, and likely will, make some small growers unable to participate in the program and insure their crop(s). Otherwise, I see no reason to believe the policy will fail to treat all producers equally.

(d) Reasonable Requirements: Will insureds be able to comply with all requirements of the policy?

Yes, **insureds** should be able to comply with all requirements of the policy. There are no requirements the insureds must comply with beyond those they likely already experience. Growers who do not routinely contract their acreage or production with a processor and choose to continue to not do so, or who do not grow an approved variety, on the other hand, will not be able to **become** insureds.

(e) Waste/Fraud/Abuse: Does the policy create vulnerabilities to waste, fraud, or abuse?

Section 7(a)(5) of the Crop Provisions specifies that the crop insured is industrial hemp that is planted in accordance with the requirements of the processor contract, and “the production management practices of the processor.” The production management practices don’t appear to be required to be in writing, unlike the processor contract requirements. One downside might be that toward the end of the insurance period, it can be determined that the producer failed to comply with a specific production management practice of the processor, and therefore be determined to have grown a crop that is not insured. Processor contract written requirements are one thing to administer; but unwritten production management practices are likely far more difficult to administer and control. I raised this concern in my report, along with a few other concerns that should be able to be resolved satisfactorily.

(f) Shifting Risk: Does the submission increase or shift risk to another FCIC-reinsured policy?

No, the submission does not increase or shift risk to another FCIC-reinsured policy.

(4) Requirements of the Act

(a) Available Coverage: Does this policy provide coverage that, in whole or in part, is generally available from the private sector?

No, this coverage is unavailable in the private sector. However, crop hail coverage was made available to growers for 2019 by most Approved Insurance Providers (AIPs).

(b) Legal Authority: Does the policy propose to insure a peril that is not authorized by the Act?

No, the perils proposed under this policy are authorized by the Act and are currently provided for producers of other crops.

(c) Requirements/Current Direction: To the extent of the reviewer’s knowledge, does the policy comply with all requirements of the Act and the public policy goals of FCIC?

Yes. I found no provisions of the policy that fail to comply with all requirements of the Act. The proposed policy enhances the risk management alternatives available to agricultural producers, a stated goal of the Risk Management Agency. Approval of the program will enable the FCIC to further its mission of “...promoting the economic stability of agriculture through a sound system of crop insurance...” and RMA’s vision of “...serving America’s agricultural producers through effective, market-based risk management solutions” by expanding the scope of risk management tools available to agricultural producers, and particularly to industrial hemp growers. RMA would benefit from the availability of this program by further meeting their mission of “...promoting, supporting and regulating sound risk management solutions to preserve and strengthen the economic stability of America’s agricultural producers.” Development of this program that has been requested by industrial hemp growers and

organizations supports RMA's vision to secure the future of agriculture by providing world class risk management tools to rural America.

(5) Excessive Risk

Are the risks proposed to be covered excessive such that they encourage adverse selection, moral hazard, or premium rates cannot be adequately or appropriately determined?

No, the risks proposed to be covered should not encourage adverse selection, moral hazard, or premium rates that cannot be adequately or appropriately determined. On page 20 of their main submission document AgriLogic stated "One potential opportunity for moral hazard would be not reporting all harvested acreage, which could allow a producer to obtain an insurance payment based on low yield." They did not cite any reasons this would be more likely for industrial hemp than other APH products; however, it is likely due to higher crop values per acre.

S Recommendation: RMA should verify the reasoning behind AgriLogic's observation of this moral hazard potential and take any appropriate action.

(6) Underwriting Principles

(a) Does the product follow sound, reasonable, and appropriate underwriting principles?

Yes, this product follows sound, reasonable, and appropriate underwriting principles.

(b) If applicable, does the underwriting guide contain all the information needed to determine eligibility for insurance and amount of coverage?

Yes, the proposed Industrial Hemp Crop Insurance Standards Handbook and Loss Adjustment Standards Handbook contain all the information to determine eligibility for insurance and amount of coverage as well as appropriate provisions for adjusting losses.

(7) New and Improved Coverage

(a) Will the plan of insurance provide a new kind of coverage that is likely to be viable and marketable?

Yes. The demand for this product appears to be significant, and the product should receive great support from the industry, the banking community, and the marketplace in general.

(b) Will the plan of insurance provide crop insurance coverage in a manner that addresses a clear and identifiable flaw or problem in an existing policy?

This is not applicable, because this is not an existing policy.

- (c) Will the plan of insurance provide a new or improved coverage for a commodity that previously had no available crop insurance, or has demonstrated a low level of participation or coverage level under existing coverage?**

Yes, the plan of insurance provides a new coverage for a commodity that previously had no available crop insurance.

(8) Delivery System

- (a) Does the policy place an unreasonable administrative burden on the insureds, AIPs, or the Federal crop insurance program? Administrative burden includes time, effort, or financial resources expended by persons to generate, maintain, or provide information to or for a Federal agency, including the resources expended for reviewing instructions; acquiring, installing, and utilizing technology and systems; adjusting the existing ways to comply with any previously applicable instructions and requirements; searching data sources; completing and reviewing the collection of information; and transmitting or otherwise disclosing the information.**

No, the policy does not appear to place an unreasonable burden on the insureds, AIPs, or the Federal crop insurance program. The impact on the industry from an administrative and training perspective is anticipated to be minimal. Current industry staff (including agents, adjusters, and RMA staff as well as others) should be able to implement the program relatively easily.

- (b) If applicable, are training plans reasonable and appropriate?**

Yes, the Training Presentation appears to be reasonable and appropriate, but very little else was provided regarding actual training plans. However, I noted that one industry representative indicated “We hold annual spring update trainings for our sales and underwriting staff during December and January. Training for claims personnel is held in January or February. Assuming the Hemp policy will be an APH plan with an 11/30 sales closing date, most of the training could be done as part of the spring update training for both the sales team and the loss adjustment team.” The sales closing dates are February 28 in California and North Carolina, and March 15 in all other States. That won’t allow much time for the materials to be developed and training sessions to be planned for this first year.

- (c) Are the submitter conclusions on administrative requirements and costs supported by a marketability assessment?**

Yes, two separate Marketability Assessments supported the conclusions on administrative requirements and costs.

(9) Marketability

- (a) Is the submitter’s determination of marketability reasonable and supported by the marketability assessment, market research studies, focus group results, and other evidence?**

Yes. Two separate Marketability Assessments supported the determination of marketability along with a number of Listening Sessions and report.

(b) Is the proposed policy or plan of insurance likely to result in a viable and marketable policy that can reasonably attain levels of participation similar to other like policies?

Yes, there is no reason to believe the proposed policy and plan of insurance will fail to result in a viable and marketable policy that can reasonably attain levels of participation similar to other like policies.

(c) Does the information gathered in the focus groups regarding what the producers are willing to pay support that producers will be willing to purchase the product at the proposed rates?

The information from the Listening Sessions did not appear to provide information regarding what producers are willing to pay.

(d) Will the product have a significant adverse impact on the crop insurance delivery system?

No, it will not. The impact on the industry from an administrative and training perspective is anticipated to be minimal. Current industry staff (including agents, adjusters, and RMA staff as well as others) should be able to implement this program relatively easily.

Is this supported by information contained in the marketability assessment?

Yes. Two separate Marketability Assessments supported the fact that the impact on the industry from an administrative and training perspective is anticipated to be minimal

(e) Is evidence provided that AIPs and their agents will sell and service the product?

Yes. Two separate Marketability Assessments indicated that AIPs and their agents will sell and service the product.

(10) Other Review Areas

(a) Special Questions: Questions specific to this review provided by FCIC.

(i) What new insurance challenges might the emerging market for industrial hemp create that the Federal crop insurance program has not encountered before?

There is a potential significant lack of processing capability to handle a crop that producers and their support industries and institutions such as Extension and universities are relatively new to, particularly in some States more than others. This challenge is greatly dependent upon how much acreage and production the potential processors attempt to take

on as the industries and resources develop. It could result in processors bypassing acreage because of their inability to handle the product.

A risk that is difficult to predict at this time is the potential for production to be rejected by the processor due to THC levels as well as other substances or conditions that may be injurious or detrimental to the end use of the product. Exacerbating this potential problem is the potential for production to be rejected for both THC levels and other substances or conditions, and I don't believe the submission addresses that issue, unless the provisions of section 12(c)(4) of the submitted Crop Provisions are determined to do so adequately. Those provisions read "Any production destroyed in accordance with section 15(j) of the Basic Provisions will not be considered production to count (excludes production that exceeds the THC levels specified in section 10(b)(1) of these Crop Provisions)." My review of this statement reads as follows:

"In section 12(c)(4), address action that will be taken if both conditions apply; e.g., the production is in excess of .3% THC (which would not be an insured loss of production), but it also has another substance or condition that is injurious to human health in excess of the maximum allowed by the FDA or other U.S. public health organizations or State agencies, and the insured must destroy the insured crop or crop production.

Also, give consideration to changing the closing parenthetical clause in section 12(c)(4) to read "(this provision does not apply to production that is destroyed because it exceeds the THC levels specified in section 10(b)(1) of these Crop Provisions)."

Another challenge that has not been encountered before is the significantly greater potential for cross-pollination to affect the acceptability of the crop by the processor. While this is, and has been an issue that has been managed for specific insurable crops in the past, it has never had the potential to affect the program to the extent that could be realized with this crop, due to the myriad end-uses of the crop and the widespread adaptability for it to grow and become a problem. Although the adaptability of hemp to grow and be used for multiple purposes can be a significant risk to its use as a single purpose, such as for CBD, the fact that the crop could have significant use for alternative purposes can mitigate the risk for the producer if handled properly. For example, if a producer's crop is damaged to the extent that the production to count for the intended purpose is greatly reduced, the ability to market the crop for other uses, could significantly reduce the indemnity that would have been paid, provided that the crop provisions properly allow those alternative uses to be used to increase the production to count.

Allowing basic units by type along with different coverage levels and price election percentages by type is a combination that doesn't appear to be available for any other crop programs. This exposes the program to additional risk by producers having the best knowledge of the risk exposure for their various acreages and the types they will be producing. They will essentially be given greater opportunity to manage their risk, which they should be expected to do, for their benefit. That risk management opportunity can impact the program's actuarial soundness.

Section 10(b)(1) of the CP provides that "we will not insure against any loss of production that is due to levels of THC in excess of 0.3 percent or more on a dry weight basis except

as otherwise specified on the Special Provisions.” The General statements on page 3 of 5 in the proposed Special Provisions state “In accordance with section 10(b)(1) of the Crop Provisions, a THC limit of above .3% is allowed if authorized by the applicable governing authority for the local (*sic*) in which the insured crop is grown. Any production exceeding the applicable limit will be considered lost due to an uninsured cause of loss.” This provides flexibility among the various “applicable governing authorities” to vary the level of THC that would make the loss of such production (due to that cause) uninsured. This is generally not a consideration for other crops for which Federal standards are generally used, although some programs utilize State standards. It adds another degree of complexity to the program, requiring vigilance and appropriate reaction regarding THC “tolerance levels” of the various governing authorities.

Section 12(c)(3) states “Mature grain production and harvested CBD production will be adjusted to a moisture content specified in FCIC approved procedures.” Such adjustments are routinely included in the Crop Provisions and/or Special Provisions. It is a greater challenge to establish the appropriate moisture adjustments in the absence of uniform standards that have generally been available for other programs that have been developed and include similar adjustments (at least to grain, but not CBD). Since AgriLogic established grain moisture adjustments exceeding 9%, it seems that it would be best to show those adjustments on the Special Provisions, unless uncertainty requires that they be specified in FCIC-approved procedures that will be easier to change if necessary.

The Industrial Hemp Example Contract (file 04.04 of the submission documents) contains an Item 1 requirement for the farm “to insure the hemp biomass in the name of Farm and _____” (the processor). This seems to be problematic by suggesting the need for a Transfer of Coverage (which has to be on our form and must be approved in writing by us) or an Assignment of Indemnity form (also on our form), as appropriate, to comply with that requirement. While other processing crops that require processor contracts contain language that may be similar to this, it is not a routine practice experienced with most crop insurance programs. As I recommended in my review of that file, RMA should consider consulting legal counsel regarding this statement on the form.

(ii) Would it be appropriate to limit the scope of initial availability of the product due to factors like limited data availability and market volatility?

The initial availability of the program across a diverse area of the county provides a degree of risk distribution that normally would, all else being equal, enhance the stability and strength of the program. If limits were considered, it would be best to maintain the broad distribution provided by the projected States, and consider limitation on the basis of the counties, particularly avoiding areas of counties where no hemp acreage has been experienced.

If so, what might the most appropriate method(s) be (e.g. requiring a contract that includes a price for insurability, limiting the product to counties with industrial hemp production history, establishing a cap on acreage eligible for coverage, requiring producer production history for insurability, and/or other methods)?

While the methods identified above are potentially viable options, any limiting of the availability of insurance would likely also limit the availability of production and processing experience, and I don't believe would be in the best interest of Congress's intent or the industry's potential, and would only hold back the opportunity to allow the industry and the program to reach their potential. One of the great strengths of the Federal crop insurance program is the widespread distribution of the program among a significantly diverse set of crops and production areas. The initial magnitude of this product will not jeopardize the overall FCI program. Limiting the program's scope beyond the limits of the submission would likely jeopardize the potential of the industry and receive considerably more criticism than would be received in the event a large number of diversely-spread producers' were compensated for their legitimate hemp losses.

(iii) Could significant variations in the ways industrial hemp types are planted, cultivated, and harvested across the country, and/or the lack of site-adapted good farming practices (GFPs), impact the likelihood of the development of a viable and marketable product?

Although those factors certainly create challenges, I don't believe they impact the likelihood of the development of a viable and marketable product to a significant extent, and certainly not to the extent that development efforts should be restrained.

(iv) Could significant geographic differences and/or volatility in prices of the proposed types (i.e. fiber, seed, and/or CBD) impact the submitter's ability to develop adequate pricing or rating methodology for the product, and are the proposed market adjustment factors appropriate?

I do believe significant geographic differences and/or volatility in prices of the harvested commodities (i.e. fiber, seed, and/or CBD) have created obstacles that AgriLogic has had to clear, and will continue to face, in order to develop adequate pricing or rating methodology for the product. However, with the support of the entire industrial hemp industry, I believe AgriLogic has addressed many of the problems as they have proceeded, and will continue to resolve the problems and issues presented by such obstacles. The benefit of this degree of support in an emerging industry such as industrial hemp, with such significant potential for the future in such diverse production areas, should not be underestimated. This is significantly different than commodities that have been grown domestically for decades without the benefit of crop insurance (insurance that has become more accepted than in the past and is now often required). The contacts AgriLogic has worked with in developing the prices, will not lessen the exposure to potentially significant fluctuations; however, AgriLogic will be in a position to utilize the significant expertise of those contacts to monitor the expectations of the prices in advance of establishing the upcoming year's price elections. While it may be easy to point to extreme fluctuations in industrial hemp prices, one must realize that significant price fluctuations often exist for even our more "stable" grain and fiber crops that can be insured under various yield and revenue plans of insurance. AgriLogic has employed various methods in their rating and pricing methodologies to set rates and prices that should prove to be acceptable for both the industrial hemp industry and the long-term actuarial soundness of the program.

I have no reason to believe the proposed market adjustment factors are inappropriate for the program, and fully expect that AgriLogic will be watching the trends very closely in order to make any appropriate adjustments that are deemed necessary as experience is gained and resources (such as the pricing contacts and tools) are utilized to their fullest extent.

- (v) **Is the methodology for establishing transitional yields (T-Yields) for the product sound, and are differences in yield between varieties within a type sufficient to create a situation of over-insurance when lower yielding varieties are planted follow(ing) sic higher yielding varieties?**

Not applicable for this underwriting review.

- (vi) **Are yield substitution and cups appropriate, given the yield volatility for cannabidiol (CBD)?**

Time did not allow the opportunity to review this.

- (vii) **Since the product submitted has rotation requirements and industrial hemp is a new crop to the agricultural landscape, would master yields be more appropriate for the insured to more quickly accumulate their own yield history, versus longer reliance on T-Yields?**

Not applicable for this underwriting review.

- (viii) **Does the product include adequate appraisal methods for the different planting patterns?**

No. The appraisal methods in the IH Loss Adjustment Standards Handbook should provide greater variability for stand reduction and plant damage appraisals between low-density plantings and high density plantings. With such a learning curve to overcome, companies should be encouraged to take more samples than the required minimum number. However, encouragement probably wouldn't realize many results. AgriLogic should give serious consideration to increasing the sampling requirements for this crop as recommended in the review of the Industrial Hemp LASH, at least until significant experience has been gained and the methods have been determined to be acceptable for determining accurate potential production amounts. This might require some testing under appropriate conditions where a portion of the crop could later be harvested (or appraised under the Seed Count method) to compare with the earlier appraisals.

Are differences in the various planting patterns and/or seed germination rates significant enough to warrant acreage adjustment consideration?

I do not believe differences in the various planting patterns and/or seed germination rates are significant enough to warrant acreage adjustment consideration, at least on a proactive basis without sufficient supporting data. Any significant impacts should be appropriately addressed through good farming practice considerations as data, or lack thereof, warrants.

- (ix) **Are the minimum acreage requirements (e.g. 5 acres for CBD and 20 acres for grain and fiber) appropriate, or should they be adjusted upward or downward for any type(s)?**

Yes. On page 11 of the Listening Sessions Report, AgriLogic stated that Mr. Conyea and Mr. Goldman agreed that ten net share acres would be a reasonable minimum for the program. I have not found evidence that provides sufficient justification to change the requirements.

Is the proposed minimum distance of 5 miles between CBD fields and other industrial hemp fields appropriate for insurability?

Yes. On page 27 of the Listening Sessions Report, AgriLogic referred to buffer zone comments indicating that seed and fiber fields will pollinate CBD fields, Murray State is doing research on buffer zones, the AOSCA is using three mile buffers, and there are no studies proving pollen can travel further. I have seen nothing that warrants changing the distance.

- (x) **Is interplanting industrial hemp with another crop considered a good farming practice in any of the areas proposed for coverage eligibility?**

Yes, on page 18 of the Listening Session Report file 04.03, Jay Noller with Oregon State University (OSU) recommends interplanting with alfalfa. On page 23 of the Listening Session Report, AgriLogic stated that Ed Wasson of Greenhouse Growing Systems spoke about interplanting hemp into alfalfa for weed suppression.”

- (xi) **Should any additional crops be included in the rotational requirements (e.g. crambe, dry beans, safflowers, mustard, or rapeseed)?**

In my review comments for page 5 of 5 of the Special Provisions, I recommended the following:

In the second paragraph under “**Insurance Availability**,” consider adding other rotation crops that would exclude industrial hemp from insurance. Such additional crops, taken from the canola SPOI, include crambe, garbanzo beans (chickpeas), and lentils (all of which prohibit canola from insurability if planted any of the preceding two crop years).

The Dry Peas SPOI’s also contain a rotation crop statement reading “This statement applies to field peas, lentils, and chickpeas grown either as a grain, cover crop or in a cover crop mixture.”

AgriLogic should contact the various land grant universities and Extension service to verify the appropriate crops and durations (years previously planted) to be included in the rotational requirements as they finalize their documents and as the various researchers have had more time to solidify their recommendations.

- (xii) **For CBD production, some processors pay on a converted basis of pounds multiplied by CBD percentage. For loss adjustment and/or APH purposes, should a conversion**

factor to pounds of production be established for CBD processed on the basis of pounds multiplied by CBD percentage?

Where processors pay on a converted basis of pounds multiplied by CBD percentage, if producers have adequate data to support doing so, the Special Provisions should provide a means for insuring them on this basis (i.e., for APH and loss adjustment purposes). If this action is taken, the language in section 12(c)(3) of the proposed CP would need to be changed.

(b) Additional Reviewer Observations: The expert reviewer’s written report may also include additional information at the discretion of the expert reviewer.

(i) Comments and Recommendations Regarding the Submitted Material

Listed below are comments or recommendations regarding the submitted material, in the order as it appears in the specified submission documents.

Page references identify the page number printed in the lower right corner of each page of the text as it appears in the specified submission documents that were made available through SharePoint, unless otherwise specified herein.

(A) Comments and recommendations regarding file *00.01 Industrial Hemp 508(h) Submission Document (1)*.

The cover page of AgriLogic’s main submission document states it is a Section 522(b) Concept Proposal 147.

NS Recommendation: AgriLogic might want to be aware of this and take any appropriate action.

(B) Comments and recommendations regarding file *04.01 Industrial Hemp Marketability Assessment – Diversified.pdf*.

Ron Miiller stated on page 2 of Diversified’s Marketability Assessment “Assuming the Hemp policy will the opportunity to do as Mr. Miiller stated; i.e., hold combined sales and loss adjustment training be an APH plan with an 11/30 sales closing date, most of the training could be done as part of the spring update training for both the sales team and the loss adjustment team.” The sales closing dates are February 28 and March 15, however that may allow Diversified on this program in the spring, provided they are held early enough before the sales closing date. A November 30 sales closing date would not have allowed that, and it even seems the February and March dates would make it difficult.

NS Recommendation: No action needed; however, AgriLogic might want to be aware of this for planning purposes.

(C) Comments and recommendations regarding file *04.04 Industrial Hemp Example Contract*:

Note: I did not see any information indicating how the example contract was obtained. However, if it is intended to be used as an example of an acceptable processor contract, some of the following items are recommended with that objective in mind.

(1) Consider changing the heading to read “HEMP PRODUCTION, PROCESSOR, AND SALES CONTRACT” to better reflect its use for insurance purposes.

(2) Consider removing the references to “an Oregon limited liability company” unless it is determined to be legally necessary and always the case.

NS Recommendation: AgriLogic may want to make these changes.

(3) In line 1 of item 1, either delete “to” in each of the farm’s stated obligations after “to grow and harvest the crop,” or insert “to” at the beginning of all stated obligations after “to ensure the crop passes” Also, clean up the language in the last stated farm obligation that reads “and cover cost to rent and operate hand dry facility and pay, including labor costs.”

S Recommendation: Require AgriLogic to make this change, particularly at the end of the sentence, which is confusing as written.

(4) Items 1 and 2 both obligate the farm and the processor to harvest the crop, and at both their sole expenses. The contract should be written in a manner that identifies which party is responsible for harvesting the crop and who is responsible for the harvest costs (or if both parties are to share the expense of harvesting, what their respective shares are to be; e.g., 50:50). However, both parties cannot be solely responsible for harvest or costs.

S Recommendation: Require AgriLogic to make this change.

(5) The item 1 requirement for the farm “to insure the hemp biomass in the name of Farm and _____” (the processor) seems to be problematic by suggesting the need for a Transfer of Coverage (which has to be on our form and must be approved in writing by us) or an Assignment of Indemnity form (also on our form), as appropriate, to comply with that requirement.

S Recommendation: RMA should consider consulting legal counsel regarding this statement on the form.

(6) In line 6 of item 1 on page 1, it appears that an incorrect Oregon Department of Agriculture (ODA) potency test amount is shown (i.e., “under .034% THC”). It is probably intended to state “under .34% THC.” Theoretically, the next statement is wrong, because it reads “and thus qualifies as federally and state legal industrial hemp.” As indicated in the

Crop Provisions (CP) comments below, hemp is defined for Federal purposes as having “not more than 0.3 percent on a dry weight basis,” which is less than .34% THC, if that is what the “.034%” in the form is intended to mean.

(7) In the indented paragraph at the bottom of page 1, insert “agrees” in front of “to destroy any biomass” Otherwise the statement can be interpreted to mean either “not to destroy ...” or “to destroy” Another option to achieve the same clarifying result is to insert “(a)” after “agrees” and to insert “(b)” before “unless.” In such case, the comma before “unless” should be deleted.

(8) In item 2 at the top of page 2, insert a comma after “dry.” Replace the semicolon with a parenthesis before “including” and after “drying of crops.” Change “marketing and sales of” to read “market and sell.” Change “extraction of” to “extract.” Change “is agreed to” to “are agreed to,” because “all crops harvested” (plural) are what is agreed to be extracted.

S Recommendation: Require AgriLogic to make these changes

(9) In item 5, insert a comma after “biomass.” Also consider inserting “Neither” before “Farm.” While not necessary, this change can only strengthen the statement.

NS Recommendation: AgriLogic should consider making this change.

(10) In item 6, is there a difference between “hemp biomass stock” and “hemp biomass”? If not, one of the two should be deleted; however, it may be that something else was intended, such as “other hemp products.” Note that “products developed under this Agreement” is used in item 5.

S Recommendation: Require AgriLogic to resolve the above and make any appropriate changes.

(11) Insert a comma before “which” in line 4 of item 7, and after “Agreement” in line 5.

(12) In item 9, change “hemp” to “hemp.”

S Recommendation: Require AgriLogic to make these changes.

(13) In section 11 on page 3, the example contract specifies “The Parties shall (i) ...,” but has no other provisions that necessitate the “(i)” designation, which should be deleted. In the sixth line of section 11, the period behind “Confidential Information” should be placed after the closed parenthesis, and therefore complete the sentence.

NS Recommendation: AgriLogic may want to make these changes.

(D) Comments and recommendations regarding the proposed Industrial Hemp Crop Provisions in file 03.01 Industrial Hemp Crop Provisions:

(1) Consider changing the title of the Crop Provisions to read “Hemp Crop Provisions” instead of “Industrial Hemp Crop Provisions.”

S Recommendation: Require AgriLogic to make this change if deemed appropriate by RMA. Because the definition allows the crop to be grown for the production of industrial and consumer products (not just industrial products), and because the 2018 Farm Bill language specifically states “Sec. 518 of the Federal Crop Insurance Act (7U.S.C. 1518) is amended by inserting ‘hemp’ before ‘aquacultural species’,” I believe the crop provisions should be identified as “Hemp Crop Provisions” rather than “Industrial Hemp Crop Provisions.” If deemed appropriate, all other appropriate references to the crop should also be changed for all relevant materials.

(2) In section 1, “Definitions,” and all subsequent section titles, determine whether all major section headings (designated by a number and period in bold print) should end with a period or not (as is done in these Crop Provisions).

S Recommendation: Require AgriLogic to make this change if deemed appropriate by RMA. A quick review of somewhat recent CPs showed the following:

CPs with a Period

2017 Green Pea CP

2020 Texas Citrus Tree CP

2019 Cultivated Clam Crop Insurance Provisions

CPs without a Period

2017 Coarse Grains CP

2017 Sunflower Seed CP

2017 Small Grains CP

(3) On page 1, under “Definitions,” should a definition be added for “Bypassed acreage”?

S Recommendation: Require AgriLogic to make this change if deemed appropriate. If it is added, language regarding bypassed acreage should also be included in subsection 12(c)(1) in the “Settlement of Claim” section. In such case, language from the Green Pea Crop Provisions should be considered for such bypassed acreage.

(4) On page 1, under the “CBD” definition, insert “(see further definition under “Type”)” after “Cannabidiol.”

S Recommendation: Require AgriLogic to make this change.

(5) On page 1, change the definition of “Good farming practices” to read as follows: “The cultural practices generally in use for the county for the crop to make normal progress toward maturity and produce at least the yield used to determine the production guarantee. Good farming practices includes any farming practice requirements contained in the processor contract that we determine are acceptable good farming practices according to and consistent with the terms and conditions of your insurance policy.”

The Green Pea Crop Provisions include the following condition after the processor contract language:

“and recognized by the Cooperative State Research, Education, and Extension Service (CSREES) as compatible with agronomic and weather conditions in the county.”

AgriLogic should consider whether to include this Green Pea Crop Provisions language in the “Good farming practices” definition. I recommend it be added at the end of the above definition.

S Recommendation: Require AgriLogic to make this change, because not all requirements contained in the processor contract are considered farming practices (let alone good farming practices), and we should have the right to determine that some farming practices are not considered good farming practices, particularly if they are incompatible with the terms and conditions of the insurance policy and/or are not recognized by CSREES.

(6) On page 1, delete “The” at the beginning of the “Harvest” definition. To avoid the double negative at the end of the “Harvest” definition, AgriLogic might want to consider one of the following options:

(a) Replace “and not baled” with “prior to baling” to be consistent with “swathed prior to combining;” or

(b) Replace “will not be considered harvested” with “will be considered “unharvested.”

NS Recommendation: AgriLogic may want to make these changes.

(7) On page 1, change the term being defined from “Industrial hemp” to “Hemp” and use the following definition from the 2018 Farm Bill:

“The plant *Cannabis sativa* L. and any part of that plant, including the seeds thereof and all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis (as determined by us).”

This definition, without the above closing parentheses, is taken from the 2018 Farm Bill, Sec. 10113. Hemp production. If the decision is made to stay with the term “Industrial hemp,” the plant name should be changed to “*Cannabis sativa* L.” which I believe is more accurate than “*Cannabis sativa*.”

S Recommendation: Require AgriLogic to consider making this change and to provide background information that supports the appropriate action taken.

(8) On page 1, move the definitions for “Pound” and “Processor” to their correct location alphabetically before, not after “Processor contract.”

S Recommendation: Require AgriLogic to make this change.

(9) On page 1, in the “Processor” definition, insert a comma after “facilities” in line six.

S Recommendation: Require AgriLogic to make this change, which is consistent with the definition in the Green Pea Crop Provisions, because the equipment requirements apply to both types of facilities; i.e., those they possess as well as those to which they have contractual access.

(10) On page 1, in the 4th line of the “Processor Contract” definition, insert a comma after “hemp,” consistent with the Green Pea Crop Provisions. Change “promise” to “commitment” in subparagraphs (a) and (b) to be consistent with the Crop Provisions of Green Peas and other processing crops. Also change “enough equipment” to “adequate equipment.” In reviewing this text, I had the personal feeling that “enough” generally addresses a quantity of something, whereas “adequate” and “sufficient” are more likely to address both quality and quantity. Reviewing the legal use of the three terms led to an observation that “enough” is generally more casual and frequently used in daily life, while adequate and sufficient are more scientific and formal. My research also revealed that in some specialized fields there are differences. For example, in Law (under law of contract), there is an established difference. There is a legal maxim in law of contract that states “Consideration needs not be adequate but must be sufficient.” This maxim clearly establishes difference in both words (though similar). Adequacy is more exact in nature than sufficiency. This means something is adequate if it is exactly equal to requirement whereas sufficiency means something is within a relevant range of the requirement. This led me to choose adequate over sufficient, with both being better than “enough.”

At the end of subsection (3) under the “Processor contract” definition, add the following sentence:

“Such value, without regard to discounts or incentives that may apply, will be considered a base contract price under this policy.”

S Recommendation: Require AgriLogic to make the first change, and unless legal counsel advises otherwise, to make the additional changes above.

(11) On page 1, in the “Retting” definition, change “involves” to “may involve,” because numerous sources of information indicate retting is a process to separate the fiber from the stems, which is done by soaking the stem so the fibers can soften, which is done either chemically, manually, or through dew retting (leaving them out to ret using atmospheric moisture and dew. (urbul.com – *How is CBD Oil Made – The Process Explained*, by Alan Paul)

(12) On page 1, in the “Type” definition, change the “CBD” definition to read “... leaves, stems, and stalk of industrial hemp plants ...,” because various sources refer to the stems and stalks separately and indicate both as a source of CBD, the “(c) Fiber” definition under “Type” uses both, and the SPOI’s use both in the definition of “Whole plant.”

S Recommendation: Require AgriLogic to make these changes.

(13) On page 1, in subsection 2(a) under “Unit Division,” insert “the” before “definition.”

NS Recommendation: AgriLogic may want to make this change.

(14) On page 1, in subsection 3(a), change “the insured” to “you.”

(15) The section 1 definition for “Processor contract” states “Multiple contracts with the same processor that specify amounts of production will be considered as a single processor contract unless the contracts are for different types of hemp.” Likewise, section 8(b)(1) and (2) infer there may be more than one processor contract for the unit by stating “contract(s).”

Therefore, AgriLogic should consider replacing the text in section 3(b) with the text from sections 3(a), (b), and (c) from the Sesame Pilot Crop Provisions (but modified to correct an error in those CPs) to read as follows for IH, followed by AgriLogic’s proposed section 3(c) [as recommended in this review to delete the redundant text “of the insured crop”], which would be renumbered section 3(d):

- “(a) In addition to the requirements of section 3 of the Basic Provisions, you may select one base contract price percentage for each type designated in the Special Provisions, even if the price elections for each type are the same.
- (b) If there are multiple base contract prices within the same unit, each will be considered a separate price election that will be multiplied by the production guarantee (per acre) under the applicable processor contract. These amounts will be used to determine the value of the production guarantee used to establish the premium, liability, and indemnity for the unit.
- (c) To determine the production guarantee under the applicable processor contract, apply the lesser of the:
 - (1) Contracted acres multiplied by the production guarantee (per acre);
 - (2) Planted acres multiplied by the production guarantee (per acre);
 - (3) Total production stated in the contract; or
 - (4) For acreage and production contracts only, the contracted acres multiplied by the contracted production (per acre).
- (d) Notwithstanding section 3(a), (b), and (c), if you elect the Catastrophic Risk Protection (CAT) plan of insurance coverage, the CAT level of coverage and price election will be applicable to all insured industrial hemp acreage in the county.”

If it is not agreed to make the change in the above recommendation, change the **first sentence** in subsection 3(b) on page 1 to read:

“You may select one price election percentage for each type designated in the Special Provisions, even if the price elections for each type are the same.”

The above language recommendation was modified from the 2020 Texas Citrus Tree CP, and the remaining language in this section (which is not recommended to be changed) is the same as in the 2020 Texas Citrus Tree CP, except that the term “price election” is intentionally used for IH instead of “price.”

Note the use of the term “percentage” with the “price election,” which is consistent with AgriLogic’s slide 14 in the Training Presentation file 07.01.

(16) On pages 1 and 2, in the first line of subsection 3(c), insert an introductory parenthesis in front of “(b)” so it reads “3(a) and (b)” In the last line, delete “of the insured crop,” which is redundant.

S Recommendation: Require AgriLogic to make these changes.

(17) On page 2, in section 4, delete “for all counties.”

S Recommendation: Require AgriLogic to make this change. The only time that appears to be used in other crops is when there are different contract change dates for different counties, in which case it reads “ ... for all other counties.” It is not necessary in this case where there is only one contract change date. This would make it consistent with other crop provisions.

(18) On page 2, in the second line of section 5, delete “date.” In the right column heading, change “Date” to “Dates.”

S Recommendation: Require AgriLogic to make these changes which would make this consistent with other Crop Provisions.

(19) On page 2, in section 5, in the March 15 listing of States, move “Illinois” before “Indiana,” insert a comma after “Wisconsin,” and insert “and all other states” on the line below Wisconsin.

S Recommendation: Require AgriLogic to make this change which would make this consistent with other Crop Provisions, and allow for expansion states to be addressed proactively. RMA should also discuss with AgriLogic whether it is necessary to have two sets of cancellation and termination dates that are only two weeks apart, and to consider using a single date of March 15, which is likely consistent with other insured crops.

(20) On page 2, in section 6(b), insert “to us” after “Submit.”

S Recommendation: Require AgriLogic to make this change which would make this consistent with other Crop Provisions.

(21) In section 7(a)(3), consider adding “, and in accordance with, the requirements of” after “under.” Also consider adding “and not excluded from the processor contract at any time during the crop year” after “acreage reporting date.”

S Recommendation: Require AgriLogic to consider making this change to add language that is in the Green Pea CP that also require a processor contract, and to explain the appropriate action taken.

(22) RE: Section 7(a)(5) of the CP:

S Recommendation: Require AgriLogic to explain why this language has been added to the requirement to plant for harvest in accordance with the requirements of the processor contract, and to identify any production management practices of the processor that were specifically intended to be addressed with this requirement. Also discuss with RMA the pros and cons of such production management practices not being required to be in writing, as is the case for the processor contract requirements. One downside might be that toward the end of the insurance period, it can be determined that the producer failed to comply with a specific production management practice of the processor, and therefore be determined to have grown a crop that is not insured. Processor contract written requirements are one thing to administer; but unwritten production management practices are likely far more difficult to administer and control.

(23) In section 7(a)(6), delete an apparent extra space between “the” and “applicable.”

NS Recommendation: AgriLogic may want to make this change.

(24) In section 7(a)(7)(i):

S Recommendation: Require AgriLogic to explain how “planted for any purpose other than industrial hemp” is intended to restrict the insured crop, and if the definition for “Industrial hemp” in the proposed policy language (i.e., “... grown for industrial *and consumer* products”) is consistent with this provision. (Italics are shown only to emphasize the consumer vs. industrial aspect.) I don’t believe hemp or industrial hemp grown for CBD to be used in consumer products would technically be considered for industrial use, as in the case of industrial oils, solvents, etc.

(25) In section 7(a)(7)(v), insert “approved” before “varieties.”

S Recommendation: Require AgriLogic to make this change to be consistent with section 7(a)(6), that they have to be on a list of “approved” varieties. There may be lists of other varieties that are issued by the applicable governing authority. This would also make the statement consistent with the statement in the SP addressing the same “approved variety listing.”

(26) After section 7(a)(7)(v), consider inserting a statement such as in the Cabbage CP that reads “to be sold by direct marketing.”

S Recommendation: Require AgriLogic to consider making this change if there is any potential for the crop to be grown for direct marketing.

(27) In section 7(a)(7)(vi), change “Does not meet the minimum acreage requirements ...” to “At least the minimum acreage requirement contained in the Special Provisions,” to appropriately follow the lead-in phrase “That is not”

(28) In section 7(b)(2), change “industrial hemp contract” to “acceptable processor contract,” to be more precise as to which contract’s terms the corporate resolution must contain. This would then also be the same as the Green Pea and other contract crops’ CPs.

S Recommendation: Require AgriLogic to make these changes.

(29) In section 8(b), change “processor contract” to “processor contract(s) in the first line [to agree with subsection 8(b)(1) and (2)] and change “acreage or production” to “acreage and/or production,” to accommodate contracts that specify both acreage and production. The language in the proposed IH Crop Provisions is different from processor crops for which the current language addresses acreage-only based processor contracts, acreage- and production-based processor contracts which specify a maximum number of acres, and production-only based processor contracts. Those contracts limit the insurable acreage to the lesser of (1) the planted acres, or (2) (a) the maximum number of acres specified in the contract (acreage-only and acreage- and production-based contracts) or (b) the number of acres determined by dividing the production stated in the processor contract by the approved yield (production-only based processor contracts). The language in the proposed IH Crop Provisions appears to do the same thing, but is more simply stated by not addressing the planted acreage which, by the Basic Provisions section 9(a), is the insurable acreage were it not for these limitations. Changing the language to read “acreage and/or production, while accommodating contracts that specify both acreage and production, does not appear to jeopardize or modify the implementation of these provisions as they exist in other processing crops.

S Recommendation: Require AgriLogic to make this change if the above rationale is agreed to.

(30) In section 9, insert “immediately following planting” at the end of the sentence, and close the sentence with a period (which is missing in the proposed Crop Provisions).

S Recommendation: Require AgriLogic to make this change which is consistent with the Coarse Grains Crop Provisions. Many of the other crops, including processor crops, refer to the calendar year in which the crop is normally harvested, but Small Grains and Onions, for example, make no reference to the calendar year.

(31) Section 10(a) Causes of Loss is written differently than most, if not all, other crops in that it states “any loss covered by this policy must occur within the insurance period.” The normal language for this clause states “insurance is provided only against the following *causes of loss that occur during the insurance period.*” (Italics are shown to emphasize specific comparable text.)

S Recommendation: Require AgriLogic to explain the rationale for this language change from the normal language used in this clause, and take any appropriate action as a result of AgriLogic’s explanation for this departure from normal language.

(32) In section 10(a)(3) and (4), AgriLogic uses “but not damage allowed because of” instead of “but not damage due to” to define the insurable causes exclusion of damage from insufficient or improper application of pest control measures, and insufficient or improper application of disease control measures and the failure to follow applicable rotation requirements contained in section 8(a)(1) of the Crop Provisions. (If used, this reference should be to section 8(a) of the CP, not 8(a)(1), which is nonexistent.)

S Recommendation: Require AgriLogic to explain the rationale for this language change from the normal language used in this clause, and take any appropriate action as a result of AgriLogic’s explanation for this departure from normal language. Considered in any discussion on this issue, should be the possibility of removing the rotation requirements language, because that acreage would not only have the cause of loss excluded, but the acreage would not be insurable under the provisions of 8(a). An exception I can think of would be if the rotation requirements were not met on acreage that is uninsured as a result, and because of that, damage occurred on insured acreage (e.g., adjacent acreage, and the disease spread to insured acreage as a result). I don’t know if that was the intent, but it should be included in the discussion.

(33) In section 10(b)(1), delete “or more” because “in excess of” already addresses more than .3 percent THC. Do not delete “in excess of” and leave “or more,” because .3 percent THC is an acceptable level for CBD.

(34) In section 10(b) consider including provisions such as those in the Green Pea CP that provide for not insuring any loss of production due to bypassed acreage as stated in those CPs, or that strictly exclude any loss of production due to acreage being bypassed.

S Recommendation: Require AgriLogic to discuss this recommendation with appropriate parties and take any appropriate action.

(35) In section 11(b), change “destroyed without consent and will result in an appraisal of production to count of not less than the production guarantee per acre for the unit” to read “destroyed without consent, which will result in an appraised production to count of not less than the production guarantee for such acreage.”

S Recommendation: Require AgriLogic to make this change to better tie the result “appraised production” to the action, “destroyed without consent,” rather than to tie the result to the acreage (i.e., acreage will be considered ... and will result ...). Also, using “not less than the production guarantee *for such acreage*” is the intent in the event different guarantees are, or could at some point be, possible for different acreage in the unit. “Per acre” is not needed because it is already included in the “Production guarantee (per acre)” definition in the BP, and is already inferred by “for such acreage.”

(36) In each of the examples in section 12(b), insert “Your indemnity would be calculated as follows:” in the line between the premium calculation and the indemnity calculation.

S Recommendation: Require AgriLogic to make this change to more easily distinguish between the premium calculation and indemnity calculation, particularly since this is the “Settlement of Claim” section and the premium calculation has been included in the section (which is not done for other crop provisions).

(37) In each of the examples in section 12(b), change the singular “pound” to “pounds” and insert “loss” after “\$5,000” and “\$55,000,” respectively, for the first and second example. Also insert “1” and “2,” respectively, after “Example” in each example. Change “1.000 share” to “100% share” in each example.

S Recommendation: Require AgriLogic to make these changes to be more consistent with other crop provisions.

(38) Include a third indemnity calculation example (for the fiber type) either before or after the CBD example in section 12(b).

(39) In section 12(c)(1)(i)(A), delete “Which is” and capitalize “Abandoned.”

NS Recommendation: AgriLogic may want to make this change, since they deleted “That is” used in the Sesame Pilot Crop Provisions and Green Pea Crop Provisions. The Coarse Grains Crop Provisions use “That is” only for “abandoned” acreage. Since “acreage that is ...” fits all three cases (A, B, and C), it can also be deleted from all three.

(40) In section 12(c)(1)(ii), insert a comma after “causes,” insert “the” before “THC,” and change “limit” to “level.”

(41) In section 12(c)(1)(iii)(A), insert a comma after “or you fail to provide sufficient care for the samples.”

(42) Change the section designators for sections 12(c)(3) and (4) to read (d) and (e), because they are subordinate to section 12, not subsection 12(c). See section 11(d) of the Coarse Grains Crop Provisions for similar circumstances.

S Recommendation: Require AgriLogic to make these changes.

(43) In section 12(c)(3), change “moisture content” to “moisture percentage” and change “FCIC approved procedures” to “FCIC-approved procedures.” Such adjustments are routinely included in the Crop Provisions and/or Special Provisions. It is a greater challenge to establish the appropriate moisture adjustments in the absence of uniform standards that have generally been available for other programs that have been developed and include similar adjustments (at least to grain, but not CBD). Since AgriLogic established grain moisture adjustments exceeding 9%, and CBD adjustments exceeding 10%, it seems that it would be best to show those adjustments on the Special Provisions, unless uncertainty requires that they be specified in FCIC-approved procedures that will be easier to change if necessary.

Also consider including language to allow adjustments for CBD percentage where processors pay on a converted basis of pounds multiplied by CBD percentage, provided that producers have adequate data to support doing so. The Special Provisions would need to provide a means for insuring them on this basis (i.e., for APH and loss adjustment purposes).

(44) In section 12(c)(4), address action that will be taken if both conditions apply; e.g., the production is in excess of .3% THC (which would not be an insured loss of production), but it also has another substance or condition that is injurious to human health in excess of the maximum allowed by the FDA or other U.S. public health organizations or State agencies, and the insured must destroy the insured crop or crop production.

Also, give consideration to changing the closing parenthetical clause in section 12(c)(4) to read “(this provision does not apply to production that is destroyed because it exceeds the THC levels specified in section 10(b)(1) of these Crop Provisions).”

S Recommendation: Require AgriLogic to provide its recommendations on this issue before taking any appropriate action to retain or modify the appropriate language. As currently written in section 12(c)(4) of the CP, the clause could be interpreted incorrectly to mean such production exceeding .3% THC is excluded FROM production to count.

AgriLogic’s Training Presentation slide 28 states:

“Appraised production (standard appraisal types)

Additionally, production lost due to uninsured causes will include production that exceeds THC limit specified in section 10(b)(1) of the CP.”

(45) If replanting payments do not apply to this crop state so accordingly in the CPs in one of two ways:

(a) Add a “Replanting Payments” section (likely section 11) that states “The provisions of section 13 of the Basic Provisions are not applicable.” If done, the remaining section numbers will need to be changed, as well as any references to those numbers.

(b) Include a reference to “Replanting Payments” in section 13 as follows:

Insert “**Replanting Payments,**” in the section 13 heading before “**and Written Agreements.**” and insert “replanting payment,” before “and written agreement provisions” in the text in section 13.

S Recommendation: Require AgriLogic to make this change if replanting payments do not apply to this crop.

(E) Comments and recommendations regarding the proposed Industrial Hemp Special Provisions in file 03.02 Industrial Hemp Special Provisions:

(1) Insert page numbers on each page of the Special Provisions of Insurance (SPOI). I will refer to page numbers below in the order they numerically appear in file 03.02.

(2) In the T/P column, change “TP” to read “T/P” for the T/P’s shown as “TP”; e.g., 9, 10, 12, 13, 14, 17-22, 25-30, and 33-36. Also align the left side the same on each (some are indented different than others).

(3) On page 3 of 5, insert “WWW,” “XXX,” “YYY,” and “ZZZ” in front of “X” and “Y” in the Type column for each line.

(4) In the first line of the second General footnote at the bottom of page 3 of 5, insert “on a dry weight basis” after “.3%.”

(5) Also in the first line of the second General footnote at the bottom of page 3 of 5, change “local” to “locale,” or better yet - use another word that has more common usage in FCIC policies, such as “area,” which is defined in the Basic Provisions and used more than 25 times in those BP’s. The term “locale” is not used in the BP’s and doesn’t add anything to this usage that I can perceive. While “local” is used in the BP’s, it is not an appropriate term in this case; i.e., it is an adjective (such as “local area”) whereas “locale” is a noun. It’s just not the best noun in this case.

S Recommendation: Require AgriLogic to make these changes.

(6) The “Practice” text on page 4 of 5 should be moved to be under the “Insurance Availability” section on page 5 of 5, because it is addressing an acreage insurability issue, and is not a farming practice listed in the “Practice” column of the SPs for Type/Practice (T/P) purposes. Likewise, delete “*7” from each of the entries in the “Practice” column. In the last sentence of the “Practice” provisions on page 4 of 5, change “this Special Provisions of Insurance” to “these Special Provisions of Insurance.”

NS Recommendation: AgriLogic may want to make this change.

(7) In the last sentence of the “Price” provisions on page 4 of 5, move the comma from after “contract” to after “contract price.”

S Recommendation: AgriLogic should make this change.

(8) The “Price” provisions on page 4 of 5, state “If a contract price is available as shown in the actuarial documents, you may elect to have your price election determined in accordance with the Contract Price Addendum (CPA). If the Crop Provisions or Special Provisions provide a method to determine a contract price, your price election will be determined in accordance with the Crop Provisions or Special Provisions and the CPA does not apply.”

Since the Crop Provisions and Special Provisions do not provide a method to determine a contract price, the CPA should apply, but I found no CPA in the submitted material.

S Recommendation: Discuss the above with AgriLogic to take appropriate action regarding the CPA.

(9) On page 5 of 5, apply bold print to the “Insurance Availability” heading at the top of the printed text on the page.

S Recommendation: Require AgriLogic to make these changes.

(10) In the second paragraph under “**Insurance Availability**,” consider adding other rotation crops that would exclude industrial hemp from insurance. Such additional crops, taken from the canola SPOI, include crambe, garbanzo beans (chickpeas), and lentils (all of which prohibit canola from insurability if planted any of the preceding two crop years). The Dry Peas SPOI’s also contain a rotation crop statement reading “This statement applies to field peas, lentils, and chickpeas grown either as a grain, cover crop or in a cover crop mixture.”

S Recommendation: Require AgriLogic to verify whether these crops (and the additional statement) were considered to be included in the crop rotation text for any of the proposed insurable States, and to proceed appropriately.

(11) In the next-to-last paragraph on page 5 of 5, change “Extension” to “Cooperative Extension System” which is defined in the Basic Provisions. Also, change the URL for the cover crop and crop insurance and Cover Crop Termination Guidelines from “http” to “https” (which is more secure).

(12) In the last paragraph on page 5 of 5, delete the extra “(“ after “(7)” and insert “of the Industrial Hemp Crop Provisions” after “(v).” Change “proxy state” to “proxy State” to agree with the Crop Provisions.

S Recommendation: Require AgriLogic to make these changes.

(F) Comments and recommendations regarding the proposed Industrial Hemp Crop Insurance Standards Handbook in file 05.02 Industrial Hemp CISH:

Note: Some of the formatting, structure, and organization recommendations below are made because the handbook was not developed in compliance with the Risk Management Agency External Handbook Standards (RMA-14050). Due to the large number of substance (content) recommendations in this review and the significant amount of material to review relative to the number of contracted hours, the review emphasis had to be directed toward the substance or content of the material (the specific instructions and examples that are provided to administer the crop insurance program) and not on the format, structure, organization, and similar aspects of the material. The reviewer must rely upon RMA staff and the submitter to ensure compliance with those specific standards. This essentially applies to the Crop Insurance Standards Handbook (CISH) and even more so, the Loss Adjustment Standards Handbook (LASH).

(1) On the Cover Page, the USDA and FCIC emblems and associated descriptions are not displayed as shown on the Cover Page of RMA-14050, with the descriptions above the

emblems. The Risk Management Agency description, followed by the RMA logo, should be placed below the FCIC logo. Then, the responsible division (Actuarial and Product Design Division?) should be placed below the RMA logo. This is all explained on page 6 of RMA-14050 and shown on that handbook's Cover Page, as explained at the top of the page.

S Recommendation: While I do not believe each of these three is a substantive error, RMA may (particularly not showing the responsible division), and AgriLogic should be made aware of this so they can, and will more likely, comply with the required standards as they develop their handbooks in the future. I have pointed this out in several reviews in the past, and it continues to be a problem. Examples of the inconsistencies on this are:

(a) Camelina CISH (FCIC-20170U) does not have the descriptions above the emblems (they are below) and it doesn't show the RMA description, followed by the RMA logo, followed by the RMA responsible division.

(b) APH Sesame (Pilot) CISH (FCIC 24180) [note no dash in the handbook number] does not contain the RMA logo below the description ("Risk Management Agency").

(2) Insert a blank page after the cover page so the transmittal page begins on the right-hand side when duplex-printed.

(3) In the "SUBJECT" box on page TP 1, change "procedures and instructions" to read "insurance standards," "underwriting standards," or "insurance underwriting standards" as guided by the responsible division. Change "succeeding" to "Succeeding."

(4) Change the "Reason for Issuance" on page TP 1 as guided by the responsible division. Similar handbooks generally state something such as "This handbook provides the official ... standards for the ... program for the 20XX and succeeding crop years. All approved insurance providers ... must ... these standards."

(5) In the Control Chart on page TP 2, the TP, TC, and text pages are to be shown on a separate line than the exhibit pages. All lines are to show the directive number, even if they are the same.

(6) On page 1, place a period at the end of the first paragraph, and I'm not sure why the URL is inserted at the end of the paragraph. If it is intended to remain, make a reference to its purpose. Ultimately, I found similar text in the Triticale CISH, which was developed by AgriLogic, and it appears they simply left out the word "at," which is a simple option for resolving this.

(7) In paragraph 1C on page 1, change "cancelled" to "terminated."

(8) In paragraph 1D on page 1, insert a hyphen to read "APH-based crops." After "provides" change "an indemnity ... during the insurance period" to "insured IH producers protection against yield losses occurring within the insurance period, as specified in the IH CP."

- (9) In paragraph 2B on page 1, change “Insured” to “Insureds” to be consistent with AIPs in paragraph 2A and with the text in paragraph 2B. Delete the first part of the sentence in 2B up to “Insureds.” Insureds are eligible for the program long before complying with all terms and conditions of the BP and IH CP. Also add SPOI’s at the end as well if you want to be more accurately inclusive.
- (10) In the chart in paragraph 11B on page 2, for CIH, change “process” to “standards and procedures.” For GSH, LAM, and Industrial Hemp LASH, insert “standards and” before “procedures.”
- (11) In paragraph 21, consider inserting “Late Planting, Prevented Planting, Replanting Payments, and” in front of “Written Agreements ... program.”
- (12) In paragraph 22A, change “to all persons with a share in” to “for,” and delete “is.” As stated in paragraph 22B, the IH program is not available to ALL persons (e.g., ineligible persons).
- (13) In paragraph 23B, change the heading to read “, **Sales Closing, Cancellation, and Termination Dates.**” Delete paragraph 23C, and renumber 23D as 23C.
- (14) In paragraph 23E on page 4, delete the line “For new and carryover insureds:” This appears to be carried over from the Caneberry CISH, which also didn’t need it, since both new and carryover insureds had the same date, but different “Beginning of Insurance Period” dates.
- (15) In paragraph 23F on page 4, insert “and section 9 of the CP,” after “BP.” Insert “immediately after planting” after “October 31.”
- (16) In subparagraph 24(1) on page 4, change the end of the sentence to read “unit by share and type.” The text “by 100 percent interest, share ...” doesn’t add anything to the requirement that “share” fails to provide.
- (17) In subparagraph 24(2)(a), delete “the” before “section.” Consider inserting “(5) after “6(c)” to more precisely identify the BP subsection containing the land identifier requirement. (Leaving the text as is would be fine also, on the basis that it is less likely to require revising the reference in the future in the event the BP section’s order changes.)
- (18) In subparagraph 31A on page 5, change “CBD transplant-direct seeded type” to an actual type that is possible, such as “CBD-Transplant-Whole Plant type” which was used in the training presentation. (There is no such type as “CBD transplant-direct seeded;” i.e., they are either direct seeded OR transplanted) Also, show the type exactly as it is shown on the SP (Initial Caps with hyphens between categories within the type).
- (19) In subparagraph 31B on page 5, change “Prices Elections” to “Price Elections.” Change all subsequent uses in this paragraph of “price” or “prices” to “price election” or “price elections,” respectively, because “price election” is used in section 3(e) of the BP’s

for “all plans of insurance other than revenue protection and yield protection (e.g., APH, dollar amount plans of insurance, etc.).” (Granted, “Prices” is used in the section 3 heading.) Change “on” in the last line before the “Note” to “for,” which is better and is consistent with the previous example. As in subparagraph 31A, change “CBD transplant-direct seeded type” to “CBD-Transplant-Whole Plant type.”

(20) In the “Note” at the end of paragraph 31 on page 5, change “the insured crop” and “that crop” to “industrial hemp” to avoid any confusion with regard to separate units by type.

(21) In paragraph 32 on page 5, delete “(1)” since there is no “(2).” Then number the items below the sentence the same as in the policy, instead of using letters.

(22) In the newly-numbered item (3), make the same changes proposed in this review for the CP.

(23) In the newly-numbered item (5), make any changes made to this section in the CP as a result of recommendations proposed for the CP.

(24) In paragraph 32 on page 5, make any appropriate changes as a result of the review recommendations for section 7(a) of the CP.

(25) In paragraph 33(b) on page (6), change “acreage or production” to “acreage and/or production,” as recommended in the review of section 8(b) of the CP.

(26) In paragraph 34, make appropriate changes as recommended in the review for section 10 of the CP.

S Recommendation: Require AgriLogic to make these changes.

(27) In paragraph 35C on page 8, delete “except as may be provided on the SP” because section 2(b) of the CPs state “The whole farm unit provisions are not applicable.”

S Recommendation: Discuss this issue with AgriLogic to determine if it is intended to leave this exception in the CISH to allow whole-farm units in the future; if so, the exception should be included in the CPs.

(28) In paragraph 36, change the paragraph heading to Quality Adjustment and Moisture Adjustments, and include separate statements similar to the review recommendation for slide 28 of the Training Presentation.

(29) In paragraph 36, insert “in” after “as provided.” This statement appears to contradict the language in the CP and in slide 28 of the Training Package. See the review comments for section 12(c)(4) of the CP.

(30) In the examples in paragraph 37 on page 8, consider the same changes recommended in the review of the CP, although the singular to plural recommendations for pounds, is not as significant in the CISH as in the CP. The other recommendations are more significant.

(31) In paragraph 51 on page 10, insert “standards and” before “procedures,” and insert “not in conflict with the CP and this handbook” after “procedures.” (This text was taken from page 11 of the Caneberry CISH.)

(32) In paragraph 52A on page 10, change “Are” to “Is,” and “Utilize” to “Utilizes” to be consistent with “Industrial Hemp” This error probably occurred because “Caneberries” was the lead in for this text in the Caneberry CISH, although 52(A)(1) is correct.

S Recommendation: Require AgriLogic to make these changes.

(33) In paragraph 57 on page 11, change the POLICY to “20-BR.” In the Unit(s) column, should the footnote “44” be removed, since section 2(b) of the CP states “The whole farm unit provisions are not applicable”?

S Recommendation: Require AgriLogic to make the BP policy number change (and also in Exhibit 1 that states “Basic Provisions (18-BR),” and to review the question regarding the footnote and proceed appropriately.

(34) At the bottom of page 11, change “57-60” to “58-60.” Make the same change on page TC 1.)

(35) In each Exhibit, delete the number in front of the title for the exhibit to be consistent with the rma-14050.

(36) Add “CBD” and “THC” to the table of RMA-approved acronyms/abbreviations used in the handbook. Note that both acronyms are included in Exhibit 2 Definitions. Also note my comment (8) in section (ii) of this report addressing “Comments and Recommendations Regarding Reviewed Material That Was Not Part of the Submission.” Exhibit 1 should be changed as indicated to be consistent with RMA-14050.

(37) Change the following definitions, including their incorrect alphabetic order, to agree with any changes made as a result of the review recommendations for the definitions in section 1 of the Crop Provisions.

Good farming practices,
Harvest,
Industrial hemp,
Processor contract,
Pound,
Processor,
Retting, and
Type

(38) On page 15, change the exhibit number to “Exhibit 4.” Instructions on page 9 of RMA-14050 require “Exhibit 3 and subsequent exhibits, as applicable, shall be titled “Form Standards,” and “Reserve exhibit 3 if no form standards are provided in the handbook.” The instructions also require using “additional exhibits to provide information that supplements the procedure provided in the various parts of the handbook.” In this case, the information on page 15 should be included in Exhibit 4. In accordance with RMA-14050, there is no Exhibit 3 (and likewise no page dedicated to Exhibit 3) in the handbook, and Exhibit 3 is to be shown on page TC 1 as “(Reserved) with no associated page number. The Control Chart would also show Exhibit 3 as “Reserved” in the chart column where the “Exhibit Page(s)” for all other exhibits are shown (on page TP 2 for the IH CISH).

(39) In Exhibit 3 (renumbered to Exhibit 4) on page 15, include the additional insurability requirements and the “proxy State” statement contained in the Special Provisions as follows, and as recommended with changes in the review herein of the Special Provisions. Headings for each of these items are suggested below in bold print:

(a) The “Practice” text (see item 2E. below) on page 4 of 5 of the SP which, as explained in the review of the SPs, is really an acreage insurability issue and not an insurable practice issue for IH;

(b) The “Planted acreage” qualifying language (see 2C. below) in the first paragraph under “Insurance Availability” on page 5 of 5 of the SP;

(c) The “crop following a cover crop” text (see 2D. below) in the next-to-last paragraph on page 5 of 5 of the SP.

A logical location for the above is in a separate paragraph titled “Acreage Insurability Requirements” on page 15. Since paragraph 1 is titled “Rotation Requirements,” but is also an “Acreage Insurability Requirement” it might be best to rename it “Acreage Insurability Requirements,” with sub-headings suggested below:

1 CBD Types

2 Acreage Insurability Requirements

A. Minimum Acreage Requirements

B. Rotation Requirements

C. Planting Method Requirements

D. IH Following a Cover Crop

E. IH Planted the Same Calendar Year a Perennial Hay Crop is Harvested or a Non- Cover Crop Reached the Headed or Budded Stage Before Termination

3 Proxy State for Determination of Approved Insurable IH Varieties

Under each of these headings, state each of the insurability requirements and the proxy State provision from the statements in the SP.

S Recommendation: Require AgriLogic to make these changes.

(G) Comments and recommendations regarding the proposed Industrial Hemp Loss Adjustment Standards Handbook in file *05.01 Industrial Hemp LASH*:

Due to the large number of substance (content) recommendations in this review and the significant amount of material to review relative to the number of contracted hours, the review emphasis had to be directed toward the substance or content of the material (the specific instructions and examples that are provided to administer the crop insurance program) and not on the format, structure, organization, and similar aspects of the material. This applies to the Loss Adjustment Standards Handbook (LASH) even more than it did to the Crop Insurance Standards Handbook (CISH) because of the significant number of findings and recommendations made with the CISH that was reviewed before the LASH. It is possible, and even likely, that some of the findings and recommendations for the CISH, concerning format, structure, organization, and similar aspects of the material apply as well for the LASH; however, those aspects are avoided in the LASH review as much as possible.

Note: The page numbers may not be included in all references below, but the comments are in order as the material is presented and are based on the paragraph numbers and item numbers.

(1) On page TC1 and page 5 of the text, change “Qualify Adjustment” to “Quality Adjustment. Note: Page “TC1” is used in the LASH, and Page “TC 1 is used in the CISH. Also, “TP 1” and “TP 2” are used correctly in the LASH.

(2) On page TC1 and page 4, change “Unit Divisions” to “Unit Division.” Make the same change in the paragraph 12 heading on page 4.

(3) On page TC1 and page 14, insert “Appraisal” in front of “Deviations.” On page TC1, change the page number for Paragraph 27 from “12” to “14.” Check and renumber all other pages as appropriate on page TC1.

(4) On page TC1, for paragraph 21, change “Selection of” to “Selecting.” Also, change “Appraisal” to “Appraisals” unless there is a compelling reason it is different from other handbooks, including the Caneberry LASH.

(5) On page TC1, for paragraph 28, insert “Appraisal” in front of “Worksheet,” unless there is a compelling reason it is different from other handbooks, including the Caneberry LASH. Make the same change in paragraph 28 on page 14.

(6) On page TC1, for paragraph 41, change “Information” to “Procedures,” unless there is a compelling reason it is different from other handbooks, including the Caneberry LASH. This is also consistent with similar text for paragraph 28.

(7) On page TC1, enter the exhibit numbers in front of their titles, then indent, then show the title, as in all other handbooks.

(8) On page 1, in the table showing the “Relation/Purpose” of the specific named handbooks, change the “Relation/Purpose” for those handbooks to be more accurate and consistent with the same information on page 2 of the General Standards Handbook (GSH) as follows:

CIH – Provides the official FCIC-issued underwriting standards for policies under the BP, ARPI, CAT Endorsement, SCO, and APH.

DSSH - No change (it is essentially the same as the GSH)

GSH – Provides the official FCIC-approved standards for policies administered by AIPs.

LAM – Provides loss adjustment standards and requirements for determining production or revenue and adjusting crop insurance claims.

(9) In paragraph 1B(2), change “IP” to “IH.”

(10) In paragraph 2D(2) be more specific in the reference to the required statements by inserting “in the DSSH” before “on the RMA website. Otherwise, readers will have no idea which of the many handbooks at that specific website contains the statements. Insert “or successor website” after the website information as shown in the Caneberry LASH.

(11) In paragraph 11A on page 3, make the changes recommended in this review for section 7 “Insured Crop” of the CP.

S Recommendation: Require AgriLogic to make these changes.

(12) In paragraphs 11A(6) and (7)(v) on page 3, change “Special Provisions” to “SP” and insert “the” before “SP” in subparagraph (7)(v) to agree with other “SP” references.

NS Recommendation: AgriLogic may want to make this change.

(13) In paragraph 11B(a) on page 4, change “additions” to “addition.” Make additional changes recommended in the review of section 8(b) of the CP.

(14) In paragraph 12 on page 4, change “Unit Divisions” to “Unit Division.” Change “BP and CP” to “BP, CP, and Actuarial Documents.”

Insert the following text which is important information regarding unit division for IH:

“Separate Basic Units are established by type.

Whole farm unit provisions are not applicable to IH.”

(15) In paragraph 13B on page 4, insert “and section 9 of the CP” after “Basic Provisions.”

- (16) In paragraph 14 on page 4, insert text from the CP sections 10(a)(4), and 10(b) that are somewhat unique to IH.
- (17) In paragraph 15 on page 5, change the heading from “Qualify Adjustment” to “Quality Adjustment.” Insert text after the parenthetical phrase to indicate that provision does not apply to production exceeding the THC levels specified in section 10(b)(1) of the CP. See related comments and recommendation in the review of section 12(c)(4) of the CP for additional concerns and recommendations, including a recommendation to redesignate section 12(c)(4) of the CP that is referred to in this paragraph.
- (18) In paragraph 16 on page 5, change “SP” to “CP (or as otherwise specified on the SP).”
- (19) In paragraph 16(2)(a)(ii), change “prior to a final THC level is determined” to “before the final THC level is determined by the applicable governing authority.” (Same as the CP)
- (20) In paragraph 16(2)(b), make the changes recommended in the review of section 11(b) of the CP.
- (21) In the diagram on page 6, extend the dotted line across to Row 4. Verify that the next page is not a blank page as it appeared in the document I reviewed.
- (22) Change the paragraph 26A heading to read:
Stand Reduction Appraisals – Grain, Fiber, and CBD - Direct Seeded
See Para. 26D for CBD - Transplant Appraisals
- (23) In paragraph 26A(2) on page 9, change “(depending of variety)” to “(depending on variety).”
- (24) In paragraph 26A(4), the Exhibit 6 title does not state “-Grain and Fiber.” Resolve the correct title where appropriate, as in paragraph 26A(5)(c) on page 10.
- (25) In line 4 of paragraph 26B(2) on page 10, the text “to the leaf canopy in the reproductive stage ?? any appraisal will be based ...” needs a semicolon, “and,” “thus,” or some transition between the two phrases.
- (26) In line 2 of paragraph 26C(3)(a) on page 11, change “Table” to “Tables” [also in (3)(e)1], and delete “a” before “five.”
- (27) In paragraph 26C(3)(c) on page 11, insert “in column 22” after “worksheet.” Likewise, specify where on the worksheet each entry is to be placed as was done for the Stand Reduction appraisals.
- (28) In paragraph 26C(3)(e) on page 11, delete “for” after “count.”

(29) In the 4th and 5th lines of paragraph 26C(5)(a) on page 12, change the text to read “... in accordance with recommended maturity levels for the seed and increased susceptibility to shattering.” Delete the closed parenthesis.

(30) Change paragraph 26D(1) on page 12, to read:

“CBD Transplant Stand Reduction/Plant Damage appraisals may apply to damage in the vegetative and reproductive stages.

(31) In paragraph 26D(2)(b) on page 12, delete the hyphen after “1/100th,” which is neither needed nor used in paragraph 26D(2)(d).

(32) In paragraph 26D(2) on page 12, it seems that a simpler approach is to divide the number of surviving plants per 1/100th acre sample by the determined plant population (number of living, dead, and missing plants) per 1/100th acre, and multiply the result by the APH yield. Example:

Avg. number of live plants per 1/100th acre = 6

Determined plant population per 1/100th acre = $6 \div 13 = .462$ or 46.2% stand

.462 (46.2%) X 1,000 lbs. APH yield = 462 lbs./acre appraisal

(33) It seems that the formula at the top of page 13 could be more simply shown as follows, since item (d) is already shown as plants per 1/100th acre:

Item (d) \div Determined plant population per 1/100th acre X APH yield = appraisal lbs./acre

(34) There appeared to be a paginating problem with page 13.

(35) Change the paragraph 27 heading by inserting “Appraisal” before “Deviations.”

(36) In paragraph 27(2), insert a semicolon in place of the comma, or start a new sentence.

(37) In the heading for paragraph 28 on page 14, insert “Appraisal” before “Worksheet.” This was done in the Triticale LASH developed by AgriLogic.

(38) In line 3 of paragraph 28(3), insert “the beginning of” before “Part 3.”

(39) In the last line of the example in paragraph 41(8)(c), insert “X” after “6000 cu. ft.” to denote “times.”

(40) In Exhibit 1, include “FCIC” as an acronym and show its term unless it is specifically intended not to include it, which was included in the Triticale LASH that AgriLogic developed, although a search showed the term used only 10 times (all related to the name of a form or document) in both handbooks. RMA is included in the exhibit.

(41) In the Exhibit 1 term for LAM, change “Adjustments” to “Adjustment.”

(42) In the Exhibit 2 Definitions beginning on page 19, make the changes recommended in the review of the definitions in section 1 of the IH CP.

- (43) In the Description for the item “Company” in Exhibit 3 on page 21, delete the extra space before “of” and insert “AIP” after “of.”
- (44) In the Description for item 6 “Type and Stage,” if the type is to be entered as it appears on the SP (which it seems that it should), change “CBD” to “CBD – Direct Seeded or CBD – Transplant.”
- (45) In the heading between items 7 and 8 on page 21, change “**GRAIN AND FIBER**” to “**GRAIN, FIBER, AND CBD – DIRECT SEEDED.**” Consider moving the information between items 10 and 11 on page 21 to the area between items 12 and 14, since such information only applies to items 13 through 18. Also change the reference to “Page 21” (which is the same page this information is on) to read “Para. 26.” (Not Para. 26 D or E though, because all subparagraphs in paragraph 26 apply to CBD except subparagraph 26C, which is for seed count appraisals - grain only.
- (46) In item 13 on page 22, change “(Grain or Fiber)” to “(Grain, Fiber, or CBD - Direct Seeded).”
- (47) In the Description for item 15 on page 22, insert “on the” between “based” and “date.”
- (48) In the Description for item 15 on page 25, insert “on” after “based.” Change “See Para. 26B(c)(3)” to “See Para. 26B(3)(c).”
- (49) In the Description for item 26 on page 25, either change “results” to “result” or delete “results” as was done on page 23 above for the same item.
- (50) In the Description for item 27 on page 25, as indicated in comment (46) above, “Para. 26B(c)(3)” does not exist; and Para. 26B(3)(c) doesn’t include any remarks info, so I’m not sure what is intended here.
- (51) On page 26, in the paragraph below the heading, change “**Grain And Fiber**” to “**Grain, Fiber, and CBD – Direct Seeded.**”
- (52) In the item 18 entry for sample 1 on page 27, delete the period after the decimal fraction “.73.”
- (53) In the heading at the top of page 30, change “**Form**” to “**Forms**” to agree with the rest of Exhibit 4 and with Exhibit 3.
- (54) In the paragraph at the top of page 30, delete “A” at the beginning, because there are two examples.
- (55) In the Description for item 1 on page 30, change “column 22” to “item 22.)

(56) In item 3, change “GPS identifications” to “GPS coordinates” and specify whether, or when, they are required. If required, place them on the Example Production Worksheets.

(57) In the 2nd line of the Description for item 4, change “cause(s) of loss” to “cause(s) of damage” because at this point no loss has been verified, and to agree with the item 5 title.

(58) In (4) at the top of page 33, delete “and/or quality adjustment factors” because quality adjustment is not applicable to IH, unless crops are required to be destroyed in accordance with section 15(j) of the BP. If that is how this is intended to be handled, it is fine.

(59) In the Description for item 32b on page 36, delete “Adjust for moisture prior to any qualifying adjustment for quality.” Because Quality Adjustment doesn’t apply to IH. If intentionally left in just in case quality adjustment would be made available in the future, that is fine, because “qualifying adjustment for quality” covers that situation. In that case, the related quality adjustment comment at the top of page 33 can be disregarded as well. If left in because of production that is required to be destroyed in accordance with section 15(j) of the BP, it seems that there would be no need for a moisture test for such production that is going to be destroyed, unless it is intended to be documented anyway. If the insured destroys the production, no production would count and the moisture factor would be irrelevant. If not destroyed, the production guarantee would apply, and the moisture factor would not be needed. If it was needed to adjust production that would be counted for APH purposes, then it probably needs to stay in.

(60) For item 35 on page 36, see related comments for section 12(c)(4) of the CP review regarding production that is required to be destroyed per section 15(j) of the BP AND section 12(c)(4) of the CP. Note that I recommended section 12(c)(4) of the CP be redesignated, which if accepted, would change this section reference. These comments apply to item 40 Description also.

(61) In the item 37 title on page 37, change “Cause” to “Causes” to agree with the PW.

(62) In the item 41 title on page 38, change ‘Check “Yes:”’ to “Yes (box).”

(63) In item “r” of the Narrative Instructions on page 40, add “Explain any plant disease damage allowed because of failure to follow applicable rotation requirements in section 8(a) of the CP.” See my comments in the review of the CP, however, because those provisions make the acreage uninsurable, unless the damage that occurred on uninsurable acreage, created disease pressures on adjacent insurable acreage.

(64) In paragraph (1) on page 40, delete the last sentence that reads “Any production harvested from plants growing in the insured crop may be counted as production of the insured crop on an unadjusted weight basis.” That provision is not included in section 12 of the IH CP. If included here, it should be added to section 12 of the IH CP.

(65) In paragraph (6)(c) on page 41, change “(varying moisture, foreign material (FM), test weight, value, and so forth)” to “(e.g., varying moisture percentages).”

(66) Replace the text in (f) on page 41 (that addresses varying types in the same unit) with the following:

“In addition to definition of basic unit in the Basic Provisions, separate basic units will be established by type for IH.”

S Recommendation: Require AgriLogic to make these changes.

(67) In paragraph (9) on page 41, delete “(or type)” in the first line and “type or” in the third line. Units are by type.

S Recommendation: Require AgriLogic to review this language and make any appropriate changes necessary. It may be that this text needs to remain as is, but to also point out that units are also by type.

(68) In paragraph d of the Description for item 43 on page 42, delete “replanting is complete for the unit,” and insert a period after “so forth.” (This is because Replanting Payments are not available for IH.)

(69) In item 54, insert “For grain:” before “Enter.”

(70) In the 2nd line of the item 59a Description on page 44, either delete the comma or the hyphen after “CBD,” but don’t show both, making it appear like -10 percent (minus 10%). In the 3rd line, insert a period after “places.” (consistent with the 6th line) In the 4th line, insert “in” before “excess of” (as was done at the end of line 1). Show an example for the CBD moisture adjustment similar to the example for grain.

Example: (percent moisture is 10.5 percent; (0.5 percent in excess of 10.0%); .5 = 5 tenths in excess of 10%; $5 \times .11 = .55$; $100\% - .55 = 99.45 \div 100 = .9945$ factor);

(71) In item 59b (Factor) on page 44, shouldn’t the factor (as calculated in the Description for 59a) be entered in 59b for the moisture entry in 59a? If so, the description should be similar to that for item 32b in Section I for appraisals. In fact, note that the item 61 Description states “For grain: Result of multiplying (columns 55 or 56) times 59b or for CBD: columns 56 times 59b.”

(72) Change the 1st paragraph of the Description in item 61 to read:

For grain: Result of multiplying (column 55 or 56) times 59b.

For CBD: Result of multiplying (column 56) times 59b.

Round to whole pounds. (Stored fiber and CBD are not adjusted for moisture.)

(73) In the Description for item 65 (Quality Factor) on page 45, delete the second “MAKE NO ENTRY” instruction, and see related comments for section 12(c)(4) of the CP review regarding production that is required to be destroyed per section 15(j) of the BP AND section 12(c)(4) of the CP. Note that I recommended section 12(c)(4) of the CP be redesignated, which if accepted, would change this section reference.

(74) In the Description for items 68-72 at the top of page 46, should “types” be deleted, since separate types are separate units?

(75) In the 2nd paragraph of the Description for item 74 on page 46, delete “and final replanting payment inspections,” because replanting payments are not applicable to IH.

(76) In item 3 on pages 47 and 48, enter the GPS coordinates if required. In item 39 on page 47, change the entry from “84.0” to “90.0,” the correct total of the column 19 entries.

(77) In item 40 on page 47, is “None” supposed to be checked since none of the production qualifies for QA? In not, then the instructions should be revised for the item 40 Description on page 38.

(78) In item 56 on page 47 (and page 48), isn’t “Lbs.” supposed to be circled, since this is a Grain PW and a CBD PW? Also, verify the “59,112” entry in column 56. Should it be $1231.5 \text{ bu.} \times 44 \text{ lbs./bu} = 54,186 \text{ lbs.}$?

(79) The entries that resulted in the page 48, item 67 total of “60,012” pounds are missing (item 56 times item 59b).

(80) Include a completed PW example for fiber.

(81) In Table A, Minimum Representative Sample Requirements, because this is a new crop for this program, without a similar crop with a long history of appraisal experience, the number of samples should provide greater variation than the minimum recommendations. For lower density plant (or transplant) populations, the acres in the field or sub-field should be perhaps range from 0.1 – 5.0 for the minimum 3 samples, and add one additional sample for each additional 5 acres. One additional sample for each additional 40 acres is not enough for this program.

S Recommendation: Require AgriLogic to give serious consideration to increasing the sampling requirements for this crop as recommended above or in another appropriate manner, at least until significant experience has been gained and the methods have been determined to be acceptable for determining accurate potential production amounts. This might require some testing under appropriate conditions where a portion of the crop could later be harvested (or appraised under the Seed Count method) to compare with the earlier appraisals.

(82) In the first paragraph of Exhibit 6 on page 51, change “grain and fiber types” to “Grain, Fiber, and CBD – Direct Seeded types.”

(83) Change the heading “Surviving Stands / 9 ft²” at the top of the chart on page 52 to “**SURVIVING PLANTS / 9FT²**,” to agree with the same charts on pages 53 and 54.

S Recommendation: Require AgriLogic to make these changes.

(H) Comments and recommendations regarding file 07.01 Industrial Hemp Training Presentation:

Note: Slide numbers, rather than page numbers, are referenced in this section.

(1) In the 1st bullet on slide 2, insert a reference to the types identified on the SP, because that is where the actual types in the county are located, and at this point do not appear to contain “Dual-purpose” or “Oil,” although identified under the “Type” definition in the CP.

(2) In the 4th bullet on slide 2, indicate that Basic Units are also established by type.

(3) In the 5th bullet on slide 2, all indications are that enterprise units are available, but there are no unit qualifiers in the CP. Either change “CP” to “BP,” or take other actions to resolve this. Also insert a closing parenthesis if appropriate. When I ultimately got to slide 13, it states “BP” instead of “CP,” so that is apparently the intent in this slide also.

(4) In the 6th bullet on slide 2, insert “CP section 2” after “applicable.”

S Recommendation: Require AgriLogic to make these changes.

(5) After the last bullet on slide 2 (either on the same line or on a new line), enter “Moisture adjustment for mature grain and harvested CBD production (not fiber)”

S Recommendation: Require AgriLogic to verify the reference to moisture adjustments for harvested CBD production, and to make any appropriate changes to the above text as well as the appropriate text in section 12 of the CP.

(6) In slide 3, insert “Payments” after “Replanting.”

(7) In slide 4, insert “(not applicable to IH)” after “Quality adjustment.”

S Recommendation: Require AgriLogic to make these changes.

(8) In slides 5 through 12, change appropriate definitions to read as recommended in the Crop Provisions review comments. To avoid duplication (and the fact that they may not all be accepted), those recommendations are not included here.

S Recommendation: Require AgriLogic to make the appropriate changes.

(9) For slide 14, make the changes recommended in this review for section 3 of the CP. Also use to “%” instead of “percent” to read easier, take less space, and be consistent throughout the slide. In (c), delete “of the insured crop.” (It already says “all insured IH acreage.”)

S Recommendation: Require AgriLogic to make these changes.

(10) For slide 15, see comments and recommendations regarding the Cancellation and Termination Dates in the CP review.

(11) For slide 16, insert “to us” or “to the AIP” after “Submit,” although not as critical in the slide as in the CP.

(12) For slides 17 through 24, make the changes recommended in the review of the CP sections 7 Insured Crop, 8 Insurable Acreage, 9 Insurance Period, and 10 Causes of Loss.

S Recommendation: Require AgriLogic to make any appropriate changes based on those CP review comments and recommendations.

(13) In slide 25, change “for the unit” to “for such acreage.”

NS Recommendation: AgriLogic may want to make these changes.

(14) In slide 28 (or in a separate slide if space prohibits adding to slide 28) insert: “Moisture Adjustments – Section 12(d) of the CP states ‘Mature grain production and harvested CBD production will be adjusted to a moisture content specified in FCIC approved procedures.’”

S Recommendation: Require AgriLogic to make this change.

(15) The slide 28 statement “No quality adjustment applies” is a little misleading and confusing, because the destruction of the crop in accordance with section 12(c)(4) of the CP and section 15(j) of the BP is treated as quality adjustment in the LAM, and appears to be considered quality adjustment in the IH LASH, including instructions for the Production Worksheet.

S Recommendation: Require AgriLogic to resolve this issue and make any appropriate changes on this slide and the IH LASH.

(16) In slides 30 and 32, insert “loss” after “\$5,000” and “\$55,000” in step (6).

NS Recommendation: AgriLogic may want to make these changes, although not as critical on these slides as in the CP examples.

(I) Comments and recommendations regarding file 08.01 Industrial Hemp M13 Requirements:

Note: The page numbers referred to below are the page numbers that should have been in the proper location instead of how they appeared in the submission document, because the 2nd page only contained the text “Page 1” at the top of the page. Deleting several returns above and below that text changed the document to 3 pages, with the page numbers in their better location below the text or tables on each page and at the right margin.

S Recommendation: Make sure that submission document pages will view and print properly when entered into SharePoint and advise AgriLogic of this problem. It appears that the problem in this case was caused by page numbers being entered as regular text on each page rather than as footers or via automatic page numbering.

(1) On page 1, number the items consistently (either followed by a period or not, but not both), delete the hyphen after number “13,” and renumber the second item “2.” and all items below it correctly. I recommend deleting the periods behind all the item numbers because they don’t add anything, cause additional keystrokes and errors, and take up space.

(2) In item 5 (renumbered as 6) on page 1, insert appropriate text regarding “THC” that would not be considered a “standard cause of loss.”

(3) In item 6 (renumbered as 7) on page 1, change “OP” to “OU,” the correct code for Optional Units.

(4) In item 7 (renumbered as 8) on page 1, insert “payments” after “replanting.” Technically, replanting does apply, in that the insured is required to replant the crop in accordance with the provisions of section 8(c) of the CP, but no replanting payments (as named throughout the BP, but especially in section 13, “Replanting Payment”) are available for IH.

S Recommendation: Require RMA to make these changes.

(5) In the Rules entries on page 2, change “equal” to “equals.”

(6) On page 2, in the Rules for Insurance in Force – P14, change “Percent’s” to “Percents” in both instances.

NS Recommendation: AgriLogic may want to make these changes.

(7) Below the table on page 2, is the statement intended to apply to both Coverage Level Percent and Price Election Percent? If so, it should state accordingly, and an asterisk should also be entered in the “Coverage Level Percent” Field Name column.

S Recommendation: AgriLogic should verify this and make this change if appropriate.

(J) Comments and recommendations regarding file 05.03 Industrial Hemp Dates Table:

Why is April 29, 2020 the Production Reporting Date (PRD) instead of an easier date to remember such as April 30, 2020 (and the last day of the month, as are many insurance dates? It seems that most insurance dates are either the 15th (the middle of the month) or the end of the month.

NS Recommendation: AgriLogic may want to check this further, although my research indicated April 29, 2019 (a Monday) was the 2019 PRD for corn and soybeans in Adair County, KY, the IH County Dates Table I looked at.

(ii) Comments and Recommendations Regarding Reviewed Material That Was Not Part of the Submission

(1) In the Texas Citrus Tree Crop Provisions (20-TCT), the last line of section 3(b) should read “another type” instead of “another or type.”

S Recommendation: Require RMA to make this change when the Texas Citrus Tree Crop Provisions are amended.

(2) On RMA’s web site (rma.usda.gov/Policy-and-Procedure/Crop-Policies) both the Hybrid Seed Rice Crop Provisions 16-0080 and Hybrid Seed Rice Crop Provisions 19-0080 are listed. I believe that site should only list the 19-0080 Crop Provisions. The same circumstances were found with the Machine Harvested Pickling Cucumber Crop Provisions (2016 and 2017), Strawberries (2016, 2017, and 2018), and Texas Citrus Tree Crop Provisions (2016 and 2020). Also, the 2016 Strawberry Pilot Crop Provisions show a “Summary of Changes for the Sugar Beet Crop Provisions” balloon when you scroll the curser over the tab at the top of the Chrome browser, and Sesame shows a “Summary of Changes for the Green Pea Crop Provisions” balloon.

(3) The APH Sesame (Pilot) CISH (FCIC 24180) handbook did not include a control chart or filing instructions normally found on page TP 2, for example.

(4) The Risk Management Agency External Handbook Standards (RMA-14050) Control Chart on page TP 2 shows the handbook title in the top of the Control Chart as “RMA External Standards Handbook,” not the correct title “Risk Management Agency External Handbook Standards.” Instructions given on page 5 of RMA-14050 indicate the handbook should include “handbook” and “standards” in the title, and by example, this handbook should actually be called the “Risk Management Agency External Handbook Standards Handbook” because it is a “Handbook” (the last word in its title) that provides RMA External Handbook Standards.

(5) The page TC 1 of the APH Sesame (Pilot) CISH (FCIC 24180) handbook shows “SESAME PILOT PROGRAM UNDERWRITING GUIDE” at the top of the page, and should instead show the title of the handbook.

(6) In subparagraph 31 on page 6 of the Caneberry CISH, change “Prices Elections” to “Price Elections.”

(7) As I was referring to Caneberry crop insurance program materials to compare aspects of the Industrial Hemp program and program materials with, I found that the title of the caneberry CPs is actually “Fresh Market Caneberry Crop Provisions.” Since section 7(a)(4) of the “Fresh Market Caneberry CPs” define “Insured Crop” as caneberries ...

“That are grown for sale as fresh fruit,” it seems that the CISH and LASH for caneberries should be defined as “Fresh Market ...Handbook, unless I’m not aware of a reason they would be defined otherwise.

S Recommendation: Require RMA to take appropriate action to resolve the above issues.

(8) In most handbooks, Exhibit 1 is a list of terms representing an “Approved Acronym/Abbreviation” (the heading in the left column of a table showing those acronyms or abbreviations with the “Term” shown in the right column). However, the Exhibit title just states “Acronyms” and the text above the table indicates it contains “RMA-approved acronyms used in this handbook. This exhibit should use “acronyms/abbreviations” in those locations to be more precise, although it is not a significant issue, and most people probably don’t realize or care about the difference. For example, the Caneberry CISH column is titled “Approved Acronyms,” while the IH CISH column is titled “Approved Acronym/Abbreviation.” Note that the plurality is different also, being plural with the Caneberry CISH that has only 2 terms (although still plural), and singular with the IH CISH that has 14 terms. Also note that the Caneberry CISH left column is plural, but the right column “Term” is singular.

These inconsistencies are not a result of RMA failing to provide adequate direction, because the RMA External Standards Handbook (RMA-14050) shows exactly how Exhibit 1 of all external handbooks should be, with the Exhibit title reading “Acronyms and Abbreviations,” the sentence above the table reading “... acronyms and abbreviations,” the left column title reading “Approved Acronym/Abbreviation,” and the right column title reading “Term.”

NS Recommendation: RMA should take any appropriate action to resolve these inconsistencies, most likely when the handbooks are next amended. In my years of expert reviews of numerous handbooks developed by the private sector, it appears that the developers, in general, either have very little training on developing submission materials in accordance with RMA-14050 or some other cause is creating the inconsistency that is far greater than it should be. These, and particularly more significant inconsistencies, complicate, and waste significant resources that jeopardize, the review process. They also result in products that are far less consistent than they need to be and can be.

These comments are not intended to “bash” the developers. I have written, and supervised the writing of, a great number of handbooks throughout my career with FCIC and RMA, and know that it was, and is, difficult to achieve consistency when working with many developers and reviewers with diverse skills and abilities, particularly working with such diverse crops, insurance plans, and provisions. It is logical to expect even greater potential for inconsistency when even greater numbers of companies and developers are involved. Nevertheless, RMA should at least discuss this issue with both prospective and established developers for their insight and input to improve the process and results.

(9) On page TC 1 and at the top of page 27 of the Loss Adjustment Manual (LAM), change the heading for Part 4 from “Insureds Contract Information” to “Insured’s Contract Information” unless plural form is intended, which would then be “Insureds’”

(10) In paragraph 1D on page 1 of the Caneberry LASH, insert “, DSSH,” before “and LAM.” Insert “standards and” before “guidelines.”

(11) The heading of Exhibit 4, on page 32 of the DSSH reads “Non-Discrimination ... (Continue)” and should be revised to read “... (Continued).”

(12) Move the two sentences that are directly under the heading of paragraph 11A (“Insured Crop”) on page 3 of the Caneberry LASH to directly under the text just above paragraph 11, because it applies to all insurability provisions, not just the “Insured Crop.” (That is where it was moved to in the IH LASH.)

(13) Section 3(b) of the Sesame Pilot CP and section 3(c) of the Mustard CP both address multiple base contract prices within the same unit, and each appears to provide incorrect text after “each will be considered a separate price election that will be multiplied by.” Sesame continues as follows: “the value of the production guarantee (per acre) under the applicable processor contract.” That cannot be, because the contract price is used to determine the value of the production guarantee. In fact, the contract price is multiplied by the production guarantee (per acre) to determine the value of the production guarantee (as explained in section 12(b)). It continues by stating “These amounts will be totaled to determine the total production guarantee used to establish the premium, liability, and indemnity for the unit.”

The calculation is: Acres X production guarantee (per acre) = unit production guarantee;
unit production guarantee X Price Election (Contract Price) = unit value of guarantee.

Mustard continues as follows: “the number of insurable acres under applicable processor contract.” It continues by stating “These amounts will be totaled to determine the premium, liability, and indemnity for the unit.” There is incorrectly no mention of the production guarantee in the calculation. The calculation is explained in section 13(b) of the Mustard CP, and is the same as shown above for the Sesame CP.

(14) In the Camelina CP section 1 definition of “Maximum allowable acres,” change the “section 8(c)” reference to “section 7(c).” When the Camelina Crop Provisions (14-0333) were amended beginning the 2014 crop year, section 2 Unit Division was removed and sections 3 through 16 were redesignated as sections 2 through 15; however, the reference to section 8(c) wasn’t changed to refer to its redesignation as section 7(c).

(15) In paragraph 915B on page 38 of the CIH, the web site referral for more information regarding availability of the Contract Price Amendment shows PAGE NOT FOUND.

(16) On page 11 of the Triticale LASH, correct the diagram to show the row width measure from the center of the 1st row to the center of the 4th row.

S Recommendation: Require RMA to take appropriate action to resolve the above issues.

2B (Reserved)

3 **Appendix** (None)

4 **Biographies** (See attached)

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William C. (Bill) Jones' Biography

Bill Jones is an Agricultural Risk Management Consultant and serves as an Expert Reviewer for the Federal Crop Insurance Corporation (FCIC). He retired from the United States Department of Agriculture (USDA) Risk Management Agency (RMA) in January 2003 and became an Expert Reviewer later that same year. In his 33 years with FCIC and RMA, Bill worked in underwriting, marketing, contract servicing, claims, and research and development. His experience with the Agency was gained in five field offices covering States from the east to west coasts at the regional level, and in Kansas City, Missouri at the national level.

Bill was raised on a grain and dairy farm in central Illinois. He began his career with FCIC in 1968 while a student at Illinois State University (ISU). During the summers of 1968 and 1969 he was a trainee with FCIC's North Central Area Office in Springfield, Illinois. Both summers he worked with senior FCIC employees in underwriting, marketing, contract servicing, and claims throughout the nine-State North Central area encompassing Illinois, Indiana, Iowa, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin.

Upon graduating from ISU with a BS in Vocational Agriculture in June 1970, Bill began his career as an underwriter with FCIC's North Central Area Office. He was inducted into the U.S. Army in February 1971, and received an honorable discharge in December 1972. While in the Army, Bill was awarded two Army Commendation Medals for his service with the 4th Infantry Division (Mechanized). After returning from the Army, he served FCIC and RMA as follows:

Underwriter in FCIC's Springfield, IL Field Actuarial Office (1968 – 1973)
Sales Specialist in FCIC's Springfield, IL Sales Center (July 1973 – June 1975)
Contract Service Specialist in FCIC's Indianapolis, IN Contract Service Center (1975 - 1976)
Marketing Branch Chief of FCIC's Spokane, WA Regional Service Office (1977-1978)
Research and Development Specialist in FCIC's Actuarial Division in Kansas City, MO (78-81)
Acting Chief of FCIC's Marketing Research and Analysis Branch in Kansas City, MO (81 - 82)
Crop Policy Development Branch Chief in Kansas City (supervised the development and approval of insurance policies and procedures for FCIC and reinsured companies) (82 – 84)
FCIC's Claims Section Chief and Procedure Branch Chief (1984 - 1996)
FCIC's Specialty Crops Coordinator (1996 until January 2003 retirement) His 7 years in this position make him uniquely qualified as an Expert Reviewer of specialty crop submissions.

From 1981 through 1999 Bill and his family owned and operated a fruit and vegetable operation in the Kansas City area. Bill carried out all production activities in their operation and hired, trained, and supervised employees. He also served two years as President of the Kansas Fruit Growers Association. These experiences helped make him uniquely qualified to serve as FCIC's Specialty Crops Coordinator to address the risk management needs of specialty crop producers.

Bill became an Expert Reviewer for the FCIC Board of Directors in 2003 and has conducted more than 25 underwriting reviews of concept proposals and privately submitted policies for FCIC approval. Since retirement he has served as the president of his Property Owners Association and gained certification as a Certified Pesticide Applicator in Missouri and a DSI Water Operator with the Missouri Department of Natural Resources.

**Actuarial Expert Review of 508(h) Submission
Industrial Hemp (IH)**

**Prepared by LeWayne Jansonius
November 25, 2019**

**Reference BPA No: 12FPC320F0001
Requisition: 984424**

I. EXECUTIVE SUMMARY

The Industrial Hemp Crop Insurance Program developed by AgriLogic will provide insurance for industrial hemp similar to coverage currently provided for other Actual Production History (APH) yield-based programs. Hemp became federally legal to grow in December of 2018 in the United States. The proposed program is to be offered in 15 states where the majority of industrial hemp is being licensed to grow currently.

The USDA released a draft of its Interim Final Rule (IFR) for industrial hemp production on October 29. Market participants hope the IFR will bring clarity to numerous sides of the emerging industry. Prior to the passage of the 2018 Farm Bill, industrial hemp growers were not required to report acreage, yield, production, and other data to the USDA. While some states required that licensed growers report acreage and all production data to the state hemp agency or program, many states only required that hemp growers be licensed but did not keep record of other data. With federal and state rules under construction there remains some uncertainty about its insurability.

AgriLogic employs a number of measures that ensure that a viable insurance program can be available for this rapidly developing industry. These included underwriting precautions such as requiring a processor contract, rotation requirements, minimum acreage requirements, and specifying that mandatory destruction for a hemp crop that exceeds the legal THC threshold is a non-insurable cause of loss. The definition of legal THC levels and the timing of the testing for THC is still being debated as the industry waits for the final rule to be published.

AgriLogic notes that most agricultural commodities that are insurable under federal insurance programs have long spans of spatial-historical production records, standard agronomic practices, developed regulations, and established genetics which are accessible for utilization in developing and maintaining insurance programs. Industrial Hemp does not have any of those traits currently and therefore, has a heavy reliance on biomass growth modeling for determining rates.

Significant Weaknesses:

- The assumption that yield variations for hemp will coincide with those of similar crops. The selection of similar crops was based on a similar growing season and acreage minimums. A similar growing season, however, may not suggest similar yield variations or risk in growing the crop. The submission does not include an evaluation of the yield comparability between hemp and similar crops. There is no explanation for the volatility found in the hemp reported yields that were collected and if the same could be expected for a similar crop. Are the hemp yields variable mainly due to soils, precipitation, climate, pests, disease, “experimental farming”, or some other reason and do they have the same effect on other crops grown in the same county?
- The assumption that biomass modeling for estimating production is a good proxy for estimating yields. The submission relies heavily on the Carnegie-Ames-Stanford-Approach (CASA) model, but research would suggest that using it to estimate yields has had mixed reviews. “The model performs satisfactorily for wheat, rice and sugarcane, and poorly for cotton” Bastiaanssen & Ali, 2003. A study published in June 2010, Liu, Pattey, Miller, McNairn, Smith and Wu (Remote Sensing of Environment) stated “The cumulative APAR accounted for 96% of the corn aboveground dry biomass variability and 72% of the yield variability”. The limited amount of ground truth data should be used to test and calibrate the model for reasonableness of this assumption.
- The assumption that all industrial hemp yield data utilized to estimate yield percentages by type are accurate. Several of the yields are taken from reported small acreage. Nearly one-third of the

observations are 1 acre or less (USA only). The problem with using small acreage observations is the potential of introduced error. For example, a report of .3 acres may actually be .25 acres or .349 acres or any acreage that rounds to .3. In this example, the .3 acres with a yield of 1200 pounds per acre can actually range between 1032 to 1440 pounds per acre. A difference of 408 pounds or 34 percent of the initial estimate. The introduced error has the potential of having some effect on the yield percentage determinations. I would recommend setting a minimum acreage before including the observation in the calculations.

- The area proposed for coverage. The proposal is to cover all or parts of 15 states, and 986 counties. The landscape for this commodity is still developing. Various government agencies are still assessing the data needs for compliance and CBD testing requirements. Several areas still do not have adequate processing plants to handle the current production.
- A price election methodology is proposed but it is unclear if a price election is even used. Parts of the policy would indicate that a contract price would determine the price of the policy, but other parts suggest a price election is established. Further clarification is needed.

In conclusion, this proposal was very well organized and the depth of the documentation and methodologies used to determine the rates and price elections supplied by the submitters was very impressive. The supplemental spreadsheets were very useful in validating most of the calculations and simulations. However, I would not recommend approval of this product, without some adjustments.

1. Limit the exposure initially to maybe 4 or 5 states until addition feedback on actual yields is received, particularly for the CBD types.
2. Add an additional rate load for the CBD rate type because of multiple unknowns that still surround the growing of this commodity.
3. Clarify the use of contract price and/or price election.
4. The issue surrounding poor genetics needs to be nailed down.

II. RESEARCH REPORT

A. Protection of the Interests of Agricultural Producers and Taxpayers

1. Meaningful Coverage: Does the policy provide meaningful coverage that is of use to many producers, and is the coverage provided in a cost-efficient manner?

Yes. The expected acreage planted to this commodity in the near future suggests a need for insurance coverage. It is meaningful to the extent that it would provide coverage for weather related losses for those that plant ample number of acres. The acreage restriction may eliminate a number of growers from being participants in the coverage. It should be noted that 57% (396/693) of the CBD floral type yields were from acreage less than 5.0 acres. 32% of the observations came from 1 acre or less.

2. Policy: Is the policy clearly written so that producers will be able to understand the coverage that they are being offered? Does the policy language permit actuaries to form a clear understanding of the payment contingencies for which they will set rates? Is it likely that an excessive number of disputes or legal actions will arise from misunderstandings over policy language?

The price/ price election component of the policy is a bit confusing. The policy states in 7.(a).3 that *the insured crop must be grown under a processor contract executed by the applicable acreage reporting date*. The processor contract is defined as: *A legal contractual written industrial hemp containing at a minimum: (c) A base contract price, or method to derive a value that will be paid to the producer for the production as specified in the processor's contract.*

Nearly all the documents refer to a price election, that seems to be in conflict with the policy language that refers to a contract price. Is there a price election in addition to a contract price? If the contracts do have a quoted price, the special provisions should also include a maximum contract price to guard against moral hazards. In addition, the settlement of claim in the crop provisions may need to include the contract price/ price election language.

There appears to be two areas where there is a potential for disputes and potential legal actions; 1) THC levels and 2) seed genetics. Standards at the federal and state level are yet to be finalized which may open the door on when the crop needs to be destroyed and consequently when it is indemnified. In addition, genetics play an important part in crop production. Who is responsible for the male plants from bad seed? Is the insurer insuring the producer or the seed provider? This is not an issue with other commodities that I am aware of.

3. Calculations: Is the calculation for determining liability (i.e., the amount of coverage) clearly stated and supported by an example? Is the calculation for determining the amount of premium clearly stated and supported by an example? Is the calculation for determining the amount of indemnity clearly stated and supported by an example?

The calculations for liability, premium and indemnity are generally clear as shown in the crop provisions. However, the use and value of the contract price/ price election may need further clarification in all of the calculations.

4. Marketplace Issues: Could the product adversely affect the agricultural economy or the general marketplace of the crop that is proposed for coverage, or of other crops or areas? Does the product exclude or discourage participation of any portion of the industry? Does the product contain a consultation report that supports this conclusion?

In recent months, CBD prices have taken a significant downturn according to Hemp Benchmarks. The submitters have taken a conservative approach in setting the price but the question will it be enough. The price, if based on a price election, is based on prior years which are high and volatile. I believe there is a potential for over insurance, in the early years, if the price is not curtailed enough. This could negatively affect the agriculture economy.

The product is likely to exclude a number of small producers if the acreage limitation is imposed on the special provisions. The yield data provided for the CBD floral type indicate that over 50 percent of the grower observations were taken from plots of less than 5 acres.

B. Actuarial Appropriateness

1. Rates

- a. Data: Is adequate, credible, and reliable rate-making data available? Is the data used for the analyses appropriate, reliable, and the best available? Is it likely that the data will continue to be available? Is the data vulnerable to tampering if the proposed policy is approved?

The submission uses data from a number of sources. The biomass model sources included data from several governmental agencies (NASS, NOAA, CPC, NCEI and NASA). The data from these sources should be considered reliable and likely continue to be available.

RMA data for other crops are utilized for weighting purposes to determine a hemp rate. This data should always be available

In addition, they contacted all hemp licensing agencies of the 15 states that are proposed for insurance for yield information. Most state either did not collect the data, did not share their data or did not retain the data. The data that was obtained and was used to determine a yield per acre, came from Kentucky (CBD floral types and fiber types) and Kentucky and North Dakota (grain). The CBD types included 3 years of data, the fiber included 4 years of data and the grain included 11 years. The yield observations ranged from a low of .1 acres and a high of 750 acres.

The raw yield data from Kentucky and North Dakota are used to calculate a yield percentage for each type of hemp from an estimated amount of biomass. For example, the expected yield of CBD floral from an acre of biomass of x.

There are a number of questions about the adequacy and credibility of the data. As mentioned earlier nearly one-third of the yields are 1 acre or less in size. Because the yields are weighted to the state, county, type and year, the small acreage observations may have little to no effect, however that is not always the case. Boyle County in 2018 for instance had 6 observations (0.1, 0.1, 0.1, 0.5, 0.8, 2.0) – 5 of the observations are less than 1 acre.

In addition, there are issues regarding the assumption that yield data from Kentucky only (for CBD type) infers the same risks apply to all other states. Differences in climate, agronomic and cultural practices, topography may have a different relationship to comparable crops grown in the same region.

In the big picture, the data used to determine the percentages by type has a minor role. The data should be reviewed and amended annually. The yield data should be expanded into additional states as it becomes available.

None of the data as reported should be vulnerable to tampering.

- b. Assumptions: Are the explicit and implicit assumptions used in the rating process reasonable?

No. The submitters make three assumptions: 1) hemp annual yield variations coincide with other spring crops, 2) hemp biomass yields can be estimated using biomass modeling from comparable crops and, 3) hemp rating factors can be estimated from comparable crops.

The assumptions need to be backed with ground truth data. I do not have individual yield data to look at, but I did compare the average 2017 and 2018 county yields for CBD hemp provided by the submitters for Kentucky and compared those yields to the NASS county yields for corn and soybeans (like counties). The results would indicate a radical difference in yield variation from county to county and likely from grower to grower. Some of the differences potentially can be explained by losses that would not be covered by the policy as it is currently written, but it is unlikely that enough would be to accept the assumption that yield variations are similar to other crops for the CBD types.

2018 CBD Hemp County Yields vs NASS County Yields (Like Counties)					
	Hemp	Corn		Hemp	Soybeans
Mean	797.1	148.6		818.2	51.3
Std	446.8	22.2		494.2	4.5
CV	0.560	0.150		0.604	0.087

2017 CBD Hemp County Yields vs NASS County Yields (Like Counties)					
	Hemp	Corn		Hemp	Soybeans
Mean	822.0	151.2		888.4	52.5
Std	530.1	22.1		562.0	4.0
CV	0.645	0.146		0.633	0.076

The hemp yield variability needs further explanation and how it can be avoided under an insurance product. If the variability is explained as grower variability rather than location variability then you have a problem of having one T-yield for all growers.

The second assumption is that biomass yields can be estimated from biomass modeling techniques. The science has been rather successful in estimating biomass in the field from what I have read, therefore I would conclude that estimates for hemp fiber and hemp grain seem reasonable. Making the leap to the CBD hemp types is quite another. There is still the issue of: male plants that pollinate within the field if not removed, ditch weeds, and weed control measures.

Once CBD hemp reaches sexual maturity, producers must ensure that any male plants are removed as soon as they are found. Just a few male plants can pollinate an entire crop and trigger seed production in female plants resulting in a diminished flower set and reduced CBD concentration (Bennett, 2019). This could become very labor intensive. Can labor supply become an issue? Can bad seed genetics be an issue (male plants)? Are these potential losses covered under the policy? One could argue that those concerns may already be included in the current yield data set, but I question if the current data set represents the full proposed area and the expected future growth of the commodity.

- c. **Rating Methodology:** Is the actuarial methodology for the rates correct and appropriate for the policy? Will the methodology result in actuarially sound rates? Are the proposed premium rates likely to cover anticipated losses and a reasonable reserve?

The rates determined for industrial hemp are based on a biomass model. There is very little ground truth data yield data available for the crop. The biomass model may be a reasonable approach particular for grain and fiber that are planted with close drill spacing. The CBD types are planted unlike any other crop. The yields, what few there are available for review, are highly variable. While they may give a reasonable estimate of total pounds of dry matter by type it is reasonable to question the ability of the biomass model to fully access the risk of the CBD types.

The submitters used a biomass accumulation model to estimate the total pounds dry matter by county for a given year. The yield data that was collected essentially from Kentucky and North Dakota was used to utilized to determine yield percentages by type based on the corresponding dry matter yield estimates.

- Other than the for mentioned problem of small acreage observations the methodology seems reasonable for developing type differences for Kentucky and North Dakota. No data is available to determine if those differences are similar in other areas that are proposed. In addition, the number of yield years that are available may have an effect on the outcomes. Looking at the raw data would suggest substantial variability within years and across years which would imply that the resulting outcomes could change substantially, even with one additional year.

The submitters then determined relative variation between coefficient of variation (CV) risk scores for hemp and comparable crops. This worksheet was not included in the submission, only the results. The CV scores were then applied to current federal rates for each of the comparable crops.

- Assuming the calculations were done correctly, this step would seem reasonable, although I wonder if risk factors such as disease, genetics, “experimental farming” and cultural practices, which are not accounted for in the biomass model, are the real issue not the CV’s determined from a model.

A preliminary rate for industrial hemp was based on the base rate for each comparable crop multiplied by the CV score for each comparable crop. A weighting factor was then estimated as the inverse of the square root of the expected 2019 acreage for each comparable crop. The preliminary rates by type were then calculated by summing the weighted comparable crop rates across each type, irrigation practice, county, and coverage. Final rates were calculated by summing the weather grid-based 2018 acreage for Spring-planted row crops from Cropscape across each county and NASS Agricultural Statistical District (ASD).

- Assuming the calculations were done correctly, this step would seem reasonable for determining a starting rate, but one has to wonder if the raw CV's for the hemp yields are correct.

The rate methodology for industrial hemp essentially ignores the use of ground truth yield records and bases the rates solely on the variability of generated biomass yields. Is it appropriate? Maybe for grain and fiber production which are primarily biomass crops. The CBD types with any number of production issues may not be best rated based a biomass model unless calibrated to include ground truth data. CBD types are planted on wide spacings and are subjected to a number of production issues such as male plants, pests, and weeds that are not related to biomass.

The submitters have written into the policy a number of cautionary measures that should curtail some losses, but I am of the opinion that the suggested premium rates based on the biomass model are likely short of the anticipated losses.

- d. Experience: Does experience from prior years and relevant crops and areas support the validity of the proposed rates? Is the relation to any reference crop or area supported and logical?

The answer hinges on the number one assumption that the submitters make -- hemp annual yield variations coincide with other spring crops. If that assumption is true then prior year experience of comparable crops is valid, but if the assumption is false then the past experience of the comparable crops is not likely valid.

The table above in Rates part b. would suggest that the use of comparable crops for CBD floral type may not be relevant.

The assumption may be valid for both grain and fiber because the culture aspects and the longer series of Canadian data would support a biomass model.

- e. Do models or simulations validate the proposed rates for the risk to be covered?

Partially, the submitters simulated the loss costs ratios (LCRs) of Canadian grain hemp and other comparable crops. The results were then compared to the proposed biomass base rates to evaluate the relationship between the two rate development methodologies. The simulation does appear to validate the rates developed for grain using the biomass methodology.

No simulations were provided for fiber and the four CBD types.

2. Prices

- a. Price Data: Is adequate, credible, and reliable pricing data available? Is the data used for pricing appropriate, reliable, and the best available? Is it likely that the data will continue to be available? Is the data available when it is needed and does it represent an appropriate price for the product? Is the data vulnerable to tampering if the proposed policy is approved?

The pricing of industrial hemp is rather complex. Unlike many traditional crops it has multiple end uses; floral material, grain, and fiber, which have different values. In addition, the crop harvested for the extraction of the CBD compound, has different

planting methods (direct or transplanted) and harvested from both floral materials and whole plants which create another set of prices.

Industrial hemp production is regarded to be in its infancy in the U.S., historical data is very limited as a source of price data. Historical price data is limited in some states and completely unavailable in others. This no defined standard. The price reported may be reported in different formats: price per pound, price per percentage CBD, price per plant, flat fee, or split processing.

Where available, grower reported prices may have also included or excluded cost associated with plant material or seed, drying of material, harvesting and transportation, which can often be only accounted for by further follow-up with the respondent or the processor.

In short, the CBD price elections were largely based on grower data reported to the Kentucky Department of Agriculture (KDA) for the years 2016, 2017 and 2018. Prices were adjusted for processor services, converted to a standard dollars per pound basis and weighted by production. A three-year average was calculated for a preliminary price estimate for each type. A 2019 price point was calculated based on grower reports, processor reports and reporting organizations as a limitation to the three-year average. The submitters then applied a market adjustment factor to arrive at the final projected price election to be used in all states.

It is difficult to determine if the data is adequate because it was not included with the submission. It is likely that it is not given the following observations from the submission.

1. Data observations came from only 1 of the 15 states included in the submission.
2. The pricing platform was inconsistent (\$/pound, \$/%CBD, plant)
3. Prices inclusions were inconsistent (genetics, drying, harvesting, etc.)

We can assume that the data is credible (in its raw form before adjustments) and reliable since it came from a state agency.

The data used in the discovery of the prices is appropriate given the limitations of an emerging commodity and the amount of data available. The data should continue to be available and one would hope that data from additional states would also become available.

The grower data will have a lag year, that is the established price will be two years later than the last year of data. That can be problematic for a crop that has volatile pricing. The submitter has taken steps in an attempt to mitigate the volatility by introducing an estimate of the current years price and a conservative adjustment factor. Given that this crop is harvested as late as October and pricing for the next crop may be better known, I would highly suggest that price elections not be made until the first week in November, if at all possible.

The submission did not include the price data from KDA, so we can only assume the 2016, 2017 and 2018 reported data and adjustments were reasonable and that the calculations for end use are correct. I have no reason to believe that they are not. Not knowing the number of reports for each year, I wonder if the direct seeded price verses the transplanted price in 2016 is a reasonable relationship to be used in future years. The pricing differential between sale of the floral portion of the plant only versus the entire plant is judgmentally set at 50 percent based on comment from industry experts.

The date on the submission is October 7, 2019. Since then prices have fallen considerable based on information provided by two of the public reporting organizations used in determining the 2019 price. Hemp Benchmarks (October 30, 2019) “market conditions are reflected in the significant downturns in prices for CBD Hemp Biomass observed this month; assessed prices for every volume bracket declined month-over-month by between 23% and 33%”. PanXchange (October) down 19 to 22 percent from the September report. While these estimates would have any bearing on the estimated prices determined for 2020, it does show the volatility in prices the market. This also raises concerns about price elections for the following year. The market could crash as some have suggested in the listening sessions. If a crash occurs, how valid are the three-year average and the current year estimates. This all seems to depend on timing. The fall back appears to be the market adjustment factors determined by conversations with industry experts that are writing the contracts. One must wonder if the 1.00 market adjustment factor change from September to October is adequate.

Price elections for fiber were primarily based to interviews with industry processors with a market adjustment factor applied to reflect the expected market for 2020. No justification was given for the expected market reduction.

Price elections for grain were primarily based the lower of limited grower data reports and data collected from industry resources with a market adjustment factor applied to reflect the expected market for 2020. Again, no justification was given for the expected market reduction other than a conservative approach.

I wouldn’t expect data from a state reporting agency to be vulnerable to tapering.

- b. Pricing Methodology: Is the methodology or method used to determine the prices appropriate for the proposed policy? In the case of price or revenue policies, are the mechanisms for establishing price clearly stated in the materials? Is the proposed methodology or procedures for establishing prices feasible?

Unfortunately, the pricing for this commodity has yet to stabilize which makes it very difficult to project future pricing. The submitters have taken a conservative approach to set limits for the initial year. My concern become the years to follow. The methodology includes a capping process which is positive in a declining price environment, but is it enough or too much in future years? I would recommend the estimate for the current year used in the methodology be determined at the very latest date possible. The crop is largely harvested by the end of October, so the timing may be crucial.

C. Recognized Insurance Principles

1. Over-insurance: Does the policy avoid providing coverage in excess of the expected value of the insured crop?

The submitters have taken steps to limit the possibility to over-insurance. The potential price election over exposure is limited by a maximum price, but needs to be monitored judiciously each year.

T-yields may be a problem if the grower yields reported in Kentucky for CBD type are a volatile as reported on the supplemental worksheet.

Including yield cups and yield adjustment factors (YA) may potentially provide for excessive coverage. See Other Review Ares – Part J

2. Losses: Does the policy contain indemnity or other provisions that can be objectively verified by loss adjusters, underwriters, or auditors? If applicable, does the loss adjustment manual provide all the information needed to determine losses consistent with the policy provisions?

This is outside my area of expertise.

3. Equal Treatment: Is the policy likely to treat all producers equally?

Yes.

4. Reasonable Requirements: Will insureds be able to comply with all requirements of the policy?

Yes. Unless good farming practices are defined differently for hemp than other crops.

5. Waste/Fraud/Abuse: Does the policy create vulnerabilities to waste, fraud, or abuse?

Yes. The definition of good farming practice comes into play here. To my knowledge there are no herbicides or insecticides licensed for this crop as of yet. So, what is a good farming practice? Required labor? If the producer is provided bad seed or genetics that have considerable amount of male population, is this an insurable loss if not removed? Are ditch weeds left uncontrolled a potential insurable loss?

6. Shifting Risk: Does the submission increase or shift risk to another FCIC reinsured policy?

I do not believe that it does.

D. Requirements of the Act

1. Available Coverage: Does this policy provide coverage that, in whole or in part, is generally available from the private sector?

None known.

2. Legal Authority: Does the policy propose to insure a peril that is not authorized by the Act?

No, to the extent of the reviewer's knowledge.

3. Requirements/Current Direction: To the extent of the reviewer's knowledge, does the policy comply with all requirements of the Act and the public policy goals of FCIC?

Yes, to the extent of the reviewer's knowledge.

E. Excessive Risk

Are the risks proposed to be covered excessive such that they encourage adverse selection, moral hazard, or premium rates cannot be adequately or appropriately determined?

The specific causes of loss for industrial hemp are:

- 1) Adverse weather conditions,

- 2) Fire,
- 3) Insects, but not damage allowed because of insufficient or improper application of pest control measures,
- 4) Plant disease, but not damage allowed because of insufficient or improper application of disease control measures and the failure to follow applicable rotation requirements contained in section 8(a)(1) of these Crop Provisions,
- 5) Wildlife,
- 6) Earthquake,
- 7) Volcanic eruption,
- 8) Failure of the irrigation water supply due to a cause of loss specified in sections 10(a)(1) through (7) that also occurs during the insurance period.

In addition, causes of loss exclude any loss of production that is due to:

- 1) Levels of THC in excess of 0.3 percent or more on a dry weight basis except as otherwise specified on the Special Provisions,
- 2) Your failure to follow the requirements contained in the processor contract,
- 3) Any harvested production infected by mold, yeast, fungus, or other microbial organisms after harvest except as specified in section 12(c)(4) of these Crop Provisions,
- 4) Any damage or loss of production due to the inability to market the industrial hemp for any reason other than actual physical damage to the industrial hemp from an insurable cause specified in this section. For example, we will not pay you an indemnity if you are unable to market due to quarantine, boycott, or refusal of any person to accept production.

I see the following potential risks where premiums may not be able to adequately or appropriately be determined.

- Bad genetics. A recent quote in Hemp Benchmarks (October 2019) “*bad seeds have led to heavy losses across the industry. Problems include, but are not limited to, poor germination rates, a high frequency of male plants in supposedly feminized seed, and actual CBD potency not matching what was advertised*”. Poor germination could be a problem as the cost for feminized seed is currently very expensive. Elimination of the male plants is very labor intensive and costly, and insurance provides a way out.
- Chemical Herbicides. Currently there are no labeled herbicides for use for hemp. Quoting Hemp Benchmarks (October 2019) “*Chemical herbicides used widely to suppress weeds in the cultivation of traditional crops are not yet able to be used legally on hemp. Some farmers who planted seeds directly found it almost impossible to stay ahead of the weeds. Crop Infrastructure Corp., a public company with a large hemp operation in Nevada, reported that eight out of their 10 pivots were severely impacted by invasive weeds and estimated that 850 acres were lost. Many farmers simply did not have access to enough labor to suppress weeds manually in large plots*”. Yield data may currently account for this risk. However, a number of observations were taken from small plots where weeds may be easier to control and maybe not as labor intensive as on larger acreage.
- Cross Pollination. A recent quote in Hemp Benchmarks (October 2019) “*pollination from male plants, “ditch weed,” or feral cannabis plants that grow wild in some parts of the country, can also pollinate female hemp crops being grown for CBD*”.

production. A farmer told Hemp Benchmarks that a 50-square mile area in southern Colorado suffered from cross pollination". My concern here is that cross pollination may not be the same for all areas. The yield data was taken is from a very limited area that may not represent the risk of all areas or states.

F. Underwriting Principles

1. Does the product follow sound, reasonable, and appropriate underwriting principles?
This is outside my area of expertise.
2. If applicable, does the underwriting guide contain all the information needed to determine eligibility for insurance and amount of coverage?
This is outside my area of expertise.

G. New and Improved Coverage

1. Will the plan of insurance provide a new kind of coverage that is likely to be viable and marketable?
Yes, as the crop becomes more established it is likely to become more marketable.
2. Will the plan of insurance provide crop insurance coverage in a manner that addresses a clear and identifiable flaw or problem in an existing policy?
Not applicable
3. Will the plan of insurance provide a new or improved coverage for a commodity that previously had no available crop insurance, or has demonstrated a low level of participation or coverage level under existing coverage?
Yes, growers currently do not have crop insurance options available to them other than Whole Farm Revenue Protection (WFRP). WFRP is primarily suitable for farmers with diversified land usage. Many hemp farmers produce solely hemp (PanXchange, October 2019 Hemp Report).

H. Delivery System

1. Does the policy place an unreasonable administrative burden on the insureds, AIPs, or the Federal crop insurance program? Administrative burden includes time, effort, or financial resources expended by persons to generate, maintain, or provide information to or for a Federal agency, including the resources expended for reviewing instructions; acquiring, installing, and utilizing technology and systems; adjusting the existing ways to comply with any previously applicable instructions and requirements; searching data sources; completing and reviewing the collection of information; and transmitting or otherwise disclosing the information.
Not likely. There will need to be additional work completed on the CBD types in terms of test for THC, which excludes production if the THC exceeds the allowable limit.
2. If applicable, are training plans reasonable and appropriate?

This is outside my area of expertise.

3. Are the submitter conclusions on administrative requirements and costs supported by a marketability assessment?

Not in my area of expertise.

I. Marketability

1. Is the submitter's determination of marketability reasonable and supported by the marketability assessment, market research studies, focus group results, and other evidence?

This is outside my area of expertise.

2. Is the proposed policy or plan of insurance likely to result in a viable and marketable policy that can reasonably attain levels of participation similar to other like policies?

Possibly, I am under the impression that this product is underrated for the CBD types and has the potential to be overpriced, which could lead to higher participation. The yield data worksheet and comments from the focus groups would suggest that there have been a number of production problems. Some would not be insurable but some still seem to be questionable as to coverage. Issues such as seed genetics, pollination from ditch weeds, labor for elimination of male plants, lack of licensed pesticide and lack of licensed herbicide are coverage questions that need to be answered.

On the flip side the focus group information provided by the submitters did not point to any direct interest in an insurance product.

3. Does the information gathered in the focus groups regarding what the producers are willing to pay support that producers will be willing to purchase the product at the proposed rates?

The information provided from the focus groups was generally learning sessions about the commodity. I saw no references relating to if consumers would be willing to purchase an insurance product.

4. Will the product have a significant adverse impact on the crop insurance delivery system? Is this supported by information contained in the marketability assessment?

None known

5. Is evidence provided that AIPs and their agents will sell and service the product?

Yes. Letters from Diversified and Crop Risk Services indicate their willingness to sell and service the product.

J. Other Review Areas

1. Special Questions: Questions specific to this review provided by FCIC.
 - a. What new insurance challenges might the emerging market for industrial hemp create that the Federal crop insurance program has not encountered before?

- Following the initial pilot of the of industrial hemp program, if FCIC takes over the program, will RMA have the ability to determine rates and T-yields using the biomass model? This question can only be answered by RMA, but I think it would be a new issue and maybe a challenging one.
 - The rating methodology uses existing rates from other crops. At what timeframe does this take place? Is it done following any rate reviews of the other crops or before the rate changes occur?
- b. Would it be appropriate to limit the scope of initial availability of the product due to factors like limited data availability and market volatility? If so, what might the most appropriate method(s) be (e.g. requiring a contract that includes a price for insurability, limiting the product to counties with industrial hemp production history, establishing a cap on acreage eligible for coverage, requiring producer production history for insurability, and/or other methods)?
 - Yes, although these are only opinions. Initially I would limit the number of states and counties simply because of the lack of yield knowledge from most state. The data provided is essentially only from Kentucky and North Dakota, therefore, I would limit the states to maybe 4 or 5 including Kentucky and North Dakota.
 - Having a policy based on a contract price would remove the problems of setting a price election that were analyzed earlier. That may be problematic if processors decide not to include a price on the contract, but it makes sense to have them be a part of the responsibility.
- c. Could significant variations in the ways industrial hemp types are planted, cultivated, and harvested across the country, and/or the lack of site-adapted good farming practices (GFPs), impact the likelihood of the development of a viable and marketable product?
 - This is outside my area of expertise.
- d. Could significant geographic differences and/or volatility in prices of the proposed types (i.e. fiber, seed, and/or CBD) impact the submitter's ability to develop adequate pricing or rating methodology for the product, and are the proposed market adjustment factors appropriate?
 - No evidence was presented that prices of the proposed types should be different by location. If the price is based on a contract price the concern goes away, but if it is based on a price election then it should be a concern. In addition, the justification for the market adjustment factors may be appropriate for 2020, but little is known about future year adjustments and how it is to be determined.
- e. Is the methodology for establishing transitional yields (T-Yields) for the product sound, and are differences in yield between varieties within a type sufficient to create a situation of over-insurance when lower yielding varieties are planted follow higher yielding varieties?
 - The methodology for establishing transitional yields depends largely on the assumption that dry matter yields can be determined based on a biomass model. While this may be plausible for grain and fiber types, this should have concerns in regard to CBD types. The CBD types are largely a by-product of the plant that is planted on a different planting pattern than the grain and fiber types.

- It should be noted that in the listening sessions, JT Workman a large grower from Clinton, Kentucky suggested that T-yield should be 25% to 35% lower and no higher than 300 pounds/ac if no yields were provided.
- f. Are yield substitution and cups appropriate, given the yield volatility for cannabidiol (CBD)?
- No,

A cup mitigates the effect of a catastrophic year on an approved APH yield by preventing it from decreasing by more than 10 percent compared to the prior year's approved APH yield and is only available for carryover insureds. Industrial hemp is in its early stages with rotation requirements, it is likely have a lot of T-yields in the database.

For APH yield calculation purposes, insureds may elect to substitute 60 percent of the applicable T-Yield for actual yields that are less than 60 percent of the applicable T-Yield to mitigate the effect of catastrophic year(s). This is only an opinion but I would consider not having the Yield Adjustment Option initially. Industrial hemp is still basically an experimental crop with no licensed insecticide or licensed herbicide.
- g. Since the product submitted has rotation requirements and industrial hemp is a new crop to the agricultural landscape, would master yields be more appropriate for the insured to more quickly accumulate their own yield history, versus longer reliance on T-Yields?
- This is outside my area of expertise.
- h. Does the product include adequate appraisal methods for the different planting patterns? Are differences in the various planting patterns and/or seed germination rates significant enough to warrant acreage adjustment consideration?
- Stand Reduction Appraisals. This is a little bit out of my area of expertise but I have dealt with sampling issues in the past. The LASH calls for a minimum of 3 appraisal samples if the field is between 0.1 and 10.0 acres and 1 additional for each forty acres thereafter on a stand reduction appraisal. There doesn't seem to be much consistency among other crops although the 1 per additional 40 acres is pretty common. But industrial hemp is not a common crop with plant spacings of 4x4 or 4x5 or 4x6. I might suggest a sampling similar to sugarcane; 3 samples 0.1 to 10.0 acres, 4 additional samples 10.1 to 40.0 and 1 for each additional 40 acres.

Under the current procedure, a 30-acre field planted on a 4 by 6 pattern would have 4 samples or only 0.1% of the plant population sampled on a stand reduction. That is not a sufficient sample.

I would also suggest increasing the row widths in the LASH, Exhibit 5, Table C of the stand reduction appraisal procedure to include 48 inches if that is the common width.
- i. Are the minimum acreage requirements (e.g. 5 acres for CBD and 20 acres for grain and fiber) appropriate, or should they be adjusted upward or downward for any type(s)? Is the

proposed minimum distance of 5 miles between CBD fields and other industrial hemp fields appropriate for insurability?

- This is outside my area of expertise. Seems like a judgment call.

j. Is interplanting industrial hemp with another crop considered a good farming practice in any of the areas proposed for coverage eligibility?

- This is outside my area of expertise.

k. Should any additional crops be included in the rotation requirements (e.g. crambe, dry beans, safflowers, mustard, or rapeseed)?

- This is outside my area of expertise.

l. For CBD production, some processors pay on a converted basis of pounds multiplied by CBD percentage. For loss adjustment and/or APH purposes, should a conversion factor to pounds of production be established for CBD processed on the basis of pounds multiplied by CBD percentage?

- If the CBD percentages are reasonable based on the data and can be justified for all locations, it should be okay. However, a number of concerns that surround these conversion factors were raised in the executive review and in the rating research.

2. Additional Reviewer Observations: The expert reviewer's written report may also include additional information at the discretion of the expert reviewer.

BIOGRAPHY

LeWayne Jansonius

Experience:

2006 to Present: Consulting Actuary (Private)

- Design and Develop crop insurance proposals that meet the insurance needs of the agriculture community.
 1. Fresh Market Green Beans
 2. Sweet Potatoes
 3. Oysters
 4. Sugar Cane
 5. Machine Harvested Cucumbers
 6. Clary Sage
 7. Camelina
 8. Certified Seed Wheat
- Actuarial Expert Reviews
 1. Puerto Rico Banana and Plantain
 2. Tobacco Quality- Price
 3. Popcorn Revenue Coverage
 4. Hurricane Insurance Protection

2008 to 2014: Hudson Insurance Company, Inc.

- Calculate crop hail rates and manage insurance filings in several States.

1984 to 2006: Risk Management Agency, Kansas City, Missouri;

- Conducted special studies and evaluations of actuarial structures and made recommendations to upper management
- Evaluated and recommended changes to premium rating methodologies
- Performed critical reviews on new actuarial proposals and studies
- Directed staff activities for the Prices Section, Rates and Coverage Section and Design Section
- Planned and developed the continuous rating system, a formula driven rating process
- Established price elections in support of RMA programs
- Developed new crop insurance programs
- Provided technical support for the standardize ratemaking process
- Developed the identification process for the non-standard classification system

1973 to 1984: National Agricultural Statistics Service; Agricultural Statistician

- Tours of duty in Kansas, Indiana and Oregon
- Established official estimates of production for crops, fruits, vegetables and livestock
- Supervised a staff of data collection enumerators

I have a degree in statistics from Kansas State University

Review of: Industrial Hemp

BPA 12FPC319A0008

BPA Task Order 12FPC320F0008

November 25, 2019

Ron Lundine



Executive Summary

This submission proposes to provide coverage for Industrial Hemp grown for fiber, grain, or CBD under an Actual Production History plan of insurance. The proposed pilot area includes 15 states from the eastern U.S., across the northern states and to the west coast. Industrial Hemp has only been legal to grow since the passage of the Agricultural Improvement Act of 2014. This industry is quickly expanding and rapidly evolving. There are no defined standards for much of the industry and if this proposal is approved, it will need close monitoring and likely numerous changes.

Acreage has increased about 300 percent per year and there were about 230,000 acres of industrial hemp planted in 2019. However, about only about half those acres were harvested and estimates indicate that this is still about eight times as many acres as needed to supply the CBD industry. Supply is quickly surpassing demand and this will have a major impact on the industry.

There are concerns with the pricing methodology. Since this industry is so new there are very limited data available. Multiple different units of measure are reported for prices. Terminology used by growers and processors is not standardized and can skew price information. The submission proposes two pricing methodologies: 1) Three-year moving average or 2) The lesser of the three-year moving average or the mean price provided by industry resources. Since any price data from the previous three years is unsustainably high because of demand exceeding supply, the submitter proposes using the second methodology. This will essentially result in contacting industry resources prior to the contract change date to determine the price. With the rapid increase in acres there are several estimates that prices will decline substantially next year.

There are also some concerns with the rating methodology. There are insufficient grower-level data to calculate premium rates. The submission uses a biomass model to estimate hemp yields and compares them to other crops that currently have established premium rates. The biomass model uses environmental inputs (Absorbed Photosynthetically Active Radiation, Temperature, and Soil Moisture) and crop-specific Light Use Efficiency values to estimate the variability of hemp and comparable crops and creates Risk Score Factors which are multiplied by the comparable crop premium rate to determine the hemp rate. The limitations of the biomass model result in relatively small differences between hemp and the comparable crops. In most cases, the Risk Score Factors result in only a +/- 10 percent change from the comparable crop premium rate. In much of the U.S. rates may be adequate, however, the selection of comparable crops has a large impact on the final rate. In much of Indiana and Illinois where only corn and soybeans were selected as comparable crops, the hemp rates are as low as 1.5 percent. It is unreasonable to assume these low rates will be actuarially sound.

T-yields were also generated from the biomass model. There is very little actual grower-level yield data available to compare to the T-yields. Most of the yield data provided was from Kentucky and only for a few types of hemp. For these very few specific state and hemp type combinations the T-yields seem somewhat reasonable. However, the vast majority of T-yields for states and hemp types have nothing for a comparison and it is questionable that they are appropriate for all states and hemp types. Since this is such a new crop, not many growers will have four years of records and will have to rely on T-yields. If these T-yields are too high it could lead to substantial losses early in the program.

A private insurance provider was identified who will likely have a CBD policy available for the 2020 crop year. It is possible that this private product is covering the same risk as this submission.

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A description of the methodology used by the expert reviewer to check rates, prices, marketability, or anything else in the submission.

The submission was read completely and the proposal was compared to other crop insurance programs. A thorough background search of the submission topic was performed. Regression analysis was performed on the relationship between actual grower yields and the biomass yield estimates. I primarily relied on my experience in reviewing numerous submissions to work through the proposal and items in the description of work.

Short biographies (not to exceed one page) for each person who took a substantial part in the expert review. The biography should include any experience, degrees, certificates, or other information to support the qualifications of the participant.

Ron Lundine was the only person involved in this expert review. I have a Bachelor of General Studies degree with a double major in Environmental Studies and Meteorology from the University of Kansas and a Master of Science degree in Atmospheric Science (Agricultural Meteorology) from the University of Missouri (thesis: Comparison of Soybean Plant-Water Stress Indicators).

I worked for USDA for a total of 35 years. The first three years as an agricultural meteorologist with the World Agricultural Outlook Board where I forecasted crop production in China, India, Southeast Asia, South Africa, and Sub-Saharan Africa for use in the World Agricultural Supply and Demand Estimates reports. The remaining 32 years I was employed with the Risk Management Agency.

(1) Protection of the Interests of Agricultural Producers and Taxpayers

(a) Meaningful Coverage: Does the policy provide meaningful coverage that is of use to many producers, and is the coverage provided in a cost-efficient manner?

The Industrial Hemp policy is an Actual Production History (APH) plan of insurance and would provide meaningful coverage to many producers. Coverage would be provided for Industrial Hemp grown for fiber, grain, and cannabidiol (CBD). Industrial Hemp is a new crop to most of the producers in the U.S. and with steep production costs and uncertain yields, crop insurance would help to stabilize the industry. However, this coverage may not be provided in a cost-efficient manner. Concerns with the pricing and rating methodologies may result in price elections that are too high and rates that are extremely variable across the country (nonirrigated CBD rates are as low as 1.5 percent in Illinois and Indiana while rates in Colorado are in excess of 80 percent).

(b) Policy: Is the policy clearly written so that producers will be able to understand the coverage that they are being offered? Does the policy language permit actuaries to form a clear understanding of the payment contingencies for which they will set rates? Is it likely that an excessive number of disputes or legal actions will arise from misunderstandings over policy language?

For the most part, the policy is clearly written and producers will be able to understand the coverage offered. Actuaries will also be able to understand that this is a yield-based policy and that the standard causes of loss will apply and that hemp that exceeds 0.3 percent delta-9-tetrahydrocannabinol (THC) will not be a covered cause of loss. It is unlikely that an excessive number of disputes or legal actions will arise. However, the lack of well-established good farming practices may lead to an increase in disputes or FCIC determinations regarding good farming practices.

There are a few issues in the policy that may need come clarifications.

- The definition of Harvest – The combining or threshing the insured crop ... should be either: Combining or threshing the insured crop or: The combining or threshing of the insured crop.
- The definition of Planted Acreage – mentions seedlings or hydroponic plants that are transplanted into the field, but the submission states that grain/fiber hemp is seeded into the field and this may need to be included in the definition.
- Section 3 (c) is missing a parenthesis: Notwithstanding section 3(a) and b)
- Section 10 (a) (4) references section 8 (a) (1) but this should refer to section 8 (a).
- Section 10 (b) (1) states: Levels of THC in excess of 0.3 percent or more on a dry weight basis. The “or more” is redundant.

(c) Calculations: Is the calculation for determining liability (i.e., the amount of coverage) clearly stated and supported by an example? Is the calculation for determining the amount of premium clearly stated and supported by an example? Is the calculation for determining the amount of indemnity clearly stated and supported by an example?

An example is provided that indicates the liability is equal to the number of acres multiplied by the production guarantee per acre multiplied by the price election. The premium is equal to the liability multiplied by the premium rate and the share. The indemnity is equal to the production guarantee minus the value of the production to count.

(d) Marketplace Issues: Could the product adversely affect the agricultural economy or the general marketplace of the crop that is proposed for coverage, or of other crops or areas? Does the product exclude or discourage participation of any portion of the industry? Does the

product contain a consultation report that supports this conclusion?

Industrial Hemp is a new emerging crop and the marketplace is rapidly evolving. There are numerous unknowns about where the market is going. If this crop insurance product is released with crop price elections that are unrealistically high and with premium rates that are relatively low, there could be an incentive for new growers to enter the industry and further saturate the market with overproduction which could drive prices down. This could lead to situations of moral hazard when the insurance is worth more than selling the crop. The insurance product has acre limitations which exclude small growers, and insureds must also have license to grow and a contract with a processor to purchase insurance. Two Marketability Assessments were provided with the submission but neither mentioned any issues.

(2) Actuarial Appropriateness

(a) Rates

(i) Data: Is adequate, credible, and reliable rate-making data available? Is the data used for the analyses appropriate, reliable, and the best available? Is it likely that the data will continue to be available? Is the data vulnerable to tampering if the proposed policy is approved?

Adequate, credible, and reliable rate-making yield data are not available. Industrial Hemp has only been legal to grow in the United States following the Agricultural Improvement Act of 2014. Only the past two years have had significant amounts of acreage. Since Industrial Hemp is a very new crop and rapidly evolving, many agronomic practices and market issues have not yet been standardized making it difficult to obtain credible and reliable data.

Most of the grower-level Industrial Hemp yield data in the United States came from Kentucky, North Dakota, and Wisconsin. Yield data for grain, fiber, and CBD were provided as a

supplement to the original submission. These data were not used in the main rate methodology but used to calibrate the final estimates for each hemp type. However, these data were highly variable and their use even to calibrate the final estimates cause some concern. A fairly large number of these data observations appear to be duplicates. For the same year, state, county, and type there are numerous observations that have the exact same number of acres and yield. While it is not impossible for several observations to be identical, it is unlikely that this would occur on a large scale. For 2015, there were 31 data observations and 20 were duplicates. For 2016 there were 100 data observations and 47 were duplicates. This happened less frequently for the 2017-18 data but are still a concern.

Some yield data were collected from Canada, China, and France. It appears that only some of the data from Canada were used due to different practices and the unreliability of some of the international data.

The main portion of the rate methodology used a biomass model that estimates vegetative production from environmental inputs. The data inputs into the model are: Absorbed Photosynthetically Active Radiation (APAR), Temperature, Soil Moisture, and Light Use Efficiency. These data are all adequate, credible, reliable, and not vulnerable to tampering. However, the U. S. Drought Monitor was used to proxy soil moisture conditions. It is relatively slow to react (by design) to short-term changes. The Drought Monitor could indicate a moderate drought but a timely rain during an important crop stage such as tassel/silking in corn or pod-fill in soybeans could benefit the crop while not resulting in a substantial change to the Drought Monitor. The Drought Monitor may not be the best available variable to proxy crop-soil moisture conditions.

(ii) Assumptions: Are the explicit and implicit assumptions used in the rating process reasonable?

Since adequate grower-level hemp data were not available, the submission used a biomass crop model to estimate vegetative production in industrial hemp and several comparable crops insured under the Federal Crop Insurance program.

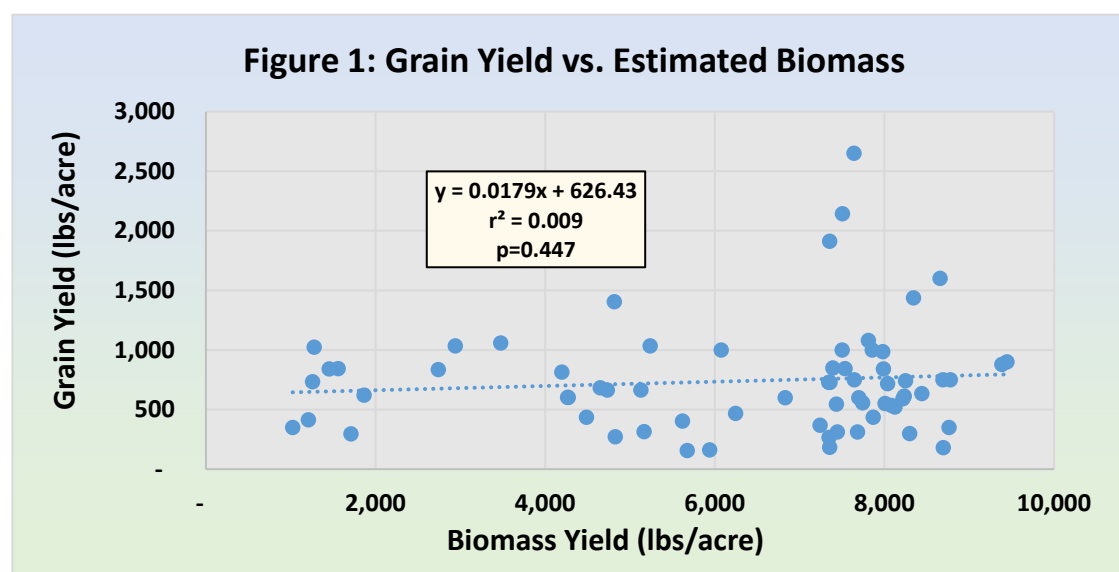
The submission states three basic assumptions with this biomass model:

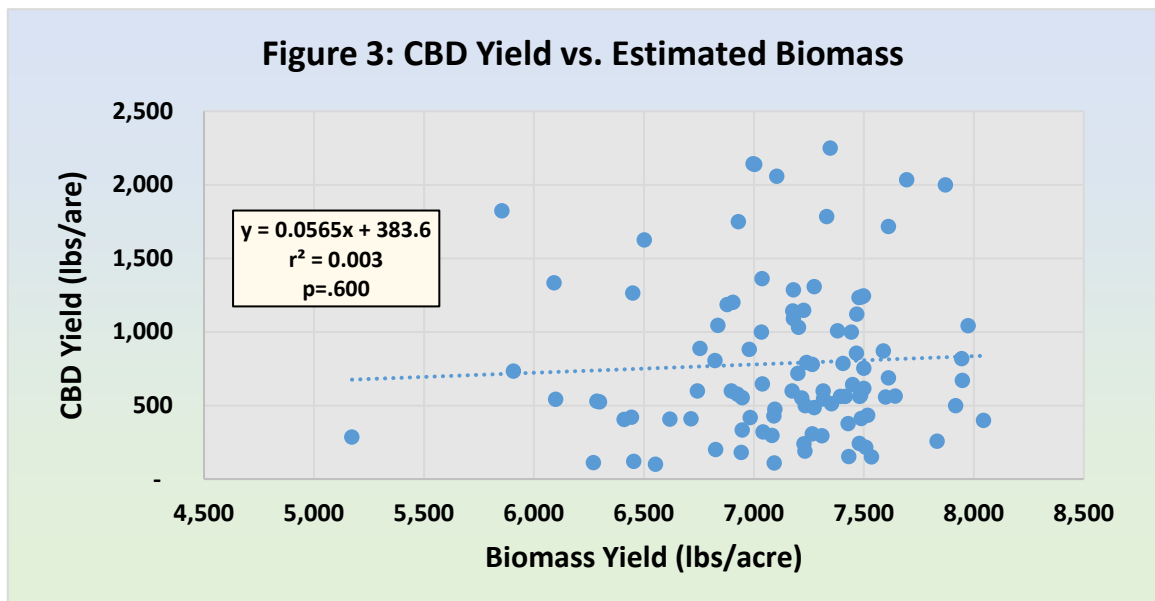
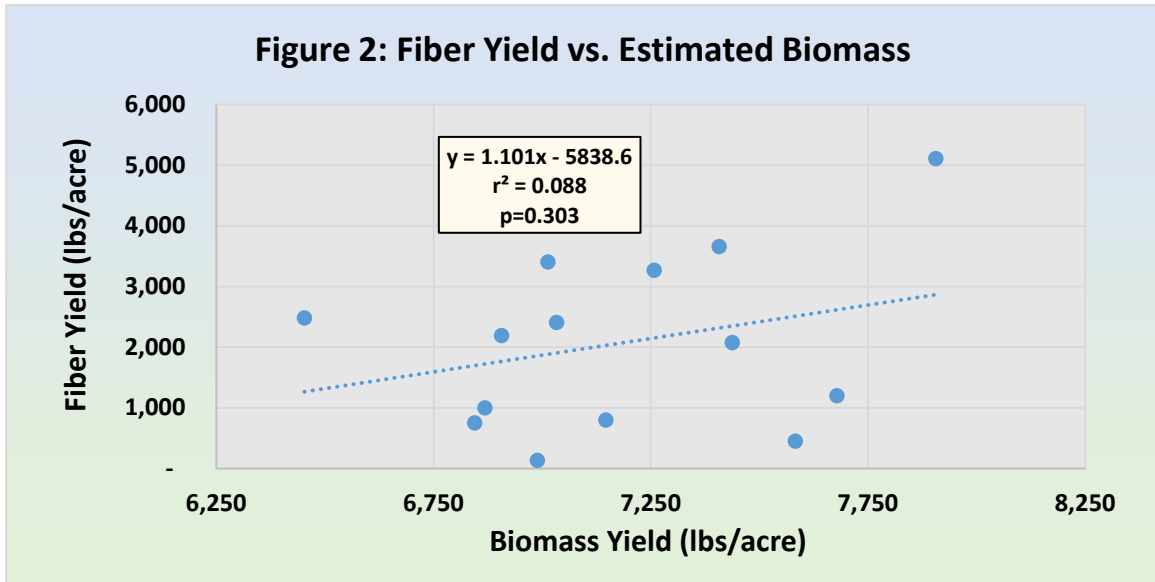
1. Hemp yield varies in tandem with other spring-planted annual crops
2. Hemp biomass by type can be estimated from the model
3. Information from comparable crops can be leveraged to determine rate factors

The basic premise of the rate methodology is to compare the variability of hemp yields to those of other crops (corn for example) that currently have premium rates established. A factor of the ratio of the hemp variance and corn variance can then be applied to the corn premium rate to determine a premium rate for hemp.

The first assumption that hemp varies in tandem with other spring-planted crops is questionable. Many crops have important reproductive periods that are critical to the final yield. The tasseling/silking period in corn for example is a relatively short window and hot/dry weather during this time can greatly reduce yield. Indeterminate soybeans have a longer flowering/pod-fill period that can withstand a short period of unfavorable weather and continue to produce flowers later that will develop pods. The same environmental conditions can result in different yield variances.

The second assumption is that hemp biomass type can be estimated from the model. The model estimates total above-ground dry matter (biomass). So, for corn it would not estimate just the amount of grain, but the total stalks, leaves, tassel, grain, husk, etc. The submission attempts to separate the total biomass for hemp into the six types: CBD Direct Seed Floral, CBD Direct Seed Whole Plant, CBD Transplant Floral, CBD Transplant Whole Plant, Fiber, and Grain. To do this the grower-level hemp yield data were used to calibrate the final biomass estimates. The grower-level data were regressed against the total biomass estimates to determine expected percent biomass by hemp type. These grower-level data were only from Kentucky, North Dakota, and Wisconsin (mostly from Kentucky), only from 4 years with most of the data in the past 2 years, and highly variable. There were only three types of hemp data provided: grain, fiber, and CBD direct seeded floral. There is not a lot of confidence in the use of these estimates across all types for all 15 proposed states. Regression analyses performed in this review (Figures 1-3) indicate there is no statistically significant relationship (at $\alpha=0.10$) between any of the actual grower-level yields by type and the biomass yield estimates. One observation for CBD in Montana that seemed to be an outlier was removed from the CBD regression analysis.





Ultimately, there was very little difference across hemp types in the in the CV Risk Scores. Table 4 (Average Coefficient of Variation Scores for Hemp Comparable Crops) in the submission's Rating Methodology shows very little variability across hemp types for any of the comparable crops. The average CV Risk Score for hemp types compared to corn for example have a low of 0.96 and high of 1.00.

The third assumption that information from comparable crops can be used causes some concerns as well. The criteria for selection as a comparable crop was only that it was grown in the county and during the same time period as hemp. The comparable crops included: barley, canola, corn, cotton, dry beans, dry peas, flax, grain sorghum, mustard, oats, safflowers, and sunflowers. There was no effort to determine if these crops have the same yield risks as hemp.

(iii) Rating Methodology: Is the actuarial methodology for the rates correct and appropriate for the policy? Will the methodology result in actuarially sound rates? Are the proposed premium rates likely to cover anticipated losses and a reasonable reserve?

The rating methodology consisted of estimating biomass yields for hemp and comparable crops and then creating a Risk Score Factor by taking the ratio of the coefficients of variation (CV) multiplied by the premium rate of the comparable crop to determine a premium rate for hemp. In other words, if the CV of hemp is greater than the CV of corn (for example) then hemp is riskier and the premium rate should be higher than that of corn.

In the Industrial Hemp Rate Excel file on the Risk Score tab the first line of data shows that the Comparable Crop CV Risk Score for corn is 19.80, the Hemp CV Risk Score is 19.67, and the Risk Score Factor is 1.007. This would indicate (an actual formula was not provided in the excel file, just the final value) that the calculation is $CV\ Corn / CV\ Hemp = 19.80/19.67 = 1.007$. However, in this instance if the CV for hemp is less than that of corn, shouldn't the CV Risk Score Factor be less than 1.00 (the CV Risk Score Factor is multiplied by the base rate for the comparable crop) and the hemp rate less than the corn rate? Should the CV ratio calculation be $CV\ Hemp / CV\ Corn$ for all observations?

As mentioned previously, the data inputs into the biomass model are: Absorbed Photosynthetically Active Radiation (APAR), Temperature, Soil Moisture, and Light Use

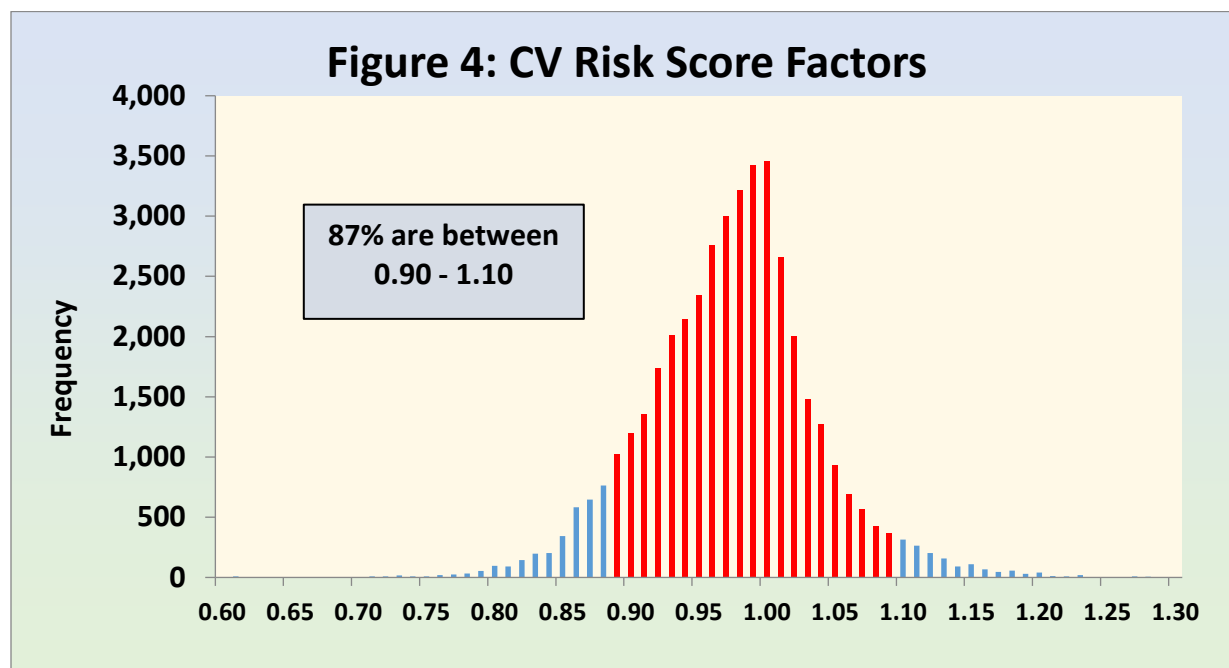
Efficiency. The biomass estimates are calculated for an area (0.5-degree by 0.5-degree grid) and daily time interval and summed to the county level for the growing season. Light Use Efficiency represents a plant's ability to use solar radiation in photosynthesis and varies by crop. A Maximum Light Use Efficiency value of 2.2 was selected for hemp from a study (Meijer et al. 1995) done on fiber hemp varieties but CBD varieties may have a different value due to the very different planting densities and plant architectures between the two types. Maximum Light Use Efficiencies for the comparable crops varied from 1.0 for dry beans to 4.0 for corn.

The inputs into the biomass model are tied to the grid area that is being estimated. The values of APAR, Temperature, Soil Moisture are the same for a given area and time regardless of the crop, hemp or corn for example. The only difference is the value of the Light Use Efficiency which is a constant for each crop. The Light Use Efficiency is equal to the Maximum Light Use Efficiency multiplied by some temperature and soil moisture constraints; however, these don't appear to vary by crop. Consequently, after taking two different constants multiplied by the input variables and then standardizing to 100 pounds, the CV's would be equal and the CV Risk Score Factor would be 1.00.

The U. S. Drought Monitor has five levels, D0 (Abnormally Dry), D1 (Moderate Drought), D2 (Severe Drought), D3 (Extreme Drought), and D4 (Exceptional Drought). The submission states that the "no drought" category (assume this is D0) was given a numeric value of 1.0 and D4 was given a numeric value of 0.001 (as opposed to zero). The submission did not state what values were given to D1, D2, or D3, but this review assumes they were .75, .50, and .25 respectively. The biomass model was run under the assumption of irrigation and the Drought Monitor was constrained in the biomass model to values between 0.7 and 1.0 (there were many values that likely fell below this floor of 0.7). This essentially takes the soil moisture variable out of the equation. It was not clear why this assumption was made. It was not stated how much of the Industrial Hemp crop is expected to be irrigated or if this assumption was applied to all the

other comparable crops. However, it appears this assumption of irrigation was used to calculate both irrigated and nonirrigated rates.

The only other place where differences in CV could be introduced is in the beta-sigmoidal growth curve. This is introduced to convert the maximum biomass estimate into a value representative of plant growth from a small plant at planting time to a larger mature plant at harvest. The submission states that the time variables in the beta-sigmoidal growth curve for hemp were allowed to vary based on planting and harvesting dates by type. It was not stated how they were allowed to vary, or any examples given. It was not mentioned if these varied for the comparable crops. This review assumes that they were allowed to vary and this is the only real source of the differences between the CV Comparable Crop and CV Hemp. If this is the only source of variation between hemp and the comparable crops, it does not provide much. In fact, about 87 percent of the CV Risk Score Factors (Figure 4) were between 0.90 and 1.10 (+-10 percent of the comparable crop rate). The end result is that the rates would not be much different than just taking the average rate of the comparable crops directly without needing to use the biomass model.



Many of the base rates are in the range of about 7 to 20 percent (for Nonirrigated CBD Transplant Floral) but vary considerably across the country. There are a relatively large number of counties that have rates less than 5 percent and as low as 1.5 percent in Indiana, Illinois, and Minnesota. The primary reason for these very low rates are the comparable crops selected and the CV Risk Score Factors around 1.0. Since these states are primarily corn/soybean areas, these are the main comparable crops used in the analysis. In many instances corn and soybeans were the only two comparable crops used in a county. Corn and soybeans in Indiana and Illinois have some of the lowest rates in all of crop insurance. It is unreasonable to assume that these very low rates would be actuarially sound and cover anticipated losses with a reasonable reserve for Industrial Hemp. It would be advisable to place a floor on the rates and not let any Industrial Hemp rates fall to these very low values. There are also some excessively high rates exceeding 80 percent for nonirrigated CBD in Colorado. Coverage should not be offered for type/practice combination where the rates are excessively high.

Very few actual industrial hemp yield data were provided, but even those showed a relatively large amount of variability. Also, the fact that this is a very new crop that is still determining appropriate production practices and many hemp producers have no previous agricultural experience points to the possibility of high yield variability especially for the first several years. Vote Hemp (a national nonprofit hemp advocacy organization) estimated that about 50 to 60 percent of the hemp acres in 2019 will not be harvested due to crop failure or non-compliant crops.

(iv) Experience: Does experience from prior years and relevant crops and areas support the validity of the proposed rates? Is the relation to any reference crop or area supported and logical?

The rating methodology was based on a comparison of estimates of hemp biomass to comparable crops. As mentioned above, there are several concerns with this process. The selection of comparable crops was solely based on the crops being grown during the same time period as hemp. It is not supported or logical that a very new and rapidly evolving crop like industrial hemp would perform in the same manner as well-established crops like corn and soybeans in the Corn Belt States with some of the lowest rates in all of crop insurance. Where there were many comparable crops used in a county the impact of any singular crop is minimized and the final rates are likely more reasonable.

(v) Do models or simulations validate the proposed rates for the risk to be covered?

The simulation created Loss Cost Ratios (LCR) from Manitoba yield data for hemp (for grain only), wheat, rapeseed, and sunflowers. A comparison of the ratio of hemp LCR to the LCR of the other crops was compared to the biomass model CV Risk Score Factors.

The submission states (underscore added): *“On average, for the types and locations evaluated, the resulting proxied rates produced from the actuarial analysis of the Canadian data were 96% of the premium rates produced by the hemp biomass model, meaning that the rates resulting from both methodologies were, on average, within 4% of each other”.*

This simulation only validates nonirrigated grain hemp rates from the biomass model in states near Manitoba, which would only be for North Dakota. In 2019, grain hemp accounted for less than 10 percent of total hemp acreage in the U.S. while CBD Hemp accounted for about 75 – 80 percent of the total. In the biomass model, the counties in North Dakota used 9 comparable crops: Wheat, Canola, Oats, Flax, Corn, Safflower, Dry Peas, Mustard, and Sunflowers. This is quite different than many of the counties in Illinois and Indiana where only Corn and Soybeans were used. The average rate from the biomass model for nonirrigated grain hemp in North Dakota was 18.2 percent which is substantially different than the very low rates in Illinois and

Indiana. This simulation does not validate grain rates in the rest of the U.S. or any of the fiber hemp or CBD hemp rates.

(b) Prices

(i) Price Data: Is adequate, credible, and reliable pricing data available? Is the data used for pricing appropriate, reliable, and the best available? Is it likely that the data will continue to be available? Is the data available when it is needed and does it represent an appropriate price for the product? Is the data vulnerable to tampering if the proposed policy is approved?

Price data provided in the submission is likely the best available; however, it is not adequate, credible, or reliable. There are numerous concerns about the price data available for industrial hemp. Because this is a very new and rapidly developing crop that has only been grown in the U.S. since 2015, any price data previously reported (when demand greatly exceeded supply) and any data for the next several years will not likely be representative of what prices will be when this market finally stabilizes.

The submitters requested price data from growers and processors but many declined to provide any. Price data was acquired from three sources: harvest reports from growers primarily from Kentucky and Tennessee, growers and processors from interviews with the submitter, and public pricing resources. However, defined hemp standards do not exist and some report prices as a dollar amount per percent per pound of dry matter while others report total dollar amount per pound of dry matter. Even terminology used by growers, processors, and market reports are not standard and can skew price data. Some high quality smokable hemp sells for as much as ten times other types of hemp. Some processors provide transplants or other services and reduce the crop price to growers. There are also volume discount prices. All of these issues make it difficult to use any previous data or any data moving forward until some standardization occurs.

In 2019, hemp prices decreased substantially and processors took a loss on contract prices paid

to growers. Moving forward, many processors will not provide a set price in the contracts for 2020. There will be a floor price with a method to determine a final price based on published market price. This may technically meet the definition of a contract in the crop provisions which just requires a method to determine a price and does not mention a timeframe, but the price will not be available until the end of the season and there will be no way of determining a guarantee or premium until that time.

Kush.com (a managed marketplace dedicated to help the hemp and cannabis industry thrive) estimated that 120,000 acres of hemp would produce eight times as much CBD oil as could be consumed if 50 percent of the U.S. population were consuming 10 mg of CBD oil per day. There were over 170,000 acres of CBD hemp planted in 2019. Kush forecasts a substantial price decline to about \$1/percentage point of CBD/pound in 2020. Contract prices for the 2019 crop were around \$3/percentage point of CBD/pound.

Price data credibility and reliability will likely improve moving forward. However, the submission states that contracts currently are not a guarantee of a market. There is a high failure rate of processors and varying degrees of credibility of the remaining processors. Due to these issues there is a risk that the price data are vulnerable to tampering.

(ii) Pricing Methodology: Is the methodology or method used to determine the prices appropriate for the proposed policy? In the case of price or revenue policies, are the mechanisms for establishing price clearly stated in the materials? Is the proposed methodology or procedures for establishing prices feasible?

The pricing methodology for CBD, grain, and fiber are all similar. The submission provides two methodologies for each type. The first method is a three-year moving average. Due to the lack of credible and reliable data a second method is also provided which is the lesser of the price from a three-year moving average or the mean price provided by industry resources. The submitter is recommending the second methodology for all three hemp types.

As a secondary precaution, a Market Adjustment Factor (ranging from 0.75 to 1.00) will be applied to the final price. There was no rationale provided for the selection of these factors and no justification for using a factor of 1.00 for CBD Transplant types since this likely is the most unreliable price data moving forward.

(3) Recognized Insurance Principles

(a) Over-insurance: Does the policy avoid providing coverage in excess of the expected value of the insured crop?

There is a considerable likelihood that coverage in excess of the expected crop value will be offered. Prices the past few years have been artificially high due to the limited number of acres planted and demand that has greatly exceeded supply. However, substantial acreage was planted in 2019 and projections are that acreage will continue to increase and supply will greatly exceed demand leading to significant price declines for 2020. T-yields are also likely too high and the combination of high price and high T-yield will compound the issue of over-insurance.

(b) Losses: Does the policy contain indemnity or other provisions that can be objectively verified by loss adjusters, underwriters, or auditors? If applicable, does the loss adjustment manual provide all the information needed to determine losses consistent with the policy provisions?

The submission states that for CBD production male plants must be removed from the field or they can pollinate the crop causing reduced levels of CBD. Neither the Crop Provisions nor Loss Adjustment Standards Handbook mention that male plants must be removed. If the male

plants are not removed timely it could create a loss of CBD that should not be a covered cause of loss. Loss adjusters may have difficulty distinguishing this from other causes of loss.

(c) Equal Treatment: Is the policy likely to treat all producers equally?

In most instances the policy treats all producers equally. However, there are some acreage limitations that will exclude growers on smaller acreage from obtaining crop insurance (20 acre minimum for grain/fiber and a 5-acre minimum for CBD). These acreage limitations were recommended by several growers in the listening session to reduce the impact of “experimental” growers entering the market. However, there were several other growers on smaller acreage that have been successful and requested the limitation be removed.

(d) Reasonable Requirements: Will insureds be able to comply with all requirements of the policy?

This is a pretty standard APH policy and the insureds should be able to comply with all the requirements.

(e) Waste/Fraud/Abuse: Does the policy create vulnerabilities to waste, fraud, or abuse?

This policy potentially creates vulnerabilities to waste, fraud, and abuse. Potential high prices and high T-yields would over-value the guarantee. There are several things that could impact the marketing of the crop: THC > 0.3 percent, processor goes out of business, supply greatly exceeding demand. These are not insurable causes of loss, but if they occur it would create a situation for potential fraud to try and collect an indemnity.

(f) Shifting Risk: Does the submission increase or shift risk to another FCIC-reinsured policy?

No, the only other insurance available will be Whole Farm Revenue Protection in 2020.

(4) Requirements of the Act

(a) Available Coverage: Does this policy provide coverage that, in whole or in part, is generally available from the private sector?

Rural Mutual offered Crop-Hail insurance for Hemp in 2019. There are also numerous websites that mention available hemp insurance but not many offered specific details. Since hemp has only been legal to grow since the passage of the Agricultural Improvement Act of 2018, insurance companies have just recently been considering developing crop insurance for hemp.

Cannasure Insurance Services is offering coverage for cannabis and hemp but only to indoor facilities. They did mention they might be working on an outdoor insurance product.

<https://www.cannasure.com/>

Allen Financial Insurance Group's website indicated that crop insurance is available for hemp growers of fiber, flower, or seeds. The coverage they currently offer is only for the crop after it is harvested and stored, not while it is growing in the field.

<https://www.eggroup.com/hemp-insurance/>

Golden Pacific Crop Insurances Services Inc. website indicates that they offer hemp coverage through eWeatherRisk which provides coverage for specific weather-related issues such as insufficient rainfall. Golden Pacific did not return a voicemail message to determine if they offer any other private hemp coverage.

<https://www.goldenpacificcrop.com/industrial-hemp-crop-insurance>

<http://www.eweatherrisk.com/>

The Assure Group's website indicates they currently offer hail, rain and heating degree day insurance for hemp. A phone conversation with the company owner John Reed indicated that they are developing a private crop insurance product for CBD (but not fiber or grain) that they are planning on releasing for the 2020 crop year. This CBD coverage is not fully developed yet but may be very similar to the CBD coverage in this submission.

<https://www.theassuregroup.com/hemp/#banner>

(b) Legal Authority: Does the policy propose to insure a peril that is not authorized by the Act?

No, this is a standard APH policy and the causes of loss are the same as other APH policies.

(c) Requirements/Current Direction: To the extent of the reviewer's knowledge, does the policy comply with all requirements of the Act and the public policy goals of FCIC?

The policy does comply since Section 518 of the Federal Crop Insurance Act (7 U.S.C. 1518) was amended by inserting "hemp" into the list of agricultural commodities.

(5) Excessive Risk: Are the risks proposed to be covered excessive such that they encourage adverse selection, moral hazard, or premium rates cannot be adequately or appropriately determined?

The potential for adverse selection is increased since price elections and T-yields could possibly be set too high. A crop being produced but not sold could occur for several reasons, THC > 0.3 percent, processor goes out of business, or supply greatly exceeding demand. These are not insurable causes of loss but if they occur, the risk of moral hazard to find a way to indemnify the crop would be increased.

(6) Underwriting Principles

(a) Does the product follow sound, reasonable, and appropriate underwriting principles?

For the most part the product does follow sound, reasonable, and appropriate underwriting principles. There are a few concerns that may need to be addressed. The rotation requirements list of crops may need to add some additional crops that are susceptible to Sclerotinia (white mold) which are mentioned below in section 10(a). For CBD production, male plants must be removed from the field or they can pollinate an entire crop which will promote seed production and reduce CBD levels. The crop provisions and Crop Insurance Standards Handbook may need to add some language to address this issue.

(b) If applicable, does the underwriting guide contain all the information needed to determine eligibility for insurance and amount of coverage?

Yes, the Crop Insurance Standards Handbook does contain information to determine eligibility and states that the Industrial Hemp program is available to all persons with a share in insurable acreage and meeting the requirements in the Basic Provisions, Crop Provisions, and Special Provisions and located in approved counties meeting the minimum acreage requirements. An example of the calculation shows that the approved yield multiplied by the coverage level percentage multiplied by the acres is equal to the guarantee.

(7) New and Improved Coverage

(a) Will the plan of insurance provide a new kind of coverage that is likely to be viable and marketable?

The Industrial Hemp policy will likely be marketable because of the high input costs and uncertainty about the yield outcomes. The viability of the product depends on several factors. The market for hemp has grown rapidly in the first few years and there is tremendous interest

from growers planting more hemp. However, supply is already exceeding demand and additional growers and production will drive the price down further. This could slow the industry down and the first several years could be quite volatile until some equilibrium is reached between supply and demand. T-yields will play a large role in the program's viability. Since most growers will not have four years of records they will have to rely on T-yields. If they are set too high, the program could suffer tremendous losses that will take years to recoup.

(b) Will the plan of insurance provide crop insurance coverage in a manner that addresses a clear and identifiable flaw or problem in an existing policy?

The Industrial Hemp policy is new and there is no existing policy.

(c) Will the plan of insurance provide a new or improved coverage for a commodity that previously had no available crop insurance, or has demonstrated a low level of participation or coverage level under existing coverage?

The Industrial Hemp policy will provide new coverage for a commodity that previously had no available crop insurance.

(8) Delivery System

(a) Does the policy place an unreasonable administrative burden on the insureds, AIPs, or the Federal crop insurance program? Administrative burden includes time, effort, or financial resources expended by persons to generate, maintain, or provide information to or for a Federal agency, including the resources expended for reviewing instructions; acquiring, installing, and utilizing technology and systems; adjusting the existing ways to comply with any previously applicable instructions and requirements; searching data sources; completing and reviewing the collection of information; and transmitting or otherwise disclosing the information.

The Industrial Hemp crop insurance program is a standard APH plan of insurance very similar to many other current programs. There were marketability assessments provided by two AIP's indicating the administrative burden would be minimal.

(b) If applicable, are training plans reasonable and appropriate?

A training presentation was provided with the submission and seems adequate to give the AIP's the information needed to train their agents and adjusters.

(c) Are the submitter conclusions on administrative requirements and costs supported by a marketability assessment?

Yes, as stated above.

(9) Marketability

(a) Is the submitter's determination of marketability reasonable and supported by the marketability assessment, market research studies, focus group results, and other evidence?

The submission estimates that liability in the first year of the program will be about \$97 million and premium about \$11 million. This is based on participation levels ranging from 25 to 60 percent. These seem to be reasonable estimates based on the high participation of the industry meetings and listening sessions. However, there will be many new growers that have no previous agricultural experience and will have to be educated about crop insurance.

(b) Is the proposed policy or plan of insurance likely to result in a viable and marketable policy that can reasonably attain levels of participation similar to other like policies?

The Industrial Hemp policy will likely be marketable because of the high input costs and uncertainty about the yield outcomes. The viability of the product depends on several factors. The market for hemp has grown rapidly in the first few years and there is tremendous interest from growers planting more hemp. However, supply is already exceeding demand and additional growers and production will drive the price down further. This could slow the industry down and the first several years could be quite volatile until some equilibrium is reached between supply and demand. T-yields will play a large role in the program's viability. Since most growers will not have four years of records they will rely on T-yields. If they are set too high, the program could suffer tremendous losses that will take years to recoup.

(c) Does the information gathered in the focus groups regarding what the producers are willing to pay support that producers will be willing to purchase the product at the proposed rates.

No information regarding what producers would be willing to pay for insurance was found in the submission.

(d) Will the product have a significant adverse impact on the crop insurance delivery system? Is this supported by information contained in the marketability assessment?

It is not likely that this product will have an adverse impact on the crop insurance delivery system since it is a fairly standard APH plan of insurance.

(e) Is evidence provided that AIPs and their agents will sell and service the product?

The Marketability Assessments and Listening Session Report provided in the submission indicate there is substantial interest in this product both by the growers and agents.

(10) Other Review Areas

(a) Special Questions: Questions specific to this review provided by FCIC.

What new insurance challenges might the emerging market for industrial hemp create that the Federal crop insurance program has not encountered before?

Since the passage of the Agricultural Improvement Act of 2014, industrial hemp acreage has grown at a rate of about 300 percent per year. There is tremendous interest in growing this crop as evidenced in this acreage increase and the number of participants attending industry meetings and listening sessions associated with this submission. Unfortunately, supply is quickly surpassing demand and the rate of acreage increase and prices are not sustainable. There will very likely be numerous growers entering and exiting the hemp industry until the market stabilizes.

There is very limited experience with growing hemp and there are reports that many growers have no previous agricultural experience. These new growers will have to be educated about crop insurance. The hemp crop could be lost if the level of THC exceeds 0.3 percent. The crop must be scouted to ensure male plants are removed and the crop is not pollinated which is detrimental for CBD hemp by increasing the seed production, lowering the quality of buds, and reducing the amount of CBD. Contracts are not guaranteed because of high rate of processor failure. Vote Hemp estimated that about 50-60 percent of the 2019 planted acres were not harvested. There is a high potential for excessive losses during the first few years of this program.

CBD marketing is far out in front of the science to back up the benefits being advertised. It is unknown if this market will continue to expand or collapse rapidly if CBD falls out of favor.

Would it be appropriate to limit the scope of initial availability of the product due to factors like limited data availability and market volatility? If so, what might the most appropriate method(s) be (e.g. requiring a contract that includes a price for insurability, limiting the product to counties with industrial hemp production history, establishing a cap on acreage eligible for coverage, requiring producer production history for insurability, and/or other methods)?

It is always a difficult decision whether or not to limit the scope of a pilot program. The proposed requirements in the crop provisions that require a license issued by the applicable authority and that the crop must be grown under a processor contract as defined in the crop provisions will provide adequate limitations. The submission indicated many contracts will not have a set price, but a floor price with a method to determine a final price based on published market price. This may not meet the definition of contract in the crop provisions and limit the number of eligible insureds. There may have to be some discussion with the submitter and processors about setting a price prior to the contract change date. Further limitations of requiring production history may severely limit participation.

Could significant variations in the ways industrial hemp types are planted, cultivated, and harvested across the country, and/or the lack of site-adapted good farming practices (GFPs), impact the likelihood of the development of a viable and marketable product?

The lack of well-established good farming practices may lead to an increase in disputes. The Basic Provisions state that failure to follow recognized good farming practices are not a covered cause of loss. This may also place a burden on FCIC if the grower requests a determination

from FCIC of what is considered a good farming practice for hemp. It's doubtful that this alone will make this submission not viable or marketable but will have to be clarified during the pilot period.

Could significant geographic differences and/or volatility in prices of the proposed types (i.e. fiber, seed, and/or CBD) impact the submitter's ability to develop adequate pricing or rating methodology for the product, and are the proposed market adjustment factors appropriate?

The primary concern with the rating methodology is the use of the biomass model which does not provide much difference in the coefficients of variation between hemp and the other crops (and ultimately the risk score), and the selection of the comparable crops. In many areas where multiple comparable crops were selected, this methodology may produce acceptable rates to initiate the program. However, rates in Indiana, Illinois, and Minnesota are mostly below 5 percent and some are as low as 1.5 percent. In most of the counties with these low rates, just corn and soybeans (which have some of the lowest rates in the country) were the only two comparable crops used. It is unreasonable to assume hemp will have similar loss experience.

The pricing methodologies are essentially the same for all types, 1) a three-year moving average or 2) the lesser of the price from a three-year moving average or the mean price provided by industry resources. No price data from the previous three years is suitable for this use. Since demand has exceeded supply, prices have been unsustainably high. The use of earlier data would likely skew any three-year moving average. The submitter is proposing the second method for all hemp types. This means there is essentially no pricing methodology except to contact industry resources and attempt to determine the most reasonable price. As a secondary precaution, a market adjustment factor is used to reduce the price. However, there is no reason given for the selection of these factors. They appear to have been chosen arbitrarily.

Is the methodology for establishing transitional yields (T-Yields) for the product sound, and are differences in yield between varieties within a type sufficient to create a situation of over-insurance when lower yielding varieties are planted follow higher yielding varieties?

T-yields were created for about 1,000 counties, six types, two practices, and 10 years. This amounts to over 100,000 yields that were generated from the biomass model yield estimates. The biomass model was based on fiber hemp only, under the assumption of irrigation, and the only apparent distinction to determine differences between types was in the beta-sigmoidal growth curve variables for planting and harvesting dates that were allowed to vary by type (which were not explained and no example was provided).

The only real comparison for the T-yields is with the actual grower yield data provided in the supplemental submission. This was only for the past few years and mostly from North Dakota for grain, and Kentucky for grain, fiber, and CBD direct seed floral. It was not specified if these data were irrigated or nonirrigated.

For North Dakota grain, the T-yields are less than the average for the grower yields supplied and seem to be a reasonable starting place. For Kentucky grain, the T-yields are within a reasonable range of the grower yields. For Kentucky fiber, the T-yields are slightly below the grower yield average. Other than these specific state/type/practice combinations it is unknown if the T-yields are reasonable. However, considering the limitations of the biomass model and the limited actual grower yields that are highly variable, it is questionable if these T-yields are appropriate for all type/practices in all areas.

Since there will be very few growers with four years of records, T-yields will be used by a substantial number of growers for several years. A comment in the Listening Session Report suggested that T-yields should be reduced by about 25-35 percent.

There is insufficient yield information by type to determine if differences in yield between varieties within a type are sufficient to create a situation of over-insurance. With the large number of varieties of hemp, it is quite possible there will be some lower yielding varieties that will result in an over-insurance situation.

Are yield substitution and cups appropriate, given the yield volatility for cannabidiol (CBD)?

It would be wise to not allow yield substitution and cups during the initial phase of this pilot until the market stabilizes. This review is not recommending placing other limits such as reducing the states and counties, requiring producer yield history, or placing caps on acreage.

Since the product submitted has rotation requirements and industrial hemp is a new crop to the agricultural landscape, would master yields be more appropriate for the insured to more quickly accumulate their own yield history, versus longer reliance on T-Yields?

Since the Industrial Hemp rotation requirements don't allow hemp to be planted in consecutive years on the same acreage it will take at least eight years to establish a yield history and not rely on T-yields. Master yields would allow the establishment of a yield history in a shorter timeframe and reduce the reliance on T-yields that may be set too high.

Does the product include adequate appraisal methods for the different planting patterns? Are differences in the various planting patterns and/or seed germination rates significant enough to warrant acreage adjustment consideration?

It appears that the appraisal methods for grain, fiber, and CBD are adequate. The listening session report mentioned that germination rates might be as low as 35 percent which would warrant acreage adjustment considerations. The removal of male plants in a CBD field might also cause concern about the use of acreage adjustments if a substantial number of plants are

identified. However, the submission did not mention how often or how many male plants per acre could occur.

Are the minimum acreage requirements (e.g. 5 acres for CBD and 20 acres for grain and fiber) appropriate, or should they be adjusted upward or downward for any type(s)? Is the proposed minimum distance of 5 miles between CBD fields and other industrial hemp fields appropriate for insurability?

The minimum acreage requirements of 5 acres for CBD and 20 acres for grain and fiber are reasonable to include in this pilot program until such time as the Industrial Hemp industry stabilizes. There will likely be many growers entering and exiting the industry during this initial phase.

A reference to buffer zones was indicated on page 26-27 of the Listening Session Report, however, no reference was found in any of the other documents of the submission. A 5-mile buffer zone is reasonable since grain and fiber hemp can pollinate CBD hemp, to start this program until research provides additional information.

Is interplanting industrial hemp with another crop considered a good farming practice in any of the areas proposed for coverage eligibility?

In the Listening Session Report, several producers mentioned that interplanting alfalfa with hemp helped to reduce insect and weed pressure. However, no reference for interplanting another crop with hemp being a good farming practice was located.

Should any additional crops be included in the rotation requirements (e.g. crambe, dry beans, safflowers, mustard, or rapeseed)?

The Special Provisions state:

Insurance will not attach to any acreage on which Cannabis, canola, dry beans, dry peas, mustard, rapeseed, soybeans, or sunflowers were grown the preceding crop year.

Dry beans, mustard, and rapeseed are already listed.

Hemp should not follow any crops that are susceptible to Sclerotinia (white mold). The Agricultural Research Service lists the following crops that are susceptible to Sclerotinia:

alfalfa, field pea, potato, mustard, safflower, flax, borage, crambe, buckwheat, chickpea, lupine, faba bean and numerous vegetables such as lettuce and carrots

The Listening Session Report also mentioned that hemp should not follow hops.

For CBD production, some processors pay on a converted basis of pounds multiplied by CBD percentage. For loss adjustment and/or APH purposes, should a conversion factor to pounds of production be established for CBD processed on the basis of pounds multiplied by CBD percentage?

The pricing methodology states that there are no defined standards in the hemp industry and this is particularly evident in the market price of the material being sold for the extraction of CBD. There are at least four different units of measure reported: dollar/% CBD/lb., dollar/lb. of dry material, dollar/plant, and flat fee per acre.

It seems that dollar/% CBD/lb. is the most appropriate method of determining the actual value of the amount of CBD, but until the industry stabilizes and converges on a single method there will need to be conversion factors to handle the multiple methods being reported.

(b) Additional Reviewer Observations: The expert reviewer's written report may also include additional information at the discretion of the expert reviewer.

It would be very helpful for reviewers if the submissions showed all calculations in the excel spreadsheets. This submission showed formulas in the rating methodology, but the excel spreadsheets contained only the final result. It was difficult to determine exactly what values were being used in some of the biomass model calculations.

Appendix of supporting material.

Websites used:

<https://www.hemp.com/what-is-hemp/>

https://www.who.int/medicines/access/controlled-substances/5.2_CBD.pdf

<https://medium.com/cbd-origin/hemp-vs-marijuana-the-difference-explained-a837c51aa8f7>

<https://www.webmd.com/pain-management/news/20180507/cbd-oil-all-the-rage-but-is-it-safe-effective#1>

<https://hightimes.com/health/cannabidiol-cbd/>

<https://www.hempbenchmarks.com/>

<https://www.cannabislawupdate.com/2018/07/california-quietly-outlaws-cbd-in-foods/>

<https://www.fda.gov/news-events/public-health-focus/warning-letters-and-test-results-cannabidiol-related-products>

<https://www.fda.gov/news-events/public-health-focus/fda-regulation-cannabis-and-cannabis-derived-products-including-cannabidiol-cbd>

<https://hempmedspx.com/states-cbd-oil-legal-purchase/>

https://www.kyagr.com/marketing/documents/HEMP_LH_Summary_of_Varieties_List_2019.pdf

<http://cquest.arc.nasa.gov:8399/casa/index.html>

<https://www.thecannabist.co/2015/06/18/safe-distance-hemp-marijuana-pollination/33130/>

<https://www.agprofessional.com/article/how-grow-hemp-cbd-seed-or-fiber>

<https://www.votehemp.com/>

<http://www.kushhemp.info/>

<https://www.liquidmellow.com/hemp-farming-guide/hemp-farming-guide-high-cbd-strains/>

<https://www.federalregister.gov/documents/2019/10/31/2019-23749/establishment-of-a-domestic-hemp-production-program>

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Eur. J. Agron., 1995, 4(1), 109-117

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satellite and surface data, Global Biogeochemical Cycles, Vol. 7 No. 4

Stocker et al. (2018), Quantifying soil moisture impacts on light use efficiency across
Biomes, New Phytologist (2018) 218: 1430–1449