

# Missouri Seed Certification Handbook



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For information on crops not listed in this handbook, please contact the Executive Director of the Missouri Crop Improvement Association, 3211 Lemone Industrial Blvd., Columbia, MO 65201-7600 or phone (573) 449-0586

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## **I. The Certifying Organization**

The Missouri Crop Improvement Association is designated annually by the Director of the Missouri Agricultural Experiment Station at Columbia, Missouri to serve as the official seed certifying agency for the State of Missouri. This action is provided for in Section 266.095 of the Missouri Seed Law.

## **II. Purpose of Seed Certification**

The purpose shall be to maintain and make available to the public, through seed certification, high quality seeds and propagating materials or varieties so grown and distributed as to maintain high quality, varietal purity and identity.

This broad purpose shall be accomplished:

- A. By cooperating with the Missouri Agricultural Experiment Station, the University of Missouri Extension Service, the Missouri Department of Agriculture and private plant breeders in the introduction and maintenance of superior strains and varieties of farm crops and in the continuous campaign for the use of standard improved varieties of farm crops within the state.
- B. By developing, adopting and maintaining standards of excellence for the various classes of seed grown by members under the rules and regulations of the Association.
- C. By providing an inspection service for members growing seed crops.
- D. By regulating certification of inspected seeds.
- E. By providing and requiring the use of uniform and distinguishing marks, tags, containers or emblems for use on all classes of seed officially sponsored by the Association.
- F. By collecting and distributing information on seeds; by conducting demonstrations and exhibits; by providing information and promoting activities of the Association.
- G. By aiding the members of the Association in promoting the agricultural interests of Missouri in any way consistent with the provisions under which the Association is incorporated.
- H. By cooperating with the Association of Official Seed Certifying Agencies.

## **III. Requirements for Membership**

- A. Active/Affiliate Member: any individual, corporation or partnership who applies for seed certification and/or approved conditioner status shall become an active/affiliate member for one year by paying the annual membership fees. Upon approval of the Board of Directors, they shall have one vote on each of the matters submitted to a vote of the membership.
- B. Associate Membership: any individual, firm or corporation not applying for seed certification and who is in any way engaged in or connected with the seed industry or its allied branches, shall become an associate member for one year by paying the annual associate membership fees. Associate members may attend the meetings of the Association, but shall not vote on matters submitted to the membership for a vote.

**IV. Application for Certification**

A. Date for Filing Applications: applications made on official forms must be filed with the Secretary of the Association prior to the following dates.

Small Grains	April 15
Cool Season Grasses	May 15
Cotton	June 15
Hybrid Corn	June 15
Crownvetch & Clovers	July 1
Industrial Hemp	July 15
Warm Season Grasses	July 15
Rice	July 15
Lespedeza	August 1
Peanut	August 1
Pre-variety Germplasm	August 1
Soybeans & Cowpeas	August 1

B. Application Forms: application for certification must be made on official forms supplied by the Association (available upon request). These forms will establish the name and address of the applicant, class, crop, variety, field(s), acreage and source of planting stock. Separate applications are required for each crop, variety and class of seed.

C. Establishing Eligibility of Planting Stock: a certification tag representing the seed planted must be submitted with the application for certification in order to verify the eligibility of the source of seed planted. If a tag is not available, a copy of the invoice showing the class, lot number and variety is acceptable. If seed from more than one lot was planted, a tag or invoice copy from each lot must accompany the application.

D. Penalty for Late Applications: the Association will accept field inspection applications after the due date, but may impose a twenty percent (20%) late fee (membership not included in these fees), plus 2% per day until the applications are received.

**V. Cancellation of Acreage for Field Inspection**

Field inspection applications may be cancelled if the applicant believes that his crop will not produce seed eligible for certification. The acreage fee will be refunded provided that the request for cancellation is made in sufficient time to save an inspector from making an unnecessary trip to the field.

**VI. Eligibility Requirements for Certification of Varieties**

A. The certifying agency shall accept as eligible for certification any variety which:

1. Is released by the Missouri Agricultural Experiment Station
2. Is recommended by the National Crop Variety Review Board
3. Is recommended by the Plant Variety Protection Office
4. Has been accepted for certification by any member agency of AOSCA
5. Is determined eligible by the MCIA Certification Committee

## **VII. Criteria for Acceptance of Varieties for Certification**

- A. A statement and supporting evidence by the originator, developer or owner requesting certification that the variety has been adequately tested to determine its value and probable area of adaptation and that it merits certification and that it is distinguishable from other varieties, as set forth in the International Code of Nomenclature for Cultivated Plants, which reads, "The term cultivar (variety) denotes an assemblage of cultivated individuals which are distinguished by any characters (morphological, physiological, cytological, chemical or others) and which, when reproduced (sexually or asexually) retain their distinguishing features."
- B. A statement on origin and breeding procedures.
- C. A description of the morphological characteristics, (such as color, height, uniformity, leaf, head or flower characteristics, etc.) physiological characteristics of value to field inspectors and such other factors as the breeder or sponsor considers pertinent.
- D. Evidence of performance, including data on yield, insect or disease resistance and other factors supporting the value of the variety. These performance tests may be conducted by private seed firms or Agricultural Experiment Stations and shall include appropriate check varieties which are used extensively in the area of intended usage.
- E. A statement giving suggested region of probable adaptation and purposes for which the variety will be used.
- F. Procedure for maintenance of seed stock classes shall be described at the time the variety is accepted for certification and a sample lot of breeder seed shall be presented to the certifying agency. This is to be retained as a control varietal check against all future seed stock released for certified seed production may be tested to establish continued trueness to variety.

## **VIII. Classes and Sources of Certified Seed**

- A. Classes of seed: four classes of seed shall be recognized in seed certification.
  - 1. Breeder seed is seed or vegetative propagating material which is directly controlled by the originating or sponsoring plant breeder, institution or firm which supplies the source for additional increases of foundation seed. No tags are issued for breeder seed.
  - 2. Foundation seed shall be seed stocks that are so handled as to most nearly maintain specific identity and purity as designated by the official seed certifying agency. Foundation seed must be owned or under the supervision of an Agricultural Experiment Station or the originator or sponsoring plant breeder/firm and shall be the source of registered and/or certified seed classes.
  - 3. Registered seed shall be the progeny of breeder or foundation seed so handled as to maintain satisfactory varietal purity and identity and that has been approved and certified by an official seed certifying agency. This class of seed should be of a quality suitable for the production of certified seed.
  - 4. Certified seed shall be the progeny of breeder, foundation or registered seed which is so handled as to maintain satisfactory varietal purity and identity and which has been certified by the official certifying agency.

- B. Limited Generation: the number of generations through which a variety may be multiplied shall be limited to that specified by the originating breeder or owner of the variety and shall not exceed two generations beyond the foundation seed class with the following exceptions.
1. Re-certification of the certified class for older crop varieties of which foundation seed is no longer being maintained.
  2. The production of an additional generation of certified seed on a one year basis when an emergency is declared prior to the planting season by the certifying agency stating that foundation and registered seed supplies are not adequate to plant the needed acreage of the variety. The certifying agency shall obtain the consent of the originating or sponsoring plant breeder, institution, firm or owner of any variety for which a limitation on the number of generations exists. The additional generation of certified seed to meet the emergency is ineligible for re-certification.

#### **IX. Definition of Terms Used in Certification**

- A. Variety (cultivar): denotes an assemblage of cultivated individuals which are distinguished by characters (morphological, physiological, cytological, chemical or others) significant for the purposes of agriculture, forestry or horticulture and which, when reproduced (sexually or asexually) or reconstituted, retain their distinguishing features.
- B. Other Varieties: shall be considered to include plants or seeds of the same kind that can be differentiated from the variety that is being inspected, but shall not include variations which are environmental or characteristic of the variety as defined by the originating breeder.
- C. Off-type: means any seed or plant not a part of the variety in that it deviates in one or more characteristics from the variety as described and may include: a seed or plant of another variety; a seed or plant not necessarily any variety; a seed or plant resulting from cross pollination by another kind or variety; a seed or plant resulting from uncontrolled self pollination during production of hybrid seed; or segregates from any of the above.
- D. Variant: means any seed or plant which (a) is distinct within the variety but occurs naturally in the variety, (b) is stable and predictable with a degree of reliability comparable to other varieties of the same kind (within recognized tolerances) when the variety is reproduced or reconstituted and (c) was originally a part of the variety as released. A variant is not considered an off-type.
- E. Proprietary variety: is one for which a person or company has exclusive production and/or marketing rights.
- F. Protected variety: is one for which a person or company has filed application for protection with the U.S. Plant Variety Protection Office.
- G. Conditioning: is the mechanical handling of seed from harvest until marketing.
- H. Plant breeder: is a person or organization actively engaged in the breeding and maintenance of plant varieties.

## **X. Field Inspections**

- A. The certifying agency shall make one or more field inspections of each field for which an application for certification of any class of seed has been received. The agency shall make such inspection when (a) varietal purity and identity or any other factor affecting seed certification can best be determined and (b) the field is in such condition that an adequate inspection to determine varietal purity and identity may be made.
- B. The certifying agency shall assign inspection work which requires technical training only to individuals who have been trained for such work.
- C. The inspector shall cross each field sufficiently to evaluate accurately the factors affecting the eligibility for certification.
- D. Upon request, one re-inspection of a rejected field will be made.

## **XI. Varietal Purity**

- A. The certifying agency shall determine that the varietal purity and identity are maintained at all stages of certification, including seeding, harvesting, conditioning and labeling of the seed.
- B. The unit of certification shall be a clearly defined field or fields.
- C. All classes of certified seed fields must meet the varietal standards as set forth for each of the commodity standards. Inspections and standards for specific crops shall be on the basis of the description of the variety as set forth by the breeder.

## **XII. Seed Harvesting and Storage**

- A. All harvesting equipment (combines, trucks, wagons, elevators, pits, augers, bins, etc...) that will handle certified seed must be thoroughly cleaned before harvesting any class of certified seed.
- B. Bins must be thoroughly cleaned and separated in such a manner that there will be no chance of mixture with other crop seed or varieties. Bins should be weatherproof and well ventilated and be marked with the class and variety of each crop.
- C. The seed from fields of different farm units may be stored in large bins, provided that varietal purity is similar. (Corn and cotton may be combined only if the expected general purity and quality is, based on field inspections, considered to be approximately equal in value. The Executive Director of the certifying agency shall have the authority to make this decision.)
- D. The Executive Director shall have the authority to, where field inspection reports indicate a marked difference in quality, require that seed from different fields on the same farm unit be kept separate after harvest.
- E. Before producers start to condition their seed, a preliminary sample should be taken from the harvested seed for a check as to the condition of the seed - its germination, varietal purity and presence of harmful weed seeds. A representative sample should be taken from several samples

drawn deep in the bin. Refer to Appendix B of this handbook for additional information on procedures and fees for utilizing the MCIA laboratory.

- F. All seed should have been in storage for a minimum of three (3) weeks before it is sampled for final certification.

### **XIII. Seed Conditioning**

- A. Approved certified seed conditioner: shall be defined as an individual, partnership or corporation that meets all current requirements for conditioning certified seed, is a member in good standing of the certifying agency and has been approved by the certifying agency. It is recommended that all approved certified seed conditioners attend a seed conditioning workshop at least once every three (3) years. A list of approved workshops is available from the MCIA office.
- B. All new members must have their conditioning facilities inspected by a representative of the certifying agency before they will be allowed to condition certified seed.
- C. All approved certified seed conditioners in Missouri are eligible to perform the following tasks.
  - 1. Condition certified seed on a custom fee basis.
  - 2. Accept ownership of seed eligible for certification in Missouri and in turn condition the seed for sale as a class of certified seed.
  - 3. Eligible to print certification tags for seed which will be sold with the name of the approved conditioner as the labeler, provided that the approved conditioner has an in-house seed testing laboratory staffed by a Registered Seed Technologist.
- D. Approved certified seed conditioners must have the following minimum equipment.
  - 1. A cleaner must have a minimum of three screens and be equipped with traveling brushes, roller or ball racks beneath the screens adequate to dislodge any imbedded material. The cleaner shall also have at least two (2) variable air blasts and/or vacuum pickups or a combination thereof to enhance the separation ability of the equipment. A selection of screens sufficient to provide optimum conditioning for each crop is required. The intent of this requirement is that all certified seed be conditioned with an air-screen cleaner as the primary equipment.
  - 2. Must be equipped with spirals and/or gravity table, length separator or other finishing equipment to further condition the seed.
  - 3. Must be equipped with at least two (2) bins that can be thoroughly and completely cleaned.
  - 4. If more than one holding bin is used, intakes to bins must be such that they can be completely blocked off during the period that the bin contains certified seed by head turn, slides or caps. All bins in which certified seed is to be stored must be designed so that there will be no possible contamination.
  - 5. The surge bin over the seed receiving hopper must be designed to maintain a "full choke feed" during the conditioning of seed lots.
  - 6. All dumps, elevator heads, elevating equipment, distributor spouts and elevator legs must be such that they can be completely, quickly and easily cleaned. They are to be used exclusively for servicing the seed conditioning plant processing certified seed.
  - 7. If conditioned seed is to be elevated, a separate leg is required in addition to the receiving leg. Augers are prohibited to move conditioned certified seed.



8. Facilities requesting approval to condition small seeded legumes must be equipped with a velvet roll machine in addition to the equipment listed above. Gravity tables are recommended, but not required.
9. A seed treater for the purpose of disinfecting planting seed is recommended, but not required.
10. All other equipment used in the conditioning process must be designed and operated as to allow complete cleanout.
11. Adequate forced air and vacuum cleaning equipment to positively clean all otherwise inaccessible areas of equipment and structural members.
12. Packaging, container weighing, container storage and bulk storage shall be adequate to maintain seed quality and quantities.
13. If certification tags are to be printed, all tag printing equipment used on certification tags shall be subject to approval of the certifying agency.
14. Mobile conditioning units must request approval from the certifying agency and have a facility inspection by a representative of the certifying agency before they will be allowed to condition certified seed in Missouri. This inspection must take place prior to each conditioning job. Mobile conditioners must pay the annual MCIA affiliate membership fee to be eligible to condition certified seed in Missouri.

E. Procedures for Custom Conditioning Certified Seed

1. All Missouri certified seed must be conditioned by an approved certified seed conditioner.
2. The applicant is responsible for the cleanliness of the equipment used to harvest, handle, store and condition their certified seed at all times. The use of an approved conditioning facility does not relieve the applicant of this responsibility to properly condition the seed.
3. The applicant must submit form MCIA-1, "Custom Conditioning of Certifiable Seed" immediately upon completion of conditioning, properly completed and signed by the applicant and conditioner. Forms are available from the MCIA office.
4. A representative sample of each lot must be drawn by the conditioner and given to the applicant. At least five (5) pounds of all cereals, sorghum, corn and large seeded legumes will be saved and two (2) pounds of small seeded legumes and grasses.
5. The applicant is responsible for submitting samples of at least two (2) pounds for a complete analysis to the MCIA seed testing laboratory. The approved conditioner may submit these samples as a service to the applicant.
6. The approved conditioner shall draw a representative sample of at least two (2) pounds from each lot of seed received before seed enters the conditioning plant and again after the seed is conditioned. These referee samples shall be properly labeled for positive identification with the information to include, receiving lot number, producers name & address, kind, class and variety. This sample is to remain in the possession of the conditioner and shall be forwarded to the MCIA upon request.

F. Procedures for Transferring Ownership of Certified Seed in Bulk Form

1. The applicant must complete a "Bulk Transfer of Seed for Processing" form that indicates the kind, class, variety, amount and who will condition the seed. Forms are available from the MCIA office. Refer to the fee schedule in Appendix B for bulk transfer fees.
2. Responsibility for conditioning and final certification of the seed becomes that of the purchaser.

- G. Certificate of Approval: will be issued to each approved certified seed conditioner approved by the MCIA. Each certificate will specify the crops that the holder is eligible to condition.
- H. Revocation of Certificate: may occur for just cause after a hearing in which the alleged violator may appear, be heard and produce any evidence they may desire.
- I. Personnel
  - 1. Should be trained to properly set conditioning equipment for optimum performance.
  - 2. Should be familiar with federal and state seed laws, as well as MCIA certification requirements.
  - 3. Should have a sincere desire to produce only the best possible certified seed.
  - 4. Should keep accurate, complete and up-to-date records of each lot that is conditioned and shall submit all reports promptly.
  - 5. A suitable person shall be designated as the official representative for supervising the conditioning and sampling of certified seed.
  - 6. A representative of each approved conditioner should attend an approved conditioning workshop at least once every three years. A list of approved workshops is available from the MCIA office.
- J. Approved Conditioner Listing: a list of MCIA approved conditioning facilities is available from the MCIA office upon request.
- K. Inspections: each approved conditioning facility will be subject to random, unannounced inspection to insure that the conditioning equipment and procedures are adequate to produce high quality certified seed.

#### **XIV. Seed Containers, Seed Lot Size and Identification**

- A. Seed Containers
  - 1. All classes of certified seed must be packaged in new containers printed with a company and/or certified logo.
  - 2. Bags (other than valve-pac) must be closed either by hand or machine sewing.
  - 3. Field seed must be packaged in the following quantities; one-half bushel, one bushel, one and one-half bushels, two bushels, fifty pounds or one hundred pounds.
  - 4. Grass seed may be packaged in any size unit deemed necessary for sale.
- B. Seed Lot Size and Identification
  - 1. To facilitate the collection of a representative sample, no lot will be allowed to exceed 3,600 containers or 3,000 bushels.
  - 2. Each lot shall be clearly marked at closing with either a certified tag or label attached to each container indicating the class, variety and lot number or each container must be stenciled with the class, variety and lot number.
  - 3. For seed lots where the sample is submitted by the applicant, they must indicate the location of the seed so that the MCIA can spot check the lot if desired.
  - 4. Each lot of seed must be identified with a unique lot number that includes the applicants MCIA membership number. Duplicate lot numbers will not be permitted in the same crop year.

## **XV. Seed Sampling and Testing**

- A. Before seed is officially sampled, it must be conditioned and packaged in new containers that are printed with a company and/or certified logo, except for mini-bulk containers which may be plain.
- B. Applicants are permitted to draw their own samples at the time of conditioning. They are instructed to take a few seeds from the containers before closing so that a sample of 10-15 pounds has been collected when the lot is finished.
- C. Applicants may submit their own samples to the MCIA seed testing lab for analysis. These samples must be a minimum of two (2) pounds and marked with the class, variety, lot number, number of containers & size and location of the seed. Any samples that have been treated with a fungicide shall be labeled as to the kind of treatment and a sample of the treatment label shall be supplied.
- D. All applicants submitting their own samples for analysis are subject to random, unannounced spot checks to insure accurate testing.
- E. Applicants may request that their samples be drawn by a representative of the MCIA.
- F. Applicants may utilize the services of an outside seed testing laboratory to obtain a germination report for the purpose of issuing certified tags/labels, provided that the outside lab has a Registered Seed Technologist on staff and that the results are within recognized federal tolerances of the results reported by the MCIA lab. The MCIA lab will not accept a purity analysis from any outside lab. All purity analysis on Missouri certified seed samples must be conducted by the MCIA lab. Applicants who utilize the services of an outside lab for germination testing are required to submit an identical two (2) pound sample to the MCIA lab for comparison.
- G. Applicants may condition certified seed and return it to a cleaned bin for sale in bulk form or for future tagging provided that the following criteria are met.
  - 1. A sample is submitted to the MCIA seed lab for a complete analysis for each 1,000 bushels of conditioned bulk seed.
  - 2. No augers are used to move the seed after it leaves the conditioning system.
  - 3. A new sample is taken at the time of conditioning/packaging and submitted to the MCIA seed lab for a purity analysis to insure that no contamination has occurred.
- H. Any sample submitted to the MCIA seed lab that contains live insects or larvae will stand rejected. These lots will not be released until they have been fumigated and cleared after a visual examination by a representative of the MCIA.
- I. There will be a \$50.00 service charge for any samples requesting a "RUSH" analysis.

## **XVI. Certification Tags and Labels**

- A. All classes of certified seed sold in containers must have an official tag or label properly affixed (attached in a manner that prevents removal and reattachment without the tampering being obvious to each container). The name of the seed class shall be printed across the top of each tag or label in accordance with the color scheme listed below. Seed will not be recognized as certified if it is shipped without the prescribed labeling.
1. Foundation seed will be printed on white stock.
  2. Registered seed will be printed on purple stock.
  3. Certified seed will be printed on blue stock.
- B. The certification tag attached to the bag serves to identify the kind, class, variety and lot number of the seed contained therein. Certification tags are obtained from the MCIA office after a representative sample of the lot has met or exceeded certification standards for that particular crop.
- C. Certification tags must be attached to the container by the applicant, approved conditioner or representative of the MCIA.
- D. To facilitate conditioning, an applicant or approved conditioner may be issued the appropriate certification tags prior to completing all requirements for certification, provided they have preliminary test results that show the seed meets certification standards. If the final conditioned lot fails to meet certification standards, the original certification tags must be returned to the MCIA office and corrected tags will be issued at the applicant's expense. Pre-tagged seed may not be moved from the premises prior to completing all requirements for certification.
- E. Unused certification tags/labels must be destroyed or returned to the MCIA office. Unattached certification tags/labels must not be handed to a third party under any circumstances.
- F. All varieties protected under the provisions of the U.S. Plant Variety Protection Act (PVP) are required to be labeled with the appropriate PVP statement as required by federal law. This statement must be included on the tag or stenciled/printed directly on the bag. A list of protected varieties and appropriate wording is available from the MCIA office.
- G. Applicants may, in lieu of using certification tags/labels, sell their certified seed in containers with the certified label printed directly on the container after receiving approval from the MCIA office. For a detailed listing of the procedure and fees, please contact the MCIA office.
- I. All certified seed producers who market their seed as certified must first obtain a seed permit number from the Missouri Department of Agriculture. This permit is good for twelve (12) months or any fraction thereof, beginning on January 1 and ending on December 31 each year. Applications for seed permits are to be made on special forms available from the Missouri Department of Agriculture, P.O. Box 630, Jefferson City, MO 65102 or phone (573) 751-4310.

## **XVII. Movement of Certified Seed**

- A. Applicants who receive final certification of their crop or who request their names be placed on the published seed list must market all seed from that crop as certified seed.
- B. Applicants must not deliver certified seed to the purchaser until official tags or labels have been attached, one per container, and all requirements for final certification have been met.
- C. The Executive Director shall have the power to interpret the rules and make reasonable adjustments and modifications to meet special conditions which may develop.

## **XVIII. Seed Not Meeting Certification Standards**

- A. Any lot of certified seed that is rejected for reasons other than excessive other crop, prohibited crop or prohibited weed is allowed one resample.
- B. Any lot of certified seed that is rejected for the presence of prohibited crop or weed must be reconditioned before it will be eligible for retesting by the MCIA seed lab.
- C. All samples from seed lots that had previously been rejected must be pulled by an official representative of the MCIA.
- D. When tags or labels have been issued based on a preliminary analysis prior to completing the conditioning process and the final conditioned sample does not meet or exceed the components listed on the certified tag, the situation will be handled as follows.
  - 1. A rejection notice will be sent to the applicant stating why the seed was not accepted for certification.
  - 2. Applicant will be required to remove the original certified tags/labels and return them to the MCIA office or deface them to the point that they may not be mistaken for authentic certified tags/labels.
  - 3. In order to enforce the removal or defacement of the tags/labels from rejected lots, a copy of the rejection notice will be forwarded to the Missouri Department of Agriculture (MDA) stating the reason for rejection and the location of the seed. Removal or defacement of the tags/labels will be verified by the state inspector in the region where the seed is located. If the state inspector can not receive a satisfactory answer as to whether the tags/labels were removed or defaced, he will issue a stop-sale notice on the seed. This notice will remain in effect until the tags/labels have been removed or defaced and the MDA releases the seed.

## **XIX. Substandard Seed Provisions**

- A. It is recognized that certain lots of seed that may be desirable for the advancement of crop improvement would be lost if regular certification standards are strictly adhered to. Therefore, lots of seed which, for reasons other than varietal purity, fail to meet the minimum standards for certification may be accepted for certification if superior seed is in short supply. The certification tag/label attached to such seed shall indicate the respects in which the seed does not meet regular certification standards.

- B. The Board of Directors authorizes varieties protected under the Plant Variety Protection Act, which have applied for certification, will be allowed certification with less than minimum mechanical standards, however, the tag/label will include a "SUBSTANDARD" statement for whatever minimum mechanical standards the seed fails to meet (i.e. germination, purity).

## **XX. Bulk Seed Movement**

### **A. Bulk Transfer of Seed for Processing**

1. Seed from fields that have met certification requirements for field inspection may be transferred in the bulk or unconditioned form to established members or dealers only after formal approval is granted by the Executive Director of the MCIA (forms are available from the MCIA office).
2. Refer to the fee schedule in Appendix B for bulk transfer fees.
3. A representative sample is to be forwarded to the MCIA office with the bulk transfer form.

### **B. Bulk Conditioned Seed Sales (Wholesale)**

1. Only the certified class of small grains and rice are eligible for sale using this method.
2. Certified seed may be conditioned and sold in bulk form to established dealers for the purpose of resale only after formal approval is granted by the Executive Director of the MCIA (forms are available from the MCIA office).
3. Each retail outlet must demonstrate an acceptable procedure for handling bulk certified seed to assure that varietal purity and identity are maintained throughout all seed movement. A separate storage bin (hopper bottom preferred) must be available for each variety that will be sold in bulk form. These bins, along with all equipment used to handle the seed, must be thoroughly cleaned before receiving any certified seed. Bulk containers may be used for handling bulk certified seed, provided that they have been cleaned and fumigated.
4. Each retail outlet will be required to complete a bulk retail sales certificate for each lot of certified seed sold in bulk form.
5. The applicant initiating the sale will be assessed the bulk sales transaction fees. Please refer to the fee schedule in Appendix B for bulk sales fees.

### **C. Bulk Conditioned Seed Sales (Retail)**

1. All classes of small grains, rice and soybeans are eligible for sale using this method.
2. Seed samples must be drawn during conditioning, one for each 2000 bushels, and submitted to the MCIA seed lab for analysis.
3. A bulk retail sales certificate (available from the MCIA office) must be completed for each lot of seed sold in bulk and returned to the MCIA office. Approved copies will be forwarded to the buyer and seller from the MCIA office. All unused certificates must be returned to the MCIA office.
4. Please refer to the fee schedule in Appendix B for bulk sales fees.

## **XXI. Retesting and Relabeling**

- A. Federal regulations on testing seed states that no more than five (5) calendar months shall have elapsed between the last day of the month in which the germination test was completed and the date of transportation or delivery for transportation in interstate commerce.
- B. Missouri State Seed Law states that no seed shall be sold, exposed for sale or offered for sale within Missouri when a period of more than nine (9) calendar months has elapsed, exclusive of the month in which the test was completed, between the germination test date and the time the seed is offered or exposed for sale.
- C. The owner of Missouri certified seed is responsible for resampling, retesting and relabeling certified seed after the germination date expires. The owner of the seed must remove the old tags and replace them with new tags indicating the new test date.

## **XXII. Interagency Certification**

- A. Interagency certification is the participation of two or more certifying agencies in performing the services required to certify the same final lot of seed. Generally, the methods and standards employed in each step of the interagency certification process are identical with those used when certification is completed by a single agency.
- B. The seed certification standards as adopted by the Missouri Crop Improvement Association shall be applied for all interagency certification. It is recognized that in many cases, detailed arrangements may be necessary between the two agencies and/or the seed conditioner for the specific case involved.
- C. Seed to be recognized for interagency certification shall be first approved by one or both agencies involved in a particular case. The seed must also be received in containers carrying official certification tags or evidence of its eligibility from another certifying agency, including the following:
  - 1. Necessary facilities to perform the function requested without introducing admixtures.
  - 2. Identity of the seed must be maintained at all times.
  - 3. Records of all operations shall be complete and adequate to account for all incoming seed and finally certified seed. These records shall include:
    - a. Receiving records
      - i. Kind, class and variety
      - ii. Name and address of shipper
      - iii. Shipper's lot number or inspection number
      - iv. Total amount of seed received
      - v. Receiving lot number assigned by the consignee
    - b. Record of blending, conditioning or other handling
      - i. Kind, class and variety
      - ii. State of origin
      - iii. Lot number of component lots used in making the final lot number
      - iv. Number of containers and weight of each component
      - v. Number of containers and weight or processed or blended seed
      - vi. Final lot number assigned by the conditioner
      - vii. Date conditioned or repackaged

4. The seed company shall permit the necessary inspections by the MCIA of such operations, including all records, to insure proper handling.
5. The approved seed company shall designate one individual who shall assume all responsibility for handling all details as may be required.

### **XXIII. O.E.C.D. Certification**

- A. The Organization for Economic Cooperation and Development (O.E.C.D.) in its adopted scheme for production and certification of herbage seeds sets forth minimum requirements and procedures to protect varietal purity and to maintain varietal identity during seed multiplication in its member countries, and to clarify international terminology associated with certified seed. The Agricultural Research Service (ARS) of the United States Department of Agriculture (USDA) has been assigned the responsibility to implement the O.E.C.D. Herbage Seed Certification Scheme in cooperation with the official state seed certifying agencies. The Director of the Missouri Crop Improvement Association signed the memorandum of understanding with the USDA/AMS and it became effective September 21, 2004. Anyone interested in O.E.C.D. certification of herbage seed should contact the Executive Director of the MCIA.
- B. Charges for O.E.C.D. certification are based on the total number of pounds or bushels certified and not on the number of certification tags issued. Contact the MCIA office for a current fee schedule.

### **XXIV. Liability**

- A. Responsibility for any obligation arising from the sale or shipment of Missouri certified seed rests with the applicant and/or producer or subsequent handler making the sale or shipment.
- B. It is the responsibility of the applicant and/or producer to fully comply with the provisions of both the federal and state seed laws and the rules and regulations of the MCIA. All certified seed producers who market their seed as certified must first secure a seed permit from the Missouri Department of Agriculture in Jefferson City, MO. The seed permit is good for twelve (12) months or any fraction thereof, beginning on January 1 and ending on December 31. Applications for seed permits are to be made on special forms furnished by the Missouri Department of Agriculture.

### **XXV. Definitions Under Missouri Seed Law**

- A. Agricultural seeds will be those listed as agricultural seeds in the Federal Seed Act, 7 CFR section 201.2 (l) January 1976.
- B. Restricted weed seeds shall refer to those weed seeds defined as prohibited or noxious by the Missouri Seed Law.



# Cotton Seed

## *Applications Due June 15*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for field inspection.

### **I. General**

The general seed certification standards are basic and together with the following specific standards constitute the standards for the certification of cotton seed in Missouri.

### **II. Seed Source**

- A. The producer must have planted seed of a variety eligible for certification.
- B. The entire acreage of the variety must be included in the application.
- C. The producer must show on the application the name of the tenants and/or cooperators who may have an interest in each field.

### **III. Production of Cotton Seed**

Cotton for certification must be grown on a one variety farm and/or ginned on a one variety gin when specified by the originating breeder and/or institution.

### **IV. Land Requirements**

Land to be used for the production of certified seed must be free from volunteer cotton plants.

### **V. Isolation**

- A. General
  - 1. For upland cotton, the isolation distance shall be a natural barrier or crop boundary, except minimum isolation shall be 100 feet if the contamination source differs by easily observed morphological characteristics from the field to be inspected.
  - 2. For Egyptian type cotton, the isolation shall be 1320 feet from any other type of cotton for the foundation and registered class and 660 feet for the certified class.

#### **B. Specific Requirements**

	maximum permitted ratio of plants		
	F	R	C
Other Varieties	none	1:35000	1:7000
Objectionable Weeds*	none	none	1:10000

\*cocklebur

## **VI. Field Inspection**

- A. Fields of foundation or registered seed shall be inspected two times. The first inspection shall be at early bloom stage and the second shall be after the cotton bolls begin to open.
- B. Fields will be rejected if heavily infested with weeds or if there is evidence of poor management or production practices.
- C. It will be the responsibility of the tenant or cooperator to rogue each field and remove all cocklebur and off-type cotton plants prior to inspection.

## **VII. Harvesting**

- A. Mechanical cotton pickers must be thoroughly cleaned before entering the seed field.
- B. All trailers, trucks or other equipment used in hauling seed cotton to the gin must be plainly marked as to producer, field designation, variety and class.

## **VIII. Gin Requirements**

- A. All foundation or registered seed must be ginned on a one variety gin.
- B. The gin and all seed storage facilities must be inspected and approved by a representative of the MCIA prior to receiving any class of certified seed.
- C. The gin shall have a pure seed system.
- D. The gin shall have separate seed storage stalls that can be thoroughly cleaned. Each stall shall be clearly marked to identify each class of seed.
- E. All seed must be ginned from vehicles, unless otherwise authorized.
- F. When changing to a higher class, seed rolls must be dumped and cleaned and one-half bale of cotton ginned before any seed is allowed to be saved.

## **IX. Delinting and Treating**

- A. Prior to receiving the seed, all storage, conditioning and handling equipment shall be completely cleaned, inspected and approved by a representative of the MCIA.
- B. Seed shall be delivered to the conditioning plant in the applicants own cleaned vehicle, unless otherwise authorized.
- C. The delinting plant will have stalls to hold each class of cotton seed separate. The stalls must have solid walls that will not leak seed. Each stall shall be properly marked to identify the producer, variety and class.
- D. All seed that is treated shall be treated according to the current recommendation of the Missouri Agricultural Experiment Station.

- E. The seed shall be packaged as it is conditioned in new containers that are stenciled or tagged in such a manner to identify the producer, lot number, variety and class.
- F. The conditioner shall keep a daily record of all seed conditioned and this record shall be available for inspection at any time.

**X. Seed Standards**

To be accepted for final certification, the delinted seed must meet the following standards.

Factor	F	R	C
Pure Seed (min)	98.00%	98.00%	98.00%
Inert Matter (max)	2.00	2.00	2.00
Total Other Crop (max) (including other varieties)	none	none	none
Total Weed Seed (max)	none	0.01	0.02
Noxious Weed Seed (max)	none	*	**
Germination	70.00	70.00	70.00

- \* 1 cocklebur per 2 pounds
- \*\* 1 cocklebur per pound

## Cool Season Grasses

### *Applications Due May 15*

Field inspection fees as listed on the schedule of fees found in Appendix B are due and must accompany the application for field inspection.

#### I. General

The general seed certification standards are basic and together with the following specific standards constitute the standards for certification of grasses in Missouri.

#### II. Source of Seed

- A. The grower must have planted foundation or registered seed of a grass variety that is eligible for certification.
- B. Certified seed is produced by sowing foundation or registered. These fields will be eligible to produce certified seed from a planting of foundation or registered seed in accordance with the following table, provided that the field(s) pass an annual inspection, meet breeder requirements and no more than one year elapses between the production of certified seed crops.

	<u>Limited Generation</u>	<u>Unlimited</u>
Registered	3 years	
Certified	<u>5 years</u>	
Total	8 years	8 years

- C. A one year grace period will be allowed for stand establishment and will not be counted against the eight (8) years of total production.

#### III. Land Restrictions

- A. Grasses may not be seeded on land that has been seeded to any variety or species of the same crop in accordance with the following table.

Foundation	5 years
Registered	3 years
Certified	2 years

- B. In order for land to be eligible to produce seed for certification, an inspection of the land must be made the year prior to seeding to check for any crop or weed problems. Another inspection of the land will be made the year of seeding to check for crop and weed problems.
- C. Feeding of grass hay to livestock on fields that are producing certified seed will not be allowed.

- D. Spreading of manure on fields producing certified seed is not allowed.
- E. It is recommended that all fertilizer spraying and haying equipment be cleaned and inspected before operating on land producing certified seed to prevent accidental contamination of the field with other crops or weeds.
- F. It is recommended that no grazing of livestock be allowed on land producing certified seed. Should grazing prove necessary, the livestock must be kept in isolation for a period of five days and fed a diet of grain or legume hay before being turned onto land producing certified seed.

**IV. Field Inspections**

An inspection is to be made annually after heading but prior to harvest. In the event that a re-inspection is necessary, the grower will be charged a minimum fee of \$25.00 or the inspectors actual expenses, whichever is greater.

**V. Field Standards**

- A. Unit of certification shall be considered a an area of land bounded by (1) a fence, (2) a road, (3) another crop from which the species being inspected does not require isolation, or distinct line of demarcation at least 6 feet wide and may not be divided after inspection for the purpose of certification. There should be a 6 foot mowed boundary around each field, including all pre-existing ditches and waterways. In the event of a unmowable ditch that contains a crop of a different variety of the same species being inspected, you must extend 165 feet into the field before you may save seed for certification. This distance should not be confused with isolation distances.
- B. A field producing foundation, registered or certified seed must have the minimum isolation distances as listed below from, (1) a field of any other variety of the same species, or (2) fields of the same variety that do not meet varietal purity and seed history requirements for production of a class of seed equal or higher than that to be produced from the field being inspected. The following isolation requirements shall be met when any other strain or strains of the same species is in bloom at the same, except that the minimum isolation for all seed classes of tetraploids shall be 15 feet from diploids of the same species.

	Border to be removed (ft.)*	Minimum Isolation (ft.)**		
		F	R	C
Cross-pollinated	0	1320	660	165
	9	880	515	100
	15	660	330	75
Strains at least 80% apomictic or highly self-fertile species***	0	60	30	15
	9	30	15	15

\* Border removal applies only to fields of 5 acres or more. Where a border is to be removed, such removal shall not occur until pollination of the crop to be certified is completed.

- \*\* when different classes of seed of the same variety are being grown on the same or adjacent fields, the isolation requirements may be reduced to 25% of the distance shown above.
- \*\*\* Varieties within species with both cross-pollinated and apomictic type of reproduction will be considered highly apomictic for purposes of minimum isolation unless otherwise specified for that variety.

Varieties that are 95% or more apomictic, as defined by the originating breeder, shall have the isolation distance reduced to a mechanical separation only. Varieties less than 95% apomictic and all other cross-pollinating species that have an isolation zone of less than 10 percent of the entire field, no isolation is required. (Isolation zone is calculated by multiplying the length of the common border with other varieties of grass by the average width of the certified field falling within the isolation distance required.)

- C. Varieties/cultivars within each of the following perennial grass tribe *Triticeae* genus and/or species groups must be isolated from each other as required for cross-pollinated species in the above table. Isolation between species of different groups requires only a mechanical separation. Isolation requirements may be modified based on published evidence of ploidy levels and genome identification for specific strains.

- (1) *Agropyron*– crested and Siberian wheatgrasses

- (2) *Elymus* – most *Elymus* species (examples are slender wheatgrass, blue wildrye, Canada wildrye, Dahurian wildrye, big squirreltail, bottlebrush squirreltail, etc.) are self-pollinated and need isolation only as required in the above table for highly self-fertile strains within the same species. Exceptions are the following cross-pollinated *Elymus* species, which must be isolated from each other, but not from the self-pollinated *Elymus* species.

- a. Snake River, thickspike, streambank and Montana (or northern) wheatgrasses, R/S hybrid wheatgrass and quackgrass R/S hybrid wheatgrass and quackgrass must also be isolated from *Pseudoroegneria* species.

- (3) *Leymus* – flowering-time groups may be separated as follows:

- a. Early – basin, beardless and Salina wildryes

- b. Late – Altai, mammoth and giant wildryes and American dunegrass

- c. *Pascopyron* – western wheatgrass

- d. *Psathyrostachys* – Russian wildryes

- e. *Thinopyrum intermedium* – intermediate and pubescent wheatgrasses

- f. *Thinopyrum ponticum* – tall wheatgrasses

- g. *Pseudoroegneria* – bluebunch (or beardless) wheatgrasses; *Pseudoroegneria* species must also be isolated from R/S hybrid wheatgrass and quackgrass.

- D. NO prohibited weeds will be allowed in a field producing a class of certified seed.

- E. Other crops/varieties may not be present in excess of the numbers shown below as determined by plants that can be differentiated from the variety being inspected.

	Maximum permitted ration of plants		
	F	R	C
Other Crops*	none	1:500	1:50
Other Varieties*	none	1:500	1:50

\* a maximum of 2.00% other crop, not to exceed 1% of any one variety.

## VI. Seed Quality Standards

- A. To be accepted for final certification, the seed must be cleaned and bagged in new bags and must meet the following seed quality standards.

	Bromegrass	Canarygrass	Orchardgrass	Timothy	Tall Fescue
Pure Seed (min)	90.00%	96.00%	90.00%	98.00%	99.00%
Inert matter (max)	10.00	4.00	10.00	2.00	1.00
Weed Seed*					
Found & Reg	0.30	0.30	0.30	0.30	0.30
Certified	1.00	1.00	1.00	1.00	1.00
Other Crop Seed**					
Found & Reg	0.25	0.25	0.25	0.25	0.25
Certified	0.50	0.50	0.50	0.50	0.50
Germination	80.00	75.00	80.00	80.00	80.00

\* all lots must be free of weed seeds contained on the Missouri Prohibited Noxious Weed list, plus onion/garlic and musk thistle.

\*\* May contain .50% other crop, provided the other crop is legume seeds, but never to exceed .50% seed of another species.

- B. Varieties of tall fescue stated to be "endophyte free" must have a growout test performed to determine the percentage of live endophyte present. The percentage of live endophyte must not exceed the following levels.

Foundation	0%
Registered	0%
Certified	5%

- C. All tall fescue stated to be "endophyte free" must be labeled stating that the seed is at least 95% free from live endophyte.

## Warm Season Grasses

### *Applications Due July 15*

Field inspection fees as listed on the schedule of fees found in Appendix B are due and must accompany the application for field inspection.

#### I. General

The general seed certification standards are basic and together with the following specific standards constitute the standards for certification of grasses in Missouri.

#### II. Source of Seed

- A. The grower must have planted foundation or registered seed of a grass variety that is eligible for certification.
- B. Certified seed is produced by sowing foundation or registered. These fields will be eligible to produce certified seed from a planting of foundation or registered seed in accordance with the following table, provided that the field(s) pass an annual inspection, meet breeder requirements and no more than one year elapses between the production of certified seed crops.

	<u>Limited Generation</u>	<u>Unlimited</u>
Registered	3 years	
Certified	<u>5 years</u>	
Total	8 years	8 years

- C. A one year grace period will be allowed for stand establishment and will not be counted against the eight (8) years of total production.

#### III. Land Restrictions

- A. Grasses may not be seeded on land that has been seeded to any variety or species of the same crop in accordance with the following table.

Foundation	5 years
Registered	3 years
Certified	2 years

- B. In order for land to be eligible to produce seed for certification, an inspection of the land must be made the year prior to seeding to check for any crop or weed problems. Another inspection of the land will be made the year of seeding to check for crop and weed problems.
- C. Feeding of grass hay to livestock on fields that are producing certified seed will not be allowed.



- D. Spreading of manure on fields producing certified seed is not allowed.
- E. It is recommended that all fertilizer spraying and haying equipment be cleaned and inspected before operating on land producing certified seed to prevent accidental contamination of the field with other crops or weeds.
- F. It is recommended that no grazing of livestock be allowed on land producing certified seed. Should grazing prove necessary, the livestock must be kept in isolation for a period of five days and fed a diet of grain or legume hay before being turned onto land producing certified seed.

**IV. Field Inspections**

An inspection is to be made annually after heading but prior to harvest. In the event that a re-inspection is necessary, the grower will be charged a minimum fee of \$25.00 or the inspectors actual expenses, whichever is greater.

**V. Field Standards**

- A. Unit of certification shall be considered a an area of land bounded by (1) a fence, (2) a road, (3) another crop from which the species being inspected does not require isolation, or distinct line of demarcation at least 6 feet wide and may not be divided after inspection for the purpose of certification. There should be a 6 foot mowed boundary around each field, including all pre-existing ditches and waterways. In the event of a unmowable ditch that contains a crop of a different variety of the same species being inspected, you must extend 165 feet into the field before you may save seed for certification. This distance should not be confused with isolation distances.
- B. A field producing foundation, registered or certified seed must have the minimum isolation distances as listed below from, (1) a field of any other variety of the same species, or (2) fields of the same variety that do not meet varietal purity and seed history requirements for production of a class of seed equal or higher than that to be produced from the field being inspected. The following isolation requirements shall be met when any other strain or strains of the same species is in bloom at the same, except that the minimum isolation for all seed classes of tetraploids shall be 15 feet from diploids of the same species.

	Border to be removed (ft.)*	Minimum Isolation (ft.)**		
		F	R	C
Cross-pollinated	0	1320	660	165
	9	880	515	100
	15	660	330	75
Strains at least 80% apomictic or highly self-fertile species***	0	60	30	15
	9	30	15	15

\* Border removal applies only to fields of 5 acres or more. Where a border is to be removed, such removal shall not occur until pollination of the crop to be certified is completed.

- \*\* when different classes of seed of the same variety are being grown on the same or adjacent fields, the isolation requirements may be reduced to 25% of the distance shown above.
- \*\*\* Varieties within species with both cross-pollinated and apomictic type of reproduction will be considered highly apomictic for purposes of minimum isolation unless otherwise specified for that variety.

Varieties that are 95% or more apomictic, as defined by the originating breeder, shall have the isolation distance reduced to a mechanical separation only. Varieties less than 95% apomictic and all other cross-pollinating species that have an isolation zone of less than 10 percent of the entire field, no isolation is required. (Isolation zone is calculated by multiplying the length of the common border with other varieties of grass by the average width of the certified field falling within the isolation distance required.)

- C. Varieties/cultivars within each of the following perennial grass tribe *Triticeae* genus and/or species groups must be isolated from each other as required for cross-pollinated species in the above table. Isolation between species of different groups requires only a mechanical separation. Isolation requirements may be modified based on published evidence of ploidy levels and genome identification for specific strains.

- (1) *Agropyron*– crested and Siberian wheatgrasses

- (2) *Elymus* – most *Elymus* species (examples are slender wheatgrass, blue wildrye, Canada wildrye, Dahurian wildrye, big squirreltail, bottlebrush squirreltail, etc.) are self-pollinated and need isolation only as required in the above table for highly self-fertile strains within the same species. Exceptions are the following cross-pollinated *Elymus* species, which must be isolated from each other, but not from the self-pollinated *Elymus* species.

- a. Snake River, thickspike, streambank and Montana (or northern) wheatgrasses, R/S hybrid wheatgrass and quackgrass R/S hybrid wheatgrass and quackgrass must also be isolated from *Pseudoroegneria* species.

- (3) *Leymus* – flowering-time groups may be separated as follows:

- a. Early – basin, beardless and Salina wildryes

- b. Late – Altai, mammoth and giant wildryes and American dunegrass

- c. *Pascopyron* – western wheatgrass

- d. *Psathyrostachys* – Russian wildryes

- e. *Thinopyrum intermedium* – intermediate and pubescent wheatgrasses

- f. *Thinopyrum ponticum* – tall wheatgrasses

- g. *Pseudoroegneria* – bluebunch (or beardless) wheatgrasses; *Pseudoroegneria* species must also be isolated from R/S hybrid wheatgrass and quackgrass.

- D. NO prohibited weeds will be allowed in a field producing a class of certified seed.

- E. Other crops/varieties may not be present in excess of the numbers shown below as determined by plants that can be differentiated from the variety being inspected.

	Maximum permitted ration of plants		
	F	R	C
Other Crops*	none	1:500	1:50
Other Varieties*	none	1:500	1:50

\* a maximum of 2.00% other crop, not to exceed 1% of any one variety.

## VI. Seed Quality Standards

- A. To be accepted for final certification, the seed must be conditioned and packaged in new containers and must meet the following seed quality standards.

	Big Bluestem	Caucasian Bluestem	Little Bluestem	Indian- grass	Sideoats Gamma*
PLS Index **	40	25	25	40	40
Weed Seed***					
Found & Reg	0.30%	0.30%	0.30%	0.30%	0.30%
Certified	1.00	1.00	1.00	1.00	1.00
Prohibited Weed****					
Found & Reg	none	none	none	none	none
Certified	none	none	none	none	none
Other Crop*****					
Found & Reg	0.50	0.50	0.50	0.50	0.50
Certified	1.00	1.00	1.00	1.00	1.00
Other Variety					
Found & Reg	0.01	0.01	0.01	0.01	0.01
Certified	0.10	0.10	0.10	0.10	0.10

\* in determining purity for sideoats gamma, the seed unit is defined as a spike containing one or more caryopses.

\*\* percent purity multiplied by percent germination, divided by 100.

\*\*\* for weeds listed on the Missouri Restricted Noxious Weed List, the following allowances are made, foundation = 1 per working sample, registered = 3 per working sample, certified = 5 per working sample.

\*\*\*\* refer to the Missouri Prohibited Noxious Weed List

\*\*\*\*\* never to exceed 0.25% seed of other grass species

	Eastern Gammagrass	Western Wheatgrass	Switchgrass*
Pure Seed	97.00%	85.00%	95.00%
Inert Matter	3.00	15.00	5.00
Weed Seed			
Found & Reg	0.30	0.30	0.30
Certified	0.50	0.50	0.50
Other Crop			
Found & Reg	0.25	0.25	0.25
Certified	0.50	0.50	0.50
Germination	30.00	60.00	50.00

\* percentage of seed of other varieties not to exceed .01% in foundation & registered or .10% in certified classes.

**Corn**  
**Hybrids, Inbreds, Single Crosses, Backcrosses & Open Pollinated**

*Applications Due June 1*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

**I. General**

The general seed certification standards are basic and together with the following specific standards constitute the standards for certification of corn in Missouri.

**II. Eligibility Requirements**

- A. Hybrid corn is seed to be planted for any use except seed production. It may be any one of the following:
1. A single cross, i.e., the first generation of a cross of two inbred lines, an inbred line and a foundation backcross or two foundation backcrosses.
  2. A three-way cross, i.e., the first generation of a cross of a foundation single cross and an inbred line or foundation backcross.
  3. A double cross, i.e., the first generation of a cross between two foundation single crosses.
  4. A top cross, i.e., the first generation of a cross of an open pollinated variety and an inbred line, a foundation backcross, or a foundation single cross.
- B. Foundation single cross to produce foundation backcross, double, three-way or top cross hybrids. A foundation single cross to be eligible for certification must be produced from approved inbred lines or foundation backcrosses, whose source assures their identity and is approved by the certifying agency.
- C. Foundation backcross to produce double, three-way or top cross hybrids. A foundation backcross to be eligible for certification must be produced from approved single crosses and inbred lines whose source assures their identity and is approved by the certifying agency.
- D. Inbred lines
1. An inbred line to be eligible for certification must be from a source such that its identity may be assured and approved by the certifying agency.
  2. An inbred used as a pollinator in a foundation single cross or foundation backcross in isolation may be certified provided all the seed parents in the isolated field are inspected for certification and meet all field requirements for certification.

### III. Source of Seed

- A. Only the class "Certified" is recognized in hybrid corn.
- B. Hybrid corn must be produced from certified foundation seed that has been field inspected.
- C. Foundation backcrosses
  - 1. A first generation foundation backcross shall be the first generation cross between a foundation single cross or related inbred lines and an inbred line which shall be the same as one of the inbreds in the foundation single cross.
  - 2. A second generation foundation backcross shall be the cross of a first generation backcross (seed parent) with its recurrent inbred parent (pollen parent).
- D. A foundation single cross shall consist of the first generation hybrid between two inbred lines, an inbred line and a foundation backcross or two foundation backcrosses.

A fertility restoring line may be substituted for its non-restoring counterpart in a foundation single cross or foundation backcross provided the fertility restoring line is the same in other observable characteristics as its non-restoring counterpart.
- E. An inbred line must be a true breeding strain of corn.
- F. Male Sterility
  - 1. When a specific genetic factor(s) is added to an inbred line, the line must be homozygous for the specific genetic factor(s) except for the pollen restoration factor(s) in the corresponding male sterile maintainer line.
  - 2. For a recovered pollen restorer inbred line, selection must be relative to a specific cytoplasmic male sterile source.
  - 3. A genetic male sterile maintainer line, consisting of duplicate-deficient and male-steriles in an approximate 1:1 ratio, shall be no more than two generations removed from breeder's seed. The maintainer shall be designated according to generation as:
    - a. Breeder's seed - the hand pollinated selfed seed from a known duplicate-deficient plant heterozygous at a particular male sterile locus.
    - b. Foundation I seed - the product of random-mating among fertile plants arising from Breeder's seed.
    - c. Foundation II seed - the product of random-mating among fertile plants arising from Foundation I seed.
  - 4. A genetic male sterile line shall be a strain homozygous for a particular male sterile recessive allele and shall be closely related to its maintainer counterpart.

5. The genetic male sterile lines may be identified as to the recessive genes they carry, e.g. B37 ms-1, N28 ms-10. The maintainer lines may be identified not only for the male sterile gene for which it is heterozygous, but for the specific translocation from which it was derived, e.g. B37 Mt-1 ms-1, N28 Mt-1 ms-10.

#### **IV. Land Requirements**

There are no requirements as to the previous crops.

#### **V. Production of Seed**

##### **A. Field Inspection**

One or more field inspections shall be made by the certifying agency during the pollinating period.

##### **B. Inspection of Seed**

Foundation single crosses, foundation backcrosses and inbred lines shall be inspected by the certifying agency. This inspection shall be an ear inspection, a grow-out test or a molecular marker assay. The molecular marker tests must be conducted by an independent laboratory approved by the certifying agency.

#### **VI. Field Standards**

##### **A. General**

##### **1. Isolation**

##### **a. Foundation single crosses, foundation backcrosses and inbred lines.**

(1) An increase field of an inbred line, either male sterile or fertile, or a production field of a specific foundation single cross, or a foundation backcross involving either male sterile or fertile lines must be isolated by not less than 660 feet from any other kind of corn, except, no isolation is required for the production of hand-pollinated seed.

(2) In the case of foundation single cross, foundation backcross, or inbred line seed production, the following exceptions may be considered when the contaminating field is of the same color and endosperm type.

a. Adequate natural barriers are permitted for modifying isolation distance.

- b. Differential maturity dates may permit modifying isolation distances provided there are no receptive silks in the seed parent at the time pollen is being shed in the contaminating field.
- c. Dent sterile popcorn requires no isolation from dent corn.

b. Hybrid Corn

- (1) A specific hybrid to be accepted for certification must be so located that the seed parent is not less than 660 feet from other corn. However, in the case of the same color and endosperm type or white endosperm corn - optically sorted, the distance may be further modified by the planting of pollen parent border rows, the number of which is to be determined by the acreage of the specific cross in accordance with the following tables. Other exceptions are listed in parts (2) and (3). The pollen parent border rows must be shedding pollen effectively and simultaneously with silk emergence in the seed parent to be used to modify isolation distance.

Hybrid Corn

Minimum distance from other corn ft.	Field Size	
	<u>1 - 20 acres</u> (minimum) border rows	<u>20 acres+</u>
660	0	0
570	4	1
490	6	2
410	8	4
330	10	6
270	12	8
210	14	10
150	16	12
90	18	14
<90	24 <sup>1</sup>	16 <sup>2</sup>

1 minimum of 60 feet including border rows  
 2 minimum of 40 feet including border row



Sweet Corn

When the field acreage growing the affected seed parent is:								Then this number of border rows is required
10 or less	10-14	15-19	20-24	25-29	30-34	35-39	40 or more	
And the distance of the seed parent from other dent corn is at least								
-feet-								
660	645	625	610	595	580	560	545	4
620	600	585	570	550	540	520	500	5
580	560	545	520	510	495	480	460	6
540	520	500	485	470	450	435	420	7
495	480	460	445	430	415	395	380	8
455	435	420	400	385	370	355	340	9
410	395	380	365	345	330	315	295	10
370	355	340	320	300	285	270	255	11
330	315	295	280	265	245	230	215	12
290	270	255	240	225	205	190	175	13
245	230	215	200	180	165	150	130	14
205	190	175	155	140	125	105	90	15
165	150	130	115	100	85	65	50	16

- (2) Adequate natural barriers are permitted for modifying isolation distances.
- (3) Differential maturity dates are permitted for modifying isolation distances, provided there are no receptive silks in the seed parent at the same time pollen is being shed in the contaminating field.
- (4) Dent sterile popcorn requires no isolation from dent corn.

- c. Open pollinated corn
  - (1) The acreage to be certified must be so located that it is not less than 660 feet from any other kind of corn, including pop corn and sweet corn, unless it is a field of the same variety being inspected for certification.
  - (2) The isolation distance may be modified, depending upon the size of the certifiable acreage, by adequate natural barriers and by designating certain rows of the same variety for pollen-shedding purposes only. The minimum isolation and border requirements for corn hybrids shall apply to open pollinated corn.
  - (3) Rows that function to provide isolation shall not be harvested for seed purposes.

B. Specific

1. Male Sterile Seed Parent

A male sterile seed parent can be used to produce certified hybrid corn seed by either of two methods.

- a. Seed of the normal fertile seed parent must be mixed with the seed of the male sterile parent of the same pedigree either by blending in the field at harvest or by size at conditioning. The ratio of male sterile parent seed to normal parent seed shall not exceed 2:1.
- b. The pollen parent must involve a certified pollen restoring line or lines so that not less than one third of the plants grown from hybrid corn seed produce pollen which appears to be normal in quantity and viability.

2. Detasseling or Pollen Control

The following requirements apply only when 5% or more of the seed parent plants have receptive silks.

- a. An isolation will not be accepted for certification if more than 1.0 percent of the seed parent plants have shed pollen on any one inspection or if the total for three inspections on different dates exceeds 2.0 percent.
- b. When more than one combination is being grown in the same isolation and the seed parent of one or more of them is shedding pollen in excess of 1.0 percent, all seed parents having 5.0 percent or more apparently receptive silks at the time will be disqualified unless adequately isolated from the shedding seed parent.
- c. Sucker tassels, portions of tassels or tassels on main plants will be counted when 2 inches or more of the central stem, the side branches or a combination of the two have the anthers extended from the glumes and are shedding pollen.

- d. The detasseling (cutting or pulling) of cytoplasmic male-sterile seed parent is permitted and the crop would be certified if it meets other certification standards.
  - e. For Foundation single crosses, an isolation will not be accepted for certification if more than 0.5 percent of seed parent plants have shed pollen on any one inspection or if the total for three inspections on different dates exceeded 1.0 percent.
3. Other Varieties and Off-Type Plants
- a. Foundation single crosses and foundation backcrosses and certified hybrids.
    - (1) A field in which more than 0.1 percent definitely off-type plants in the pollen parent have shed pollen will not be certified.
    - (2) At the time of the last inspection, the seed parent shall not contain in excess of 0.1 percent definitely off-type plants.
  - b. Foundation single crosses, foundation backcrosses and inbred lines. Any plant shedding pollen in male sterile rows must be completely destroyed at pollination time to eliminate the possibility of its seed production.
  - c. Inbred lines
 

A field which contains, at any one inspection, more than 0.1 percent of definitely off-type plants that have shed pollen or are shedding pollen when 5.0 percent or more of the plants in the field have receptive silks, shall not be certified.
  - d. Open-pollinated varieties
 

There shall not be more than 0.5 percent detectable admixture with plants of other varieties.
4. In addition to field inspection, molecular marker assays may be used at the discretion of the certifying agency to determine if standards have been met. The molecular assay tests must be conducted by a laboratory approved by the certifying agency.
5. Determining final percent hybridization and varietal purity by post control testing. Final certification of hybrid seed lots as determined by the certifying agency may be contingent upon determination of percent hybridization using the following methods:
- a. Biochemical methods by lot and/or grade size.
  - b. Field growouts by lot and/or grade size.

6. Certifying agencies may, but are not required to, use post control grow-outs or molecular testing. Post control grow-outs or molecular testing on maize are used to compare a seed lot against an established standard. AOSCA recommends the following varietal purity standards for maize; Foundation class 98%, Certified single cross hybrids 97%, and other Certified crosses 95%.

## VII. Seed Standards

### A. Seed House or Bin Inspection

Foundation single crosses, foundation backcrosses and inbred lines.

Seed ear-inspected after maturity shall not contain in excess of 0.1 percent (1:1000) of definitely off-type or more than 0.5 percent (5:1000) of ears with kernels of different color or endosperm type which would not exceed a total of twenty-five kernels per 1000 ears.

- B. Post harvest grow-out inspections or a molecular marker assay will be accepted for Foundation corn production in lieu of an ear inspection. The molecular marker tests must be conducted by an independent laboratory approved by the certifying agency.

### C. Hybrid and open-pollinated corn seed standards.

Factor	Standards for each class	
	Foundation*	Certified
Pure seed (minimum)	98.00%	98.00%
Inert matter (maximum)	2.00%	2.00%
Total weed seeds (maximum)	none	none
Total other crop seeds (maximum)	none	0.50%**
Germination*** (minimum)	90.00%	90.00%
Moisture (maximum)	14.00%	14.00%

\* Foundation seed standards apply only to open pollinated corn

\*\* The 0.50% pertains to a mechanical (visual) purity test where kernels of a different color or endosperm type will be weighed to determine this percent.

\*\*\* Minimum germination for sweet corn is 80.00%

## **Industrial Hemp (*Cannabis sativa* subsp. *sativa*)**

### *Applications Due July 15*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

#### **I. General**

- A. The general seed certification standards are basic and together with the following specific standards constitute the standards for certification of grasses in Missouri.
- B. The Genetic Standards are modified as follows:
  - 1. All production of industrial hemp crops are subject to license application approval that may be required by regulatory authorities.
  - 2. Only varieties of industrial hemp approved by regulatory authorities are eligible for certification.
  - 3. The allowable area of an industrial hemp research area or production field may be determined by state or local agencies.
  - 4. Growers may be required by regulatory agencies to obtain THC test results according to applicable regulations. Growers may be required to submit these results to the seed certifying agency before a crop certificate is issued.

#### **II. Land Requirements**

- A. Hemp crops for Foundation and Registered classes must not be grown on land which in any of the preceding 3 years produced a crop of industrial hemp.
- B. Hemp crops for Certified classes must not be grown on land which:
  - 1. In the preceding year produced a certified crop of the same variety.
  - 2. In either of the preceding 2 years produced a non-certified crop of industrial hemp or a different variety of industrial hemp.
- C. Weeds
  - 1. The presence of Broomrape (*Orobancha* spp.) in industrial hems crops is cause for declining certified status.

### III. Field Standards

#### A. Crop Inspection

1. It is the grower's responsibility to ensure that fields are inspected by an authorized inspector at least once prior to swathing or harvesting, except in the case of Foundation, Registered, and Certified monoecious types and unisexual hybrids and Foundation dioecious types, in which 2 inspections are required.
2. A field that is cut, swathed or harvested prior to crop inspection is not eligible.
3. Fields must be inspected at a stage of growth when varietal purity is best determined. Crops not inspected at the proper stage for best determining varietal purity may be cause for declining certified status.
  - a. First inspection for all classes of monoecious types must be made just before or at early flowering. First inspection for all classes of dioecious types must be made after flowering when male plants are beginning to senesce.
  - b. Second inspection for all classes of monoecious types, and the Foundation class of dioecious types must be made when seeds are well forming.
  - c. Isolation areas will be inspected for volunteer hemp plants on each inspection.

#### B. Isolation

1. The area, density, stage of maturity and location of any contaminating pollen source is an important factor in cross pollination, and therefore must be noted on the *Seed Crop Inspection Report* for consideration in determining certification status. There shall not be any *Cannabis sativa* L. plants within 100 m of the crop and not more than 10 plants/ha beyond 100 m within the isolation requirement.
2. The required isolation must be present prior to flowering and crop inspection.

Table 1 –  
Minimum Isolation Distances Required Between Inspected Industrial Hemp and Other Crops

Inspected Crop	Other Crops	Isolation Distance Required (feet)
Dioecious type – Foundation	- Different varieties of Industrial Hemp - Non-certified crop of Industrial Hemp	15,748
	- Lower certified class seed crop of same variety	6,460
	- Same class of certified seed crop of same variety	10
Dioecious type – Registered	- Different varieties of Industrial Hemp - Non-certified crop of Industrial Hemp	15,748
	- Seed crop of same variety that meets Certified standards for varietal purity	5,249
	- Seed crop of same variety that meets Registered standards for varietal purity	3
Dioecious type – Certified	- Different varieties of Industrial Hemp - Non-certified Industrial Hemp	2,624
	- Planted with certified seed of the same variety that meets Certified standards for varietal purity	656
	- Seed crop of same variety that meets Certified standards for varietal purity	3
Monoecious type – Foundation	- Dioecious variety of Industrial Hemp - Non-certified crop of Industrial Hemp	15,748
	- Other Monoecious varieties - Lower certified class seed crop of same variety	9,690
	- Same class of certified seed of same variety	16
Monoecious type – Registered	- Dioecious variety of Industrial Hemp - Non-certified crop of Industrial Hemp	15,748
	- Different varieties of the same type of Industrial Hemp (Monoecious or Female Hybrid)	6,460
	- Seed crop of same variety that meets Certified standards for varietal purity	3,230
	- Seed crop of same variety that meets Registered standards for varietal purity	3
Monoecious type – Certified	- Dioecious variety of Industrial Hemp - Non-certified crop of Industrial Hemp	3,230
	- Different varieties of the same type of Industrial Hemp (Monoecious or Female Hybrid) - Planted with certified seed of the same variety that meets Certified standards for varietal purity	656
	- Seed crop of same variety that meets Certified standards for varietal purity	3

C. Impurity Standards

1. Impurities should be removed prior to crop inspection.
2. Any combination of impurities may be reason for declining certified status.
3. Table 2 indicates the maximum number of impurities permitted by AOSCA in approximately 10,000 plants of the inspected crop. The inspector makes at least 6 counts (10,000 plants each) or the equivalent to determine the number of impurities. The resulting average of these counts must not exceed the maximum impurity standards in Table 2.

Table 2 - Maximum Impurity Standards

Plot Crop	Maximum Impurity Standards per 10,000 plants in Industrial Hemp Seed Crops	
	Maximum Number of Dioecious Male Plants Shedding Pollen	Maximum Number of Off-Types or Other Varieties
Dioecious type – Foundation	–	3
Dioecious type – Registered	–	10
Dioecious type – Certified	–	20
Monoecious type – Foundation	1	3
Monoecious type – Registered	2	10
Monoecious type – Certified	100	20

IV. Seed Standards

<b><u>Factor</u></b>	<b><u>Foundation</u></b>	<b><u>Registered</u></b>	<b><u>Certified</u></b>
Pure seed (min)	98.00%	98.00%	98.00%
Inert matter (max)*	2.00%	2.00%	2.00%
Weed seeds (max)	0.10%	0.10%	0.10%
Total other crop seeds (max)	0.01%	0.03%	0.08%
Other varieties (max)	0.005%	0.01%	0.05%
Other kinds (max)**	0.01%	0.03%	0.07%
Germination (min)	80.00%	80.00%	80.00%

\* Inert matter shall not include more than 0.5 per cent of material other than seed fragments of the variety under consideration.

\*\*Other kinds shall not exceed 2 per lb. (454 grams) for Foundation; 6 for Registered; 10 for Certified.

**Guidelines for the Production of Certified Industrial Hemp Seed**

1. Definitions

- Industrial Hemp (*Cannabis sativa L. supsp.sativa.*) includes varieties of these kinds:
  - ^ Dioecious type: with male and female flowers on separate plants.
  - ^ Monoecious type: with male and female flowers on the same plant.
  - ^ (Unisexual Female) Hybrids: with sterile male and fertile female flowers on the same plant.
- “Approved Cultivar” means any variety designated as eligible for production by federal or local regulatory authorities.
- “THC” means delta-nine ( $\Delta 9$ ) tetrahydrocannabinol, which is the component of Industrial Hemp regulated by federal or local regulatory authorities.
- Although traditionally a crop with a Dioecious plant type, many Monoecious varieties of industrial hemp (*Cannabis sativa L. supsp.sativa*) have been developed. Industrial hemp is sexually polymorphic and often produces many different ratios of intersexual plant types that can increase roguing requirements. Variety descriptions normally define these ratios.



## 2. Foundation Seed Production

Any means of processing or conditioning of seed from a Foundation production area which may contaminate the varietal purity of the seed is prohibited.

Area of Foundation Fields - when unforeseen circumstances do not permit proper maintenance of the entire field, it is recommended that the area be reduced by destroying part of the field or by isolating a part to meet the requirements of a lower status of certified seed. The remainder of the field must meet the requirements for Foundation field production. The area of a Foundation field includes the “walkways” provided within the field to facilitate effective roguing.

## 3. Recommended Production Procedures

- a) Fields should be planted to facilitate inspection, roguing and harvesting.
- b) Fields should be planted in areas easily accessible for frequent maintenance and to provide protection from outside sources of contamination, such as roadways and building sites.
- c) Regulations for land requirements are minimum standards and caution is necessary in choosing land, as volunteer growth from previous crops may vary according to local conditions.
- d) The regulations for isolation are minimum standards. It is always to the grower’s advantage to provide more isolation than required. When planting Foundation fields, specific requirements may influence the location and size of the field. It is a safeguard if adjacent crops are the same variety as the field and are inspected for certified status.

### Roguing

- a) The field must be thoroughly and intensively rogued many times throughout the crop season.
- b) Off-type male flowers must be removed before the receptive stage of female flowers in the inspected crop.
- c) The numbers and kinds of plants removed should be recorded and described on the appropriate forms.
- d) All male flowers rogued from the crop must be removed from the production area and burial is recommended.
- e) Regrowth of rogued flowers or plants must be prevented.

### Harvesting, Conditioning and Storing

- a) A seed grower should have access to the necessary equipment for harvesting and conditioning the seed from the field in such a manner as to ensure that the varietal purity of the seed is maintained.
- b) The seed should be stored, in compliance with federal or local regulations, in a clean, cool, dry area.
- c) The seed containers should be labeled for identification.

It is recommended that not more than one variety of Industrial Hemp be grown under the management of one grower.

## **Annual Lespedeza**

### *Applications Due August 1*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

#### **I. General**

The general seed certification standards are basic and together with the following specific standards constitute the standards for the certification of lespedeza in Missouri.

#### **II. Seed Source**

- A. Foundation seed shall be obtained from the increase of Breeder seed produced by Missouri Foundation Seeds or the sponsoring agency.
- B. Registered seed is produced by sowing Foundation seed. A field sown with Foundation seed is eligible to produce Registered seed for two successive seed crop years, including the year of establishment.
- C. Certified seed is produced by sowing Foundation or Registered seed. If Foundation seed is sown, seed produced by naturally reseeding crops in the four years immediately following the seeding year is eligible for Certified seed. When Registered seed is sown, seed produced during the seeding year and the first reseeding year is eligible for Certified seed. No more than one season shall elapse between the production of certified seed crops. Fields planted with Certified seed are not eligible for certification.

#### **III. Land Requirements**

A variety will not be eligible for certification if planted on land where lespedeza, other than a crop eligible for certification and of the same variety, has the opportunity to mature seed during the previous five years for the Foundation class and three years for the Registered or Certified classes. Such land must have been in cultivation for two years (Foundation) and one year (Registered and Certified) prior to planting. The land must be free of volunteer plants of lespedeza during the year immediately prior to establishment. No manure or other contaminating material shall be applied during the year prior to seeding and during the establishment and productive life of the stand.

#### **IV. Field Standards**

##### **A. Isolation**

Minimum distances from a different variety, or the same variety not under certification, must be at least ten feet. If the adjoining field has been broadcast, the distance must be a minimum of thirty feet. The isolation between classes of the same variety under certification may be reduced up to 25% of the distances otherwise required.

B. Field Inspection

1. Seed fields shall be inspected at least once prior to harvest, preferably at flowering when varietal purity can best be determined.
2. If a field is harvested prior to field inspection, it automatically becomes ineligible for certification.

C. Specific Requirements

Maximum permitted	F	R	C
Other varieties*	1:1000	1:500	1:400
Other crop	0.05%	0.10%	0.25%
Prohibited weeds	none	none	none

\* Includes other species of lespedeza

V. Seed Standards

	F	R	C
Pure Seed (minimum)	98.00%	98.00%	98.00%
Inert matter (maximum)	2.00%	2.00%	2.00%
Other crop seed* (maximum)	0.20%	0.50%	1.50%
Other varieties (maximum)	0.10%	0.25%	0.50%
Other kinds (maximum)	0.10%	0.25%	0.50%
Weed seed (maximum)	0.25%	0.50%	0.75%
Noxious weeds**	9/lb.	27/lb.	45/lb.
Prohibited weeds***	none	none	none
Germination (total)	85.00%	85.00%	85.00%

\* Including other species of lespedeza

\*\* Missouri State Noxious Weed List

\*\*\* Missouri State Prohibited Noxious Weed List

## **Peanut**

### *Applications Due August 1*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

#### **I. General**

The general seed certification standards are basic and together with the following specific standards constitute the standards for the certification of peanut seed in Missouri.

#### **II. Seed Source**

The grower must have planted Foundation or Registered seed of an eligible variety.

#### **III. Land Requirements**

Peanuts may not be produced on land that was planted to peanuts the previous two seasons. During those two years, a summer crop must be grown on the land, unless the preceding peanut crop was grown from certified seed of the same variety as is being produced.

#### **IV. Field Standards**

- A. Inspection: seed fields shall be inspected at least once prior to harvest, preferably near maturity.
- B. Unit of Certification: is a field with boundaries of demarcation that distinguish one field from another. A 10 foot strip of ground devoid of peanuts constitutes a field division.
- C. Isolation: an isolation of 4 rows or a minimum of 10 feet is required for all classes of certified seed from other varieties or from peanuts grown from uncertified seed of the same variety.
- D. Restriction on number of varieties per farm unit: only one variety may be grown for certified seed per farm without approval from the certifying agency. Where two classes of the same variety (Registered and Certified) are planted in the same field, you must show on the application either the number of rows of each class or place a marker at each end of the field where one class ends and the other begins.
- E. Limitation of Generations: Peanuts may only be certified one year when planted from Registered seed.
- F. All classes of certified seed may be rejected if weeds and grasses prevent varietal purity determination by the inspector or if a varietal mixture is present in excess of the maximum allowed for each class.

G. Specific Requirements

Factor	Maximum permitted in each class		
	F	R	C
Other varieties*	1:1500	1:1000	1:500

\* Other varieties shall be considered to include off-type plants that can be differentiated from the variety that is being inspected.

V. Seed Standards

	F	R	C
Pure Seed (minimum)	95.00%	95.00%	95.00%
Inert matter (maximum)	5.00%	5.00%	5.00%
Other crop seed (maximum)	none	0.10%	0.20%
Other varieties (maximum)	0.10%	0.20%	0.50%
Restricted/Prohibited Noxious Weeds	none	none	none
Germination (minimum)+++	80.00%	80.00%	80.00%

**INSTRUCTIONS AND PROCEDURES**

1. Seedhouse or Bin Inspection of Seed

- A. Seed should be handled as to prevent mixtures and maintain identity.
- B. Certified seed peanuts cannot be stored in the same building with other peanuts unless previously bagged and tagged or unless they are otherwise identified.
- C. Any facility handling more than one variety of peanuts (seed and commodity production) must develop and implement a documented plan to maintain varietal purity and identity.

2. Conditioning Seed

- A. All certified seed peanuts shall be handled through approved conditioning facilities. Combines, shellers and treaters must be inspected by the grower or conditioner to safeguard against mixing of seed. Harvesting and conditioning equipment may be spot checked by an MCIA inspector.

B. Certified peanut seed should be treated with a recommended fungicide for the control of seedborne organisms. The rate of application and material used for seed treatment

C. Screen sizes: Spanish varieties minimum screen is 14/64"  
Virginia varieties the minimum screens is 16/64" x 1" slot  
Runner and Valencia types the minimum screen is 15/64" x 3/4" slot  
There is a tolerance of 5% allowed.

### **3. Buying Points**

A. Buying points must be inspected and approved by an appointed representative of the buying point or an MCIA inspector prior to receiving certified peanut seed. Buying points handling more than one variety of peanuts (seed or commercial production) must develop, post and implement a documented plan to maintain varietal purity and identity prior to receiving certified seed. A buying point must appoint a representative knowledgeable of MCIA standards to be responsible for the buying point's compliance with the published rules governing certified seed production, handling and storage. Each buying point location must have an onsite representative. Representatives may not be responsible for multiple locations. Representatives must attend a training session offered by MCIA no less than once every two years. Attendance at the annual Peanut Seed Short Course will qualify as required training. A peanut buying point is any facility that receives and/or stores certified peanut seed.

### **3. Maximum Lot Size**

A. Maximum lot size is 55,000 lbs.

# Rice

## *Applications Due July 15*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

### **I. General**

The general seed certification standards are basic and together with the following specific standards constitute the standards for the certification of rice in Missouri.

### **II. Seed Source**

The producer must have planted Foundation or Registered seed of an eligible variety.

### **III. Land Requirements**

Rice shall be grown on land which the preceding crop was another kind or planted with the Certified seed of the same variety of an equal or higher seed class. If the previous crop was of the same variety, it must have been approved as meeting varietal purity standards for certification and found to be free of red rice.

### **IV. Field Standards**

A. Seed fields shall be inspected at least once prior to harvest, preferably near maturity.

B. Prior to field inspection, the applicant shall rogue and remove from each field; red rice, noxious weeds and off-type plants.

C. Levees must be planted to the same variety as the production field.

D. Fields for certification must be separated from another variety by a ditch, levee, roadway, fence or barren strip of at least 15 feet if the adjacent field is ground drilled, 50 feet if ground broadcast and 100 feet if aerial seeded.

E. Specific Requirements

Factor	Maximum permitted ratio of heads or plants		
	F	R	C
Other varieties	1:10000	1:5000	1:1000
Red Rice	none	none	none
Noxious weeds*	none	none	none
Diseases not controllable with treatment	none	none	none

\* Curly indigo, coffee bean, field bindweed, johnsongrass, dock, morning glory & barnyardgrass

**V. Seed Standards**

	F	R	C
Pure Seed (minimum)	99.00%	99.00%	99.00%
Inert matter (maximum)	1.00%	1.00%	1.00%
Other crop seed (maximum)	0.05%	0.10%	0.25%
Other varieties (maximum)	0.01%	0.02%	0.10%
Other kinds (maximum)	none	none	2/lb.
Weed seed (maximum)	0.05%	0.05%	0.10%
Noxious weeds*	none	none	none
Prohibited weeds**			
Red rice (maximum)	***	***	***
Germination (minimum)	80.00%	80.00%	80.00%

\* Refer to Missouri State Noxious Weed List

\*\* Refer to Missouri State Prohibited Noxious Weed List

\*\*\* Not to exceed 1 per 2 lbs.



**Small Grains**  
**Wheat, Oats, Barley, Rye & Triticale**

*Applications Due April 15*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

**I. General**

The general seed certification standards are basic and together with the following specific standards constitute the standards for the certification of small grains in Missouri.

**II. Seed Source**

The producer must have planted Foundation or Registered seed of an eligible variety.

**III. Isolation**

- A. Since rye is a cross-pollinated plant, no other variety may be located within 660 feet of the field(s) of rye being produced under certification that do not meet the varietal purity requirements of the class of seed inspected and are the same chromosome number. Isolation between diploid and tetraploid rye shall be at least 15 feet.
- B. Wheat, barley, oats and triticale must be separated from each other or a different variety by a barren strip at least ten feet wide.

**IV. Land Restrictions**

A small grain crop shall be planted on land on which the last crop grown was of another kind or was planted with certified seed of the same variety. A crop will not be eligible for certification if planted on land which the same kind of crop was grown the previous year unless the previous crop was grown from certified seed of the same variety.

**V. Field Standards**

- A. Seed fields shall be inspected at least once prior to harvest, preferably near maturity.
- B. It will be the responsibility of the applicant to rogue and remove from each field any off-type plants.
- C. The field must be free of plants of onion, garlic, field bindweed, rough pea, vetch and relatively free of corn cockle and docks.
- D. Where two classes of the same variety (Registered and Certified) are planted in the same field, you must show on the application either the number of rows of each class or have a marker at each end of the field showing where one class ends and the other begins.

E. Specific Requirements

Factor	Maximum permitted ratio of heads or plants		
	F	R	C
Other varieties	1:5000	1:2500	1:665
Inseparable other crops	1:10000	1:10000	1:5000
Other crop plants*	1:5000	1:5000	1:1000
Loose smut**			

\* Fields of wheat, barley, oats and triticale must be free of plants of rough pea & vetch. Foundation and Registered class fields of wheat and triticale must be free of cereal rye. Certified class fields are allowed 1 cereal rye plant per acre with the applicants option to declare a zero tolerance for cereal rye in their own production fields.

\*\* If chemically controlled seed borne diseases are found during field inspection and laboratory analysis, seed treatment is recommended.

VI. Seed Standards

	F	R	C
Pure Seed (minimum)			
Wheat, Barley & Oats	99.00%	99.00%	99.00%
Rye & Triticale	98.00%	98.00%	98.00%
Inert matter (maximum)			
Wheat, Barley & Oats	1.00%	1.00%	1.00%
Rye & Triticale	2.00%	2.00%	2.00%
Other crop seed* (maximum)			
Wheat, Barley, Rye & Triticale	0.02%	0.05%	0.10%
Oats	0.04%	0.10%	0.20%
Other varieties (maximum)			
Wheat, Barley, Rye & Triticale	0.02%	0.05%	0.15%
Oats	0.04%	0.10%	0.20%
Weed seed (maximum)	0.02%	0.04%	0.05%
	not to exceed 6/lb. in any class		
Noxious weeds**	none	none	none
Germination (minimum)			
Wheat, Barley, Oats	85.00%	85.00%	85.00%
Triticale	80.00%	80.00%	80.00%
Rye	70.00%	70.00%	70.00%

\* Wheat, barley, winter oats & triticale must be free of cereal rye, rough pea, vetch and ryegrass.

\*\* Spring oats may contain not in excess of 3 wild oats per pound.

# Soybean

## *Applications Due August 1*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

### **I. General**

The general seed certification standards are basic and together with the following specific standards constitute the standards for the certification of soybeans in Missouri.

### **II. Seed Source**

The producer must have planted Foundation or Registered seed of an eligible variety.

### **III. Land Requirements**

Soybeans may not be produced on land that was planted to soybeans the previous season, unless Certified seed of the same class and variety was planted.

### **IV. Field Standards**

A. Seed fields shall be inspected at least once prior to harvest, preferably near maturity.

B. Fields will be rejected if:

1. They are heavily infested with weeds or if there is evidence of poor production practices.
2. Fields contain black nightshade or balloonvine.
3. They contain excessive infestation of cocklebur and morning glory plants that will mature seed prior to harvest.
4. Plants of corn, commercial sunflower or excessive sorghum have not been removed.
5. The crop indicates a varietal mixture in excess of 0.25%.

C. If two varieties are planted in the same field, at least one standard row width shall be left barren or planted to another crop.

1. Where two classes of the same variety (Registered and Certified) are planted in the same field, you must show on the application either the number of rows of each class or place a marker at each end of the field where one class ends and the other begins.

2. All end rows must be planted to the same variety as the remainder of the field.

D. Specific Requirements

Factor	Maximum permitted in each class		
	F	R	C
Other varieties*	1:5000	1:2500	1:500
Corn, sorghum, sunflower	none	none	none
Prohibited weeds**	none	none	none

\* Other varieties shall be considered to include off-type plants that can be differentiated from the variety that is being inspected.  
 \*\* Field bindweed, johnsongrass, sorghum alnum, black nightshade & balloonvine

V. Seed Standards

	F	R	C
Pure Seed (minimum)	99.00%	99.00%	99.00%
Inert matter* (maximum)	1.00%	1.00%	1.00%
Other crop seed** (maximum - all classes)	not to exceed 3 per pound		
Other varieties*** (maximum)	1/lb. or 0.05%	2/lb. or 0.10%	8/lb. or 0.25%
Weed seed+ (maximum - all classes)	not to exceed 3 per pound		
Prohibited weeds ++	none	none	none
Germination (minimum)+++	80.00%	80.00%	80.00%

\* Not to exceed 2/lb dirt peds or rocks  
 \*\* Must be free of corn, rice and sorghum  
 \*\*\* Off-colored soybeans due to environmental factors shall not be considered other varieties. Other varieties shall be considered to include off-type seeds that can be differentiated from the variety being inspected.  
 + Must be free of cockleburs, black nightshade & balloonvine. May not contain in excess of 1 morning glory per pound.  
 ++ Prohibited weeds are field bindweed, johnsongrass, sorghum alnum, balloonvine & black nightshade.  
 +++ Re-certification of carryover soybeans is not permitted, except for the foundation class in certain instances.

VI. Herbicide Resistant/Tolerant Screenings

All varieties claiming resistance/tolerance to a particular herbicide must undergo a laboratory screening (seed soak or growout) before certification can be completed for that particular lot of seed.

## **Vegetatively Propagated Pasture Grass (Hybrid Bermudagrass – Forage)**

*Applications Due April 15*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

### **I. General**

The general certification standards are basic and together with the following specific standards constitute the standards for the certification of Vegetatively Propagated Pasture Grass in Missouri.

### **II. Planting Stock Source**

- A. Foundation sprigs shall be obtained from the increase of Breeder sprigs produced by Missouri Foundation Seeds or the sponsoring agency.
- B. Only those fields planted with Foundation or Registered sprigs of Vegetatively Propagated Pasture Grass will be eligible for certification.
- C. A producer of Registered sprigs may increase their acreage from their own production, provided the increase is adjacent and planted on land under their control. Note – size of increase not to exceed ten (10) acres.

### **III. Land Requirements**

A field to be eligible for the production of Foundation, Registered or Certified sprigs must have been thoroughly inspected twice prior to planting, at approximately six week intervals after field preparation for planting, to verify the absence of other Bermudagrass and noxious weeds.

### **IV. Field Standards**

#### **A. Isolation**

A field to be eligible for the production of Registered or Certified planting stock of any of these Bermudas must be isolated from any other strain of the same species by a strip at least 10 feet wide to preclude any possibility of mixing planting material during the digging operation.

#### **B. Field Inspection**

- 1. Prior to Inspection – a field must be rogued and/or sprayed sufficiently during the growing season to remove any mixture of Bermudagrass or other perennial grasses and noxious weeds.
- 2. Time of Inspection – a minimum of three inspections must be made during the growing season at a time when there is sufficient growth to make the identification of other Bermudas, other perennial grasses and noxious weeds.

C. General

1. Restrictions on number of varieties per farm - when Registered or Certified planting stock is being produced, no other variety or strain of the same species shall be grown for planting stock production except by special permission.
2. Unit of Certification – the entire acreage standing at the time of inspection as a unit from a map showing the exact size and permanent location of the field.
3. Production from different stock sources must be maintained in separate fields.

D. Specific Requirements

Maximum permitted	F	R	C
Other varieties*	1/acre	2/acre	5/acre
Other crop**	0/acre	0/acre	10/acre
Prohibited weeds	none	none	none
Other Living Plants	***	****	*****

\* Shall consist of all other Bermudagrasses that can be differentiated from the variety that is being inspected.

\*\* Shall consist of all other kinds and varieties of perennial grasses

\*\*\* Not to exceed one plant per 100 square feet

\*\*\*\* Not to exceed one plant per 200 square feet

\*\*\*\*\* Not to exceed one plant per 400 square feet

Should other varieties, other crops and/or noxious/objectionable weeds be found in excess of the standard during field inspection, roguing and eradication by spot spraying will be permitted to bring the field into compliance with standards.

V. **Instructions and Procedures**

1. All planting, mowing, harvesting and loading equipment must be thoroughly cleaned prior to entering the production field.
2. An official numbered certificate or tag will accompany each shipment of certified sprigs, plugs or sod.
3. A complete record of the amount of certified sales will be maintained and made available to MCIA. The record will include:
  - a. Class sold
  - b. Kind and variety
  - c. Field number
  - d. Date of harvest
  - e. Amount shipped (square feet, cubic feet, bushels, etc)

## **Warm Season Vegetatively Propagated Turf Grass (Bermudagrass, Zoysia)**

*Applications Due April 15*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

### **I. General**

The general certification standards are basic and together with the following specific standards constitute the standards for the certification of Vegetatively Propagated Turf Grass in Missouri.

### **II. Planting Stock Source**

- A. Foundation turf shall be the vegetative increase of breeder's turf or the increase of foundation turf.
- B. Registered turf shall be the vegetative increase of foundation turf.
- C. Certified turf shall be the vegetative increase of foundation or registered turf.
- D. Only those fields planted with foundation or registered turf will be eligible for certification.
- E. The life of the stand will continue for all classes of vegetatively propagated turf grasses as long as the varietal and mechanical purity for the class is maintained.
- F. A producer of registered turf may increase their acreage from their own production, provided the increase is adjacent and planted on land under their control. Note – size of increase not to exceed ten (10) acres.

### **III. Land Requirements**

A field to be eligible for the production of foundation, registered or certified turf must have been thoroughly inspected twice prior to planting, at approximately six week intervals after field preparation for planting, to verify the absence of other species of the type being produced and any prohibited/noxious weeds.

### **IV. Field Standards**

- A. Isolation

A field or portion of field to be eligible for the production of vegetatively propagated turf grass must be isolated from any other strain of the same species and other perennial grasses by an artificial barrier and/or strip at least 10 feet wide to prevent any possibility of mixing planting material during the growing season and harvesting operation.

B. Field Inspection

1. Prior to Inspection – a field must be rogued and/or sprayed sufficiently during the growing season to remove (1) other varieties, (2) other perennial grasses, (3) most common weeds and (4) objectionable and noxious weeds in excess of agency standards.
2. Time of Inspection – a minimum of three inspections must be made during the growing season at a time when there is sufficient growth to make identification of other varieties, other perennial grasses and objectionable/noxious weeds.

C. General

1. Restrictions on number of varieties per farm - when registered or certified planting stock is being produced, no other variety or strain of the same species shall be grown for planting stock production except by special permission from the certifying agency.
2. Unit of Certification – the entire acreage standing at the time of inspection as a unit from a map showing the exact size and permanent location of the field.
3. Production from different stock sources must be maintained in separate production units.

D. Specific Requirements

Maximum permitted	F	R	C
Other crops*	1/acre	2/acre	5/acre
Noxious/Objectionable Weeds	none	none	none
Other Living Plants (max per acre)	100	200	400

\* Shall consist of all other kinds and varieties than the variety being produced.

\*\* Shall consist of all other kinds and varieties of perennial grasses.

Should other varieties, other crops and/or noxious/objectionable weeds be found in excess of the standard during field inspection, roguing and eradication by spot spraying will be permitted to bring turf into compliance with standards.



**V. Instructions and Procedures**

1. All planting, mowing, harvesting and loading equipment must be thoroughly cleaned prior to entering the production field.
2. An official numbered certificate or tag will accompany each shipment of certified sprigs, plugs or sod.
3. A complete record of the amount of certified turf sales will be maintained and made available to MCIA. The record will include:
  - a. Class of turf sold
  - b. Kind and variety
  - c. Field number
  - d. Date of harvest
  - e. Amount of turf shipped (square feet, cubic feet, bushels, etc)

## Pre-Variety Germplasm

### *Applications Due August 1*

Field inspection fees as listed on the fee schedule found in Appendix B are due and must accompany the application for inspection.

#### **I. General**

- A. The general certification standards are basic and together with the following specific standards constitute the standards for the certification of Pre-Variety Germplasm in Missouri.
- B. The general certification standards are modified as follows:
  - 1. Eligibility Requirements for Germplasms.
    - a. Eligible species include indigenous or non-indigenous trees, shrubs (including vines), or herbaceous plants (forbs and grasses).
    - b. These standards address seed, seedlings, or other propagating materials of native and naturalized species that have not been released as a variety. Germplasm types are recognized as follows:
      - (1) Tested Germplasm

Tested propagating materials shall be the progeny of plants whose parentage has been tested and has proven genetic superiority or possesses distinctive traits for which heritability is stable, as defined by the certifying agency, but for which a variety has not been named or released. These materials must be produced so as to ensure genetic purity and identity from either:

        - (a) rigidly controlled and isolated natural stands or individual plants, or
        - (b) seed fields or orchards.
      - (2) Selected Germplasm

Selected propagating materials shall be the progeny of phenotypically selected plants of untested parentage that have promise but not proof of genetic superiority or distinctive traits, produced so as to ensure genetic purity and identity from either:

        - (a) rigidly defined natural stands or seed production areas, or
        - (b) seed fields or orchards. This definition is equivalent to the OECD “Untested Seed Orchard” category and may be labeled as such by specific tag if required (see item 6.b)

(3) Source Identified Germplasm

Source Identified propagating materials are seed, seedlings, or other propagating materials that are an unrestricted representation of a plant population on a given site and for which no selection or testing of the parent population or its progeny has been made, produced so as to ensure genetic purity and identity from either:

- (a) rigidly defined natural stands or seed production areas, or
- (b) seed fields or orchards.

c. Methods used and monitoring of selection and testing of parent material to qualify for different germplasm types shall be determined by the certification agency for each species or group of species.

2. Designation of Germplasms of Seed; Appendix I (2)

The terms Breeder, Foundation, Registered and Certified designate and define classes of named and released varieties and are not applicable to pre-variety germplasm. Tested, Selected or Source Identified germplasm types use numbers to designate generations.

The generation is not defined for indigenous or naturalized parent plants in an unrestricted wildland plant population. Seeds harvested from such populations in a non-selective manner are designated Generation Zero (abbreviated G0) since they are a natural, unrestricted representation of the parent plants. The germinant plants from this seed are also designated G0, from which G1 seeds are harvested. G1 seeds produce G1 plants from which G2 seeds are harvested, and so on.

The generation is defined as Generation 0 for parent plants preferentially selected from a cultivated or wildland population; this definition follows the convention for cultivated crop development. The seeds harvested from such G0 parent plants are designated G1. The germinant plants from this seed are also designated G1, from which G2 seeds are harvested. G2 seeds produce G2 plants from which G3 seeds are harvested, and so on.

3. Limitation of Generations

a. Limitation of generations for pre-variety germplasm is not required, but may be specified by the original applicant/developer of a designated germplasm. This limitation may be amended by the originator/developer. Such amendment shall be communicated in writing by the originator/developer to the owner of the specified seed lot, and to the associated seed certifying agency. Such amendment must indicate whether it pertains to a specific seed lot or is a permanent change for the germplasm. The SCA will forward the communication to the AOSCA office for circulation to all SCA's.

- b. The appropriate seed generation number for a designated germplasm must be tracked by the certifying agency. Tracking of asexual generations is optional; otherwise the asexual material retains the generation of the parent plants.

4. Unit of Certification

An individual plant, clone or stand of plants (or field or orchard) may be certified in producing Tested, Selected or Source Identified seed. Seed production zones and/or breeding zones may be defined as a unit of certification for Selected and Source Identified seed.

5. Production of Seed

- a. For Selected or Tested seed collected from natural stands, at least one field inspection shall be made prior to pollination. At this time, compliance with regard to rouging and isolation as covered by the applicable certifying agency standards will be checked. For Tested and Selected seed, an inspection will be made just prior to seed maturity or during harvest.
- b. For Source Identified seed collected from natural stands, verification of the collection site is required. Compliance with regard to correct identification of species, location of natural stand, and seed yield must be verified by whatever means is deemed efficient and enforceable by the certifying agency.
- c. All germplasm types grown in seed fields or orchards shall follow established certification requirements and standards for similar crop varieties, if applicable, or those developed by a certifying agency for a specific species.
- d. Producers of seedling or otherwise propagated nursery or container stock shall be supervised sufficiently so that the certifying agency knows that the stock was produced from the germplasm type claimed.

6. Labeling

- a. The following tag or label colors shall apply:
  - Tested Germplasm – Blue
  - Selected Germplasm – Green (Note exception in 6b)
  - Source Identified Germplasm – Yellow
- b. Format of face side of label: the respective seed germplasm type (TESTED, SELECTED, or SOURCE IDENTIFIED) must be printed on the top line across the tag or label. (Exception: to satisfy requirements of the OECD Seed Scheme, seed from Selected Germplasm seed orchards may be tagged with a pink tag)

having UNTESTED SEED ORCHARD, printed on the top line across the tag or label.

c. Content:

i. the generation of the seed may be indicated in the center of the tag along with such information as species, selection number, lot number, location, elevation, site index, seed zone and/or breeding zone, etc. (see tag examples in the AOSCA Native Plant Connection).

ii. Wildland collected seed documented solely by a SITE IDENTIFICATION LOG PART 1 (or equivalent information; see AOSCA Guidelines for Permitting and Certification of Wildland Collected Seed), shall be labeled as Go/Go and is eligible for direct out-planting but not for seed increase.

iii. If documentation includes both the SITE IDENTIFICATION LOG PARTS 1 and 2, (or equivalent information), then the seed may be eligible for increase. If a limitation of generations has not been specified, then the generation shall be listed on the tag as Go/GX, G1/GX, etc..., where X = “unspecified” or “unlimited”. If a limitation of generations has been specified, then the generation of the tagged material and the number of increase generations permitted shall be stated on the certification tag, e.g. G0/G3, G1/G3, etc... (read generation zero, or generation one, of the three generations permitted.

iv. Accelerated downgrading of generation(s) can be specified on the tag to limit further increases, e.g. from G1/G3 to G2/G3 or G3/G3.

d. A Selected or Tested Germplasm may not be labeled as Source Identified Germplasm.

7. Sampling and Testing

For seed of species not covered by the rules for testing seeds of the Association of Official Seed Analysts, the analysis and testing shall be in accordance with the rules of the International Seed Testing Association or appropriate state or federal laboratories as determined by the certifying agency.

## II. LAND REQUIREMENTS

- A. For natural stands of the Tested germplasm type, the exact geographic source of the parent plants and the stand history must be known. Location (designated by section or comparable land survey unit) and elevation (nearest 500 feet) of the site of seed production must be shown on the tag.

- B. Location where Selected or Source Identified seed was collected from natural stands shall be defined by means of administrative, geographic, latitudinal or other appropriate boundaries or descriptions submitted by the applicant/developer of the germplasm and reviewed and accepted by the certifying agency. State, county (or parish, seed production area or geographic zone) and elevation (nearest 500 feet) is the minimum required to be shown on the tag.
- C. For all germplasm types where seed or other propagating materials are produced in artificially established fields or orchards, the specific geographic origin of the parent material must be known and may be listed on the tag or label. The location printed on the tag or label shall be the location (specific site or county/parish or seed production area/zone) of the field or orchard.

### **III. FIELD STANDARDS**

- A. Isolation
  - 1. For rigidly controlled natural stands of Tested, Selected or Source Identified germplasm types, an adequate isolation zone shall be maintained free of off-type plants and other cross pollinating species. The isolation distance shall be set for each species by the certifying agency.
  - 2. There shall be no isolation requirements for Selected or Source Identified seed collected from natural seed zones and/or breeding zones.
  - 3. Isolation for all germplasm types when grown in seed fields or orchards shall follow isolation requirements for similar crop varieties, if applicable, or those developed by the certifying agency for a specific species.
- B. Specific
  - 1. For all germplasm types grown in a seed field or orchard, off-type plants (and plants of inseparable other species or hybridizing species) are to be defined and appropriate tolerance set by the certifying agency.
  - 2. Design and methods for establishing seed fields and orchards and the selecting and testing of plant material shall be in accordance with the requirements of the certifying agency for each species or group of species.

**AOSCA PRE-VARIETY GERMPLASM (SOURCE IDENTIFIED, SELECTED, TESTED)**

**RECOMMENDED MINIMUM GENETIC REQUIREMENTS AND STANDARDS\***

Species <sup>1</sup>		G1				G2				G3				G4, etc <sup>2</sup>			
Repro.	Habit	L <sup>3</sup>	I <sup>4</sup>	F <sup>5</sup>	S <sup>6</sup>	L	I	F	S	L	I	F	S	L	I	F	S
X Poll.	Ann.	3	900-600	1000	0.25	2	450-300	500	0.5	1	330-165	250	0.75	1	165-165	250	0.75
X Poll.	Per. <sup>7</sup>	3	900-600	1000	0.25	2	450-300	500	0.5	1	330-165	250	0.75	1	165-165	250	0.75
Self Poll.	Ann.	3	0 <sup>8</sup>	1000	0.25	2	0	500	0.5	1	0	250	0.75	1	0	250	0.75
Self Poll.	Per. <sup>7</sup>	3	0	1000	0.25	2	0	500	0.5	1	0	250	0.75	1	0	250	0.75

\*Where applicable, a pre-variety germplasm entity may be subject to AOSCA genetic requirements and standards for released varieties of comparable individual species or crop groupings (e.g. Alfalfa, Grass or Woody Plants and Forbs). Seeds harvested from wildland plant populations should utilize the G1 seed standards (footnote 6), but other requirements and standards are not applicable. These recommended requirements and standards do not apply to vegetative reproduction.

1. Species mode of sexual reproduction (cross or self pollinated) and habit (annual or perennial).
2. The number of generations may be limited if specified by the applicant/developer (refer to Pre-Variety Germplasm Certification Standards, Sec. I.B.3.a,b.; 6.c.). When over 50% of the seed producing plants in a cultivated stand are volunteers (progeny of plants from the original seeding), then the generation shall be downgraded.
3. Land history: number of crop years that must elapse between removal of a species and replanting a different germplasm entity of the same species on the same land, unless cropping practices serve to diminish the seed reservoir more quickly.
4. Isolation in feet from any contaminating sources of pollen.
  - (a) The first number is for fields less than 5 acres; the second number is for fields of 5 acres or more.
  - (b) Isolation is required between all seed fields of the same species, except all types of Natural Track germplasms when from the same specified source.
  - (c) Isolation is not required between fields of different generations of the same germplasm entity (e.g., same Germplasm ID)
  - (d) Border removal applies to grass seed fields of 5 acres or more (for reference see AOSCA Seed Certification Handbook, Appendix II, footnote 20).
  - (e) A Source Identified seed field located within the same geographic source area as was identified for the germplasm entity being increased, does not require isolation from naturally occurring plants of the same species adjacent to the seed field.
  - (f) Isolation is required between different species known to readily cross-pollinate. A species, for which its breeding system is unknown, will be treated as a cross-pollinating species for the purposes of these standards.

5. Field standards: minimum number of plants or heads in which one plant or head of an off-type or other germplasm entities of the same species is permitted.
6. Seed standards: maximum percentage of seed of off-types or other germplasm entities of the same species.
7. The life of a cultivated stand is not limited unless specified by the original applicant/developer of a designated germplasm.
8. Distance adequate to prevent mechanical mixture is necessary.

#### **IV. Seed Standards**

Seed standards are optional and may be set by the certifying agency. However, state and federal laws regarding analysis labeling must be observed.



**Appendix A**  
**Officers, Directors & Staff**

**Officers**

President	Rennie Davis 45339 Audrain 548 Vandalia, MO 63382	(573) 594-3222
Vice-President	E. L. Reed 1801 Fairchild Chillicothe, MO 64601	(573) 646-5602
Secretary/Treasurer	Richard Arnett 3211 Lemone Industrial Blvd. Columbia, MO 65201-7600	(573) 449-0586

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Seed Technologist/Laboratory Services Manager	Marshal Reidlinger
Laboratory Assistant/Seed Analyst	Paul Springer
Laboratory Assistant	Cory Arnett

## Appendix B Schedule of Fees

### A. Membership Fees

- |    |   |          |
|----|---|----------|
| 1. | Active Membership (annual, non-refundable)<br>Members requesting certification for primary crops (barley, corn, cotton, industrial hemp, lespedeza, rice, oats, peanuts, soybeans or wheat) will be required to pay the \$240.00 annual membership. | \$240.00 |
| 2. | Affiliate Membership (annual, non-refundable)<br>Members requesting certification for any crop not listed above or members requesting only approved conditioner status will be required to pay the \$150.00 annual membership fee.                  | \$150.00 |
| 3. | Associate Membership (annual, non-refundable)<br>Members requesting only inclusion on the MCIA mailing list will be required to pay the \$27.50 annual membership fee.  | \$ 27.50 |

### B. Variety Fees

- |    |                             |          |
|----|-----------------------------|----------|
| 1. | Per variety, non-refundable | \$ 12.50 |
|----|-----------------------------|----------|

### C. Inspection Fees

- |     |  | \$   |
|-----|--|------|
| 1.  | Small Grains (wheat, barley, oats – per acre)                    | 2.50 |
| 2.  | Soybeans (per acre)  | 2.50 |
|     | a. Herbicide tolerant requiring two inspections                  | 3.30 |
| 3.  | Cowpeas (per acre)   | 2.50 |
| 4.  | Cotton (per acre)  | 2.50 |
| 5.  | Peanuts (per acre)   | 2.50 |
| 6.  | Rice (per acre)  | 3.70 |
| 7.  | Cool Season Grasses (per acre)                                   |      |
|     | a. New production (2 inspections)                                | 6.75 |
|     | b. Established production (1 inspection)                         | 3.35 |
|     | c. Mileage charge per inspection (per mile)                      | 0.67 |
| 8.  | Warm Season Grasses (per acre)                                   |      |
|     | a. New production (2 inspections)                                | 6.75 |
|     | b. Established production (1 inspection)                         | 3.35 |
|     | c. Mileage charge per inspection (per mile)                      | 0.67 |
| 9.  | Hybrid Corn (per acre)   |      |
|     | a. Certification   | 6.75 |
|     | b. OECD (accreditation)  |      |
| 10. | Small Seeded Legumes (clovers, lespedeza, crownvetch – per acre) |      |
|     | a. New production (2 inspections)                                | 6.75 |
|     | b. Established production (1 inspection)                         | 3.35 |
|     | c. Mileage charge per inspection (per mile)                      | 0.67 |

11.	Vegetatively Propagated Forage Grass	
	a. New production (per location – 4 inspections – 1 <sup>st</sup> 10 acres flat fee)	265.00
	Additional per acre for all acres over 10	6.75
	Mileage charge per inspection (per mile)	0.67
	b. Established Production (per location – 2 inspections – 1 <sup>st</sup> 10 acres flat fee)	130.00
	Additional per acre for all acres over 10	3.35
	Mileage charge per inspection (per mile)	0.67
12.	Vegetatively Propagated Turf Grass	
	a. 1 <sup>st</sup> 10 acres flat fee	790.00
	Additional per acre for all acres over 10	12.50
13.	Trees/Shrubs/Native Plants ( <i>Includes all Source Identified Programs</i> )	
	a. Per hour of inspection/travel time	60.00
	b. Mileage charge per inspection (per mile)	0.67
14.	Hay/Forage (\$150.00 affiliate membership)	
	a. Member rate per hour of inspection/travel time	75.00
	Mileage charge per inspection (per mile)	0.67
	b. Non member rate per hour of inspection/travel time	150.00
	Mileage charge per inspection (per mile)	0.67

**D. Official Tags and Labels (per hundred)**

		<b>\$</b>
1.	Public Varieties	11.00
2.	Proprietary Varieties	11.00
3.	Quality Assurance material	11.00
4.	Interagency	15.00
5.	O.E.C.D.	19.00
6.	Analysis Only	
	a. members	10.00
	b. non-members	19.00
7.	NAISMA Weed Seed Free Forage	35.00

**E. Preprinted Bag Fees (per unit) \$ 0.11**

**F. Bulk Transaction Fees**

1.	Bulk Transfer	<b>\$</b>
	a. To an in-state member (per transaction)	30.00
	b. To an out-state company	
	(1) per transaction	5.75
	(2) per bushel	0.05
2.	Bulk Retail (per bushel)	0.07
3.	Bulk Wholesale (per bushel)	0.11
4.	NAISMA Transit Certificates (per unit if no tags issued)	0.10

**G. Laboratory Fees (complete test – germ, purity & noxious)**

	<b>\$</b>
1. Soybeans	28.00
2. Small Grains (wheat, oats, barley)	28.00
3. Corn	28.00
4. Cotton	28.00
5. Warm Season & Chaffey Grasses	
a. germination	20.50
b. purity (per hour)	50.00
c. domant seed check (per hour)	50.00
7. Rice	28.00
8. Clovers	40.90
9. Alfalfa	40.90
10. Cool Season Grasses	41.00
11. Lespedeza	40.90

**H. Additional Laboratory Services**

	<b>\$</b>
1. Tetrazolium (TZ) Test	
a. Soybean/small grains)	26.75
b. Grasses/legumes	26.75
c. Samples requiring a purity (per hour)	50.00
2. Accelerated Aging (AA)	18.85
3. Sand Germination	18.85
4. Samples Treated at MCIA Lab (each)	17.00
5. Red Rice Exams (each)	14.00
6. Hypocotyl Growouts	10.00
7. Herbicide Resistance/Tolerance Screenings	
a. Roundup Ready (glyphosate)	23.60
b. STS (sulfonyleurea)	23.60
c. Liberty Link (glufosinate) – bioassay	25.00
greenhouse spray	50.00
d. Extend (dicamba)	25.00
e. Enlist (2,4-D/glyphosate)	25.00
f. E3 (2,4-D/glyphosate, glufosinate)	50.00
g. LLGT27 (isoxflutole/glufosinate)	75.00
8. Preliminary Purity on Small Grains	14.00
9. Seed Count (conditioned samples)	9.00

## **Appendix C**

### **Bylaws of the Missouri Crop Improvement Association**

#### **Article I                      Name**

This organization shall be known as "The Missouri Crop Improvement Association" and is incorporated under the provisions of the Revised Statutes of the State of Missouri, Supplement of "The General Not-for-Profit Corporation Act", Section 355.020, Paragraph 1 (2) (4), Chapter 355 of the Revised Statutes of Missouri, with the principal office located at 3211 Lemone Industrial Blvd., in the City of Columbia, County of Boone, State of Missouri.

#### **Article II                      Purpose and Activities**

The purpose of this Association is to encourage and promote the general use of pure seed of the best varieties throughout the state. This broad purpose shall be accomplished:

1.     By cooperating with the Missouri Agricultural Experiment Station, the University of Missouri Extension Service, the Missouri Department of Agriculture and private plant breeders in the introduction and maintenance of superior strains and varieties of farm crops and in the continuous campaign for the use of standard improved varieties of farm crops within the State.
2.     By developing, adopting and maintaining standards of excellence for the various classes of seed grown by members under the Rules and Regulations of the Association.
3.     By providing an inspection service for members growing seed crops.
4.     By regulating certification of inspected seeds.
5.     By providing and requiring the use of uniform and distinguishing marks, tags, containers or emblems for use on the classes of seed officially sponsored by the Association.
6.     By collecting and distributing information on seeds; by conducting demonstrations and exhibits; by providing information and promoting activities.
7.     By aiding the members of the Association and promoting agricultural interests of Missouri in any way consistent with the provisions under which the Association is incorporated.

#### **Article III                      Membership and Operation Fees**

Section I     Active/Affiliate Member: Any individual, firm or corporation who applies for membership to produce seed or planting materials in one of MCIA's programs shall become an active/affiliate member upon approval of the Board of Directors and payment of the annual membership fee. An active/affiliate member shall be entitled to vote in person or by proxy, provided the proxy shall be in writing in a form approved by the Board of Directors, signed and dated by the member granting the proxy and delivered to MCIA at or prior to the time the vote is taken. Proxies will expire at the conclusion of the meeting for which it was granted.

Section II Associate Member: Any individual, firm or corporation not applying for seed certification, and who is in any way engaged in or connected with the seed industry or its allied branches, shall become an associate member for one year by paying the annual associate membership fee. Associate members may attend the meetings of the Association, but shall not vote.

Section III The Board of Directors shall have the authority to deny active/affiliate or associate membership to anyone who has, in the opinion of a majority of the Board membership present for any meeting in which said questions are raised, willfully violated the by-laws or rules & regulations of the Corporation. Each active /affiliate member applying for and having grain or seed inspected and certified shall pay operating fees at such time, in such form, and calculated in such a manner as shall be determined by the Board of Directors. These fees shall be designed to cover the cost of maintaining the Corporation and carrying on its objectives.

**Article IV Organization**

Section I The management and direction of the Association shall be vested in a Board of nine (9) Directors who shall be individuals who are active/affiliate members of the Association or individuals within corporations or partnerships which are active /affiliate members in the Association and are registered to do business in Missouri. The Directors shall hold office for the terms hereinafter set out or until his or their successor(s) in office have been elected as hereinafter provided for. The said Board of Directors shall consist of:

1. Nine (9) Directors shall be elected from four regions of the state on the following basis: Members of the Association shall elect from Region One - 2 Directors; from Region 2 - 2 Directors; from Region Three - 2 Directors; from Region Four - 2 Directors; and Member-at-large - 1 Director.
2. The Member-at-large Director shall be elected from the membership with no limitation as to geographic representation.
3. The President and Vice-President of the Association shall be elected by the majority vote of the Board of Directors voting at the annual meeting of the Directors.

Section II The Board of Directors shall be elected from the membership of the Association as above provided for, at the annual meeting of the Association.

**Article V Officers**

Section I The officers of the Association shall be as follows:

1. The President of the Association shall be elected by the majority vote of the Board of Directors voting at the annual meeting of the Directors.
2. The Vice-President of the Association shall be elected by the majority vote of the Board of Directors, voting at the annual meeting of the Directors.

3. An Executive Director, who shall also serve as the Secretary/Treasurer of the Association, shall be appointed by the Board of Directors to serve at the pleasure of the Board. The Executive Director shall serve at the pleasure of the Board on a year to year basis; however, his services may be terminated at any regular or special meeting of the Board of Directors by a 2/3 vote of the Directors. If such a vote is made, the President shall give the Executive Director ninety (90) days notice of termination and he shall terminate his duties as of such time.
4. The Board of Directors shall have the authority to appoint and employ additional personnel as required to properly conduct and carry out the business affairs of the Association.
5. The Secretary/Treasurer, along with any other assistants who receive and administrate funds for the Association, shall be properly bonded, the amount of the bond to be determined by the Board of Directors. The cost of such bond is to be borne by the Association.
6. The Executive Director shall be the Vested Member Representative to the Association of Official Seed Certifying Agencies, Inc.
7. The President or Vice-President of the Association may be removed from office by a 2/3 vote of the Directors present at the annual meeting or any special meeting of the Board of Directors.
8. Any other agent or employee of the Association other than part-time employees may be removed by a 2/3 vote of the Board of Directors. Any such employee or agent, however, shall be given thirty (30) days notice after such a vote before their duties are terminated.
9. Vacancies in any elected office or Directorship may be filled by the membership through election of a replacement or replacements from its membership. Until such an election is held, the Executive Committee shall have the power to make interim appointments from the membership.
10. The Executive Director shall have the authority to employ and dismiss part-time help as is necessary to properly conduct and carry out the business affairs of the Association.

## **Article VI**

### **Duties of Officers**

#### Section I

The President shall:

1. Preside over all meetings of the Association and the Board of Directors.
2. Call special meetings of the Association and the Board of Directors.
3. Appoint such committees as he may deem necessary as authorized by the by-laws or the Board of Directors.



4. Perform all acts and duties usually required of an executive and presiding officer.

Section II The Vice-President shall, in the absence of the President or in the event of his inability or refusal to act, perform all duties of the President and is subject to all restrictions and duties placed upon the President. He shall also perform such other duties as may be assigned to him by the President or by the Board of Directors.

Section III The Executive Director shall be held responsible to:

1. Keep a complete record of all meetings of the Association and the Board of Directors.
2. Serve all notices required by law and the by-laws of the Association.
3. Direct and supervise the work of inspection and certification authorized by the Board of Directors.
4. Receive and disburse all funds, and be the custodian of all securities of the Association.
5. Keep a full and accurate account of all the financial transactions of the Association in books belonging to the Association and deliver such books to his successor in office when qualified. He shall make a full report of all matters and business pertaining to this office to the members at the annual meeting, and to the Directors when required and make all reports required by law.
6. Deposit all monies of the Association in the name and to the credit of the Association in such depositories as may be designated from time to time by the Board of Directors.
7. Perform such other duties as may be required of him by the Board of Directors.

## **Article VII Committees**

Section I Executive Committee

The Board of Directors shall designate an Executive Committee to consist of the President, Vice-President, Executive Director and one or more additional Directors. The Executive Committee shall conduct such business of the Association as is required of them by these by-laws and any other such business as may be authorized by the Board of Directors.

Section II Other Committees

The President shall further designate a Nominating Committee and such other standing or temporary committees as the President may deem advisable with reference to the handling of the Association.

**Article VIII**

**Meetings**

- Section I An annual meeting of the Association shall be held at a time and place to be determined by the Board of Directors. Written or printed notices stating the place, day and hour of the meeting shall be delivered, either in person or mailed to each active/affiliate member not less than 10 days nor more than 40 days prior to such meeting.
- Section II Special meetings of the Association may be called by the President or by the Board of Directors, provided notices of such meetings are delivered, either in person or mailed to each active/affiliate member not less than 10 days prior to such meeting.
- Section III Special meetings of the Board of Directors may be called by the President or Executive Director, or any three Directors, provided addressed notices of such meetings are given by telephone, fax, mail or e-mail at least five days in advance of such meetings.
- Section IV Special meetings of the Executive Committee may be called by the Executive Director, President or any two members of this committee. Notices of special meetings shall be given by telephone, fax, mail or e-mail to all members of this committee.
- Section V The Executive Committee shall provide a suitable program for the annual meeting. The extent and character of shows, exhibits and demonstrations to be held in connection with the annual meeting shall be determined by the Board of Directors and/or the Executive Committee.
- Section VI Meetings shall be conducted in accordance with Robert's Rules of Order.

**Article IX**

**Quorums**

- Section I Fifteen members of this Association shall constitute a quorum for the transaction of business at regular or special meetings.
- Section II Five members of the Board of Directors shall constitute a quorum for the transaction of business.
- Section III Three members of the Executive Committee shall constitute a quorum for the transaction of business.

**Article X**

**Fiscal Year**

The fiscal year of the Association shall begin on January 1 and end on December 31.

**Article XI                    Seal**

There shall be a corporate seal of the Association which shall be in the form of a circle and shall have inscribed thereon the words "Seed Improvement Association" surrounding the official seal of the State of Missouri.

**Article XII                    Disbursal of Assets**

In the event of dissolution, as provided for under the laws of the State of Missouri, of the Missouri Crop Improvement Association, the assets of said organization, if any, shall go to an organization or organizations which is/are tax exempt under the provisions of Section 501(c) of the Internal Revenue Code as directed by the Board of Directors.

**Article XIII                    Audit**

The Secretary/Treasurer shall arrange for an annual audit of the books of the Association to be prepared by a Certified Public Accountant and to be presented at the annual meeting of the Association. At the option of the Board of Directors, such audit may be either a certified audit or a compilation audit.

**Article XIV    Amendments to By-laws**

The by-laws may be amended at any annual meeting of the Association by a 2/3 vote of the active/affiliate members present, provided that notice of such proposed changes has been sent to each member at least 10 days prior to the meeting.

