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**UTAH CROP IMPROVEMENT ASSOCIATION
GENERAL SEED CERTIFICATION REQUIREMENTS AND STANDARDS**

I. SEED CERTIFICATION IN UTAH

- A. The Utah Agricultural Experiment Station (UAES) at Utah State University is assigned responsibility for seed certification by Utah State Legislature (Utah Seed Act, Section 14-16-9). The UAES, in turn, has designated the Utah Crop Improvement Association (UCIA), a non-profit organization governed by a Board of Directors and composed primarily of Utah seed growers and conditioners, as the official seed certifying agency.
- B. The UCIA, in offering the service of seed certification, co-operates closely with personnel of the UAES, Utah State University Plant Science Department and Extension Service, and the Division of Plant Industry of the Utah State Department of Agriculture. The UCIA is housed on the Utah State University campus at Logan, in room 326 of the Agricultural Science Building.
- C. The UCIA is a member of the Association of Official Seed Certifying Agencies (AOSCA). The requirements and standards contained in this publication meet or exceed the minimum standards of AOSCA.
- D. The purpose of seed certification is to maintain and make available to the public high quality seeds and propagating materials of known genetic purity and identity.

II. CERTIFIED SEED: DEFINITION, LIMITATION, AND WARRANTY

- A. Certified seed is high-quality seed which has superior production potential as defined by the following factors:
 - 1. High varietal purity
 - 2. Known origin of seed
 - 3. High germination ability
 - 4. Little or no other crop seed, weed seed, and/or inert matter
 - 5. Strict tolerances for certain seed-borne diseases
 - 6. Free of noxious weed seeds
- B. The certification process is accomplished by accurate record keeping and a series of inspections and procedures conducted in the field and conditioning plant. Seed sample analysis is conducted at the Utah State Seed Laboratory in Salt Lake City. Only seed produced and labeled in accordance with the general and individual crop Requirements and Standards of the Utah Crop Improvement Association can be represented as Utah certified seed.
- C. Problems with a seed lot may become apparent through seed analysis or other

sources of information regarding diseases, insects, weeds, contamination, etc. not provided for in the UCIA Requirements and Standards, but which affect seed quality, genetic purity, or identity. Certification status of such a seed lot will be reassessed and may necessitate removal of certification tags.

- D. Warranty: Since the use of certified seed is beyond the control of the Utah Crop Improvement Association, no warranty of any kind is made regarding the quality or performance of the seed beyond the express representation that the seed was produced and conditioned in compliance with the Requirements and Standards of the Utah Crop Improvement Association and did qualify at the time of tagging to meet the tolerances established for seed of that particular crop. (See Section IV. D.).
- E. Tolerance: NONE OR ZERO (0): A tolerance of "none" for contaminating or diseased material in either field or clean seed standards means that none were found during the normal procedure of field inspecting or seed sample testing (or re-testing; see Section VII. D.3). It does not constitute a guarantee that the field or seed was or is entirely free of the contaminant or disease.
- F. The word "seed" or "seeds" as used in these standards shall in the broad sense be understood to include all propagating materials of agronomic crops.

III. VARIETAL DEFINITION AND ELIGIBILITY REQUIREMENTS

A. DEFINITIONS

1. **Variety**: An assemblage of cultivated individuals which are distinguished by any characters (morphological, physiological, cytological, chemical or others) significant for the purpose of agriculture, and which retain their distinguishing features when reproduced or reconstituted.
2. **Other Variety**: Plants or seed 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 breeder.
3. **Off-types**: Off types are plants or seed which do not conform to the description of the characteristics of the variety as supplied by the breeder or sponsoring institution or organization.
4. **Variant**: Seeds or plants which are:
 - a. Distinct within the variety but occur naturally in the variety.
 - b. 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.

- c. Recognized as a part of the variety when released. Variants are not to be considered as off-types. Plant breeders should identify variants in the variety description upon release.

B. APPROVAL

Only those varieties approved by the UCIA are eligible for certification. The Utah State University Variety Review Committee acts in an advisory role to UCIA, and any variety submitted for certification may be subject to review by the committee. However, a variety shall normally be eligible without review upon favorable action by one or more of the following:

Processes recognized by AOSCA in which varieties may be entered into seed certification include favorable action by one or more of the following which have considered the required varietal information, as listed in "C. INFORMATION REQUIRED" (items A. through I.)

- a) AOSCA Variety Review Board; or
- b) Plant Variety Protection office or Breeder Rights statements (with additional items A through I, under C. INFORMATION REQUIRED, as needed); or
- c) Any individual AOSCA vested member agency; or
- d) Acceptance for certification under the OEDC seed schemes (with additional items A through I, under C. INFORMATION REQUIRED).

UCIA and AOSCA recognizes all of these processes for admitting varieties into seed certification

C. INFORMATION REQUIRED

The following items (see U.S. Federal Seed Act 201.68) or their equivalent (from national/international programs) must be made available by the originator, developer, owner, or agent when eligibility for certification is requested:

- a) The name of the variety. This name must be the established name if the variety has previously been marketed.
- b) A statement concerning the variety's origin and the breeding procedure used in its development.
- c) A detailed description of the morphological, physiological, and other characteristics of the plants and seed that distinguish it from other varieties.
- d) Evidence of performance of the variety, such as comparative yield data,

insect and disease resistance, or other factors supporting the identity of the variety.

- e) A statement delineating the geographic area or areas of adaptation of the variety.
- f) A statement on the plans and procedures for the maintenance of stock seed classes including the number of generations through which the variety may be multiplied.
- g) A description of the manner in which the variety is constituted when a particular cycle of reproduction or multiplication is specified.
- h) Any additional restrictions on the variety, specified by the breeder, with respect to geographic area of seed production, age of stand or other factors affecting genetic purity.
- i) A sample of seed representative of the variety as marketed. The sample size shall be that required for a submitted sample in the current issue of the Rules of Testing Seeds for the Association of Official Seed Analysts.

After a variety has been released there is no limitation as to when it may be accepted into certification by AOSCA or its vested member agencies providing that all other provisions of this section are met.

D. VARIETIES ELIGIBLE

The AOSCA Certification Handbook lists minimum standards for all crops under the certification program. In the event certification is requested for a crop not listed in this Utah handbook, AOSCA standards will be used or Utah standards may be developed using the AOSCA standards as a base.

E. PLANT VARIETY PROTECTION

Under the Plant Variety Protection Act of 1970, an originator, developer, or owner of a variety or a crop that is reproduced sexually by seed, may obtain protection for that variety exercising one of two options:

1. The owner or authorized agent may sell either certified or non-certified seed of the variety, with a label stating "Unauthorized propagation prohibited -- U.S. Variety Protection applied for" (or ".....U.S. Protected Variety" if the certificate has been issued). Infringement of the patent is litigated by civil action.
2. The owner or authorized agent may elect to utilize the provisions of Title V of the Federal Seed Act, which stipulates that the variety may be sold by variety name only as a class of Certified seed. The labeling is similar to the non-certification option except for the added statement "To be sold by variety name only as a class of Certified Seed". Infringement of the Patent in this case is a violation of the Federal Seed Act and thus has

advantages for enforcement as compared with civil litigation.

NOTE 1: It is the responsibility of the seller to publicize that the variety is protected and have it labeled properly. Many of the varieties eligible for certification in Utah are protected, and are so designated. The following logo, when it appears on a seed bag, tag, or container, means the seed is protected by the PVP Act.



NOTE 2: An exception to the PVP Act permits a farmer to save and plant his own seed of a protected variety on his own farm. The 1970 PVP Act also allowed farmer-to-farmer sales with certain limitations, but the 1994 revision prohibits all such sales without the express permission of the variety owner or agent.

IV. ELIGIBILITY FOR GROWING CERTIFIED SEED AND MEMBERSHIP IN THE UCIA

- A. Anyone may apply to grow certified seed, but it is expected that such persons or firms should be genuinely interested in producing a high quality product and in promoting the use of better seed. NOTE: Most of the certified seed produced in Utah is grown by prior arrangement with a seed dealer or conditioner.
- B. The certified grower must develop the proper "certification philosophy", recognizing his role in maintaining the genetic purity of improved varieties developed only through tremendous effort by public and private plant scientists. He must realize that growing certified seed is not a get-rich-quick scheme, but that "profit through quality" must be his primary aim. He must be honest with his customers, neighbors, dealers, and himself, and the UCIA.
- C. MEMBERSHIP IN THE ASSOCIATION
 - 1. Membership is effective upon acceptance of the grower's application for certification (See Section V. A. below). More than one member of a Partnership or Corporation may be listed on the same application for potential membership in the Association.
 - 2. One representative from each conditioning facility may become a member of the Association upon acceptance of the facility as a certified conditioner (See Section VII. B), but will not be eligible to serve on the Board of Directors.

D. RESPONSIBILITY OF MEMBERSHIP

1. No practical system has yet been devised for certification of crop seeds that is perfect. The various inspections, sampling, and tests can only minimize the opportunity for carelessness and deception. For this reason, the seed producer and/or conditioner must accept ultimate responsibility for assurance that the UCIA Requirements and Standards have been met in every phase of seed production and conditioning.
2. The Board of Directors will act on any case where the grower or conditioner has knowingly violated any of the certification rules stated herein. By action of the Board, the grower or conditioner may be suspended from membership in the Association and be denied certification privileges as stated in the By-Laws of the Utah Crop Improvement Association.

V. PRODUCTION OF CERTIFIED SEED

A. APPLICATION FOR CERTIFICATION

1. Application forms may be obtained from the UCIA in Logan, the local UCIA supervisors, and District Agricultural Inspectors, and County Agents. An application is required for each variety, seed lot, and/or class of seed to be certified. ACREAGE FEES made payable to the Utah Crop Improvement Association and EVIDENCE OF SEED SOURCE (See Part C.2) must accompany the application, and may be collected by a UCIA representative or mailed to Utah Crop Improvement Association, Utah State University, Logan, UT 84322-4855
2. Due Date: Applications for alfalfa and other legumes, woody species, forbs, grasses, onions, and small grains are due May 15, but will be accepted with a \$10 late fee until May 31. Beans, mint, and potato applications are due June 15, but will be accepted with a \$10 late fee until June 30.
3. A listing of established acreage for perennial crops as recorded in the Logan UCIA Office will be sent out to each grower yearly for verification and notation of any changes.
4. Contact with a UCIA representative must be made prior to planting for all crops to (1) ensure eligibility of the field and the seed; (2) request drill inspection; and (3) obtain current information concerning the certification program.
5. The UCIA reserves the right to refuse applications for the following reasons: (a) the field is so isolated as to make inspection impractical, (b) the

grower is past due in any financial obligation to the Association, (c) land history, isolation, seed source or other requirements are not complied with.

B. CERTIFICATION ACREAGE FEES (Includes Membership in UCIA)

Certification Fees are updated each year and can be found in the current UCIA Certified Seed Directory or supplied on request.

C. SEED STOCKS AND SEED ELIGIBILITY

1. The UCIA will, within reason, make available sufficient stock seed to meet the demands of certified seed producers. Allocation forms for stock seed are available from UCIA representatives or the Logan office.
2. The grower must plant eligible varieties of the proper class or generation. All documentary evidence of the seed source (such as certification tags, bulk certificate, sales records, etc.) must be made available to the UCIA representative, and at least one piece of such evidence must accompany the application for certification.
3. Four seed generations classes meeting or exceeding the standards of the Association of Official Certifying Agencies are recognized in Utah for released cultivars: Breeder, Foundation, Registered, and Certified. Nomenclature and/or tag color for potatoes and mint and other vegetatively propagated crops may be different; see individual crop requirements. Also see Pre-variety Germplasm Standards for Source Identified, Selected, and Tested Germplasm.
 - a. Breeder Seed (White Tag) is directly controlled by the originating or sponsoring plant breeder or institution, and is the source for the production of seed of the other classes of Certified seed.
 - b. Foundation Seed (White Tag) is produced from fields planted with Breeder seed or designated lots of Foundation seed. Such fields are to be grown under the direct supervision of UCIA and a portion of the production may be reserved and designated as Foundation class seed (with approval of owner or agent of the variety) stock according to the needs of the Association.
 - c. Registered Seed (Purple Tag) is produced from fields planted with Foundation seed. In some varieties there is no Registered class (check the variety release notice or consult a UCIA representative).
 - d. Certified Seed (Blue Tag) is produced from fields planted with Foundation

or Registered seeds. This is the class of seed sold and utilized for commercial non-seed production and is not normally eligible for recertification (See 4a, b below).

4. Limitation of Generations -- The number of years and/or generations through which a variety may be multiplied shall be limited to that specified by the originating breeder or owner of the variety, but shall not exceed two generations beyond the Foundation seed class (with the following exceptions which may be made with the permission of the originating breeder or owner):
 - a. Recertification of the Certified class may be permitted for older varieties where Foundation seed is not being maintained by any official Foundation Seed Organization.
 - b. The production of an additional generation of the Certified class may be permitted on a one-year basis only, when an emergency is declared by an Official Seed Certifying Agency stating that the Foundation and Registered class seed supplies are not adequate to plant the needed Certified class acreage of the variety. The additional generation of Certified class seed to meet the emergency need is ineligible for recertification.
 - c. The Generation System for potatoes and mint and other vegetatively propagated crops and for Pre-Variety Germplasm plants has special nomenclature and procedures. (See individual crop requirements.)

D. PLANTING

Seed equipment (drills, planters, hoppers, etc.) must be thoroughly cleaned (brushes, air, water, vacuum, etc.) and an inspection may be required at the discretion of the UCIA representative (See Sec. V.A. 4). This ensures that contaminating seeds do not cause rejection or necessitate roguing of a field.

E. LAND AND ISOLATION REQUIREMENTS

1. The seed must be planted on clean land. The land history must be known and must not have been previously planted to or have grown another variety or class of seed that might volunteer and affect genetic purity. The duration between classes and varieties is based on longevity of viable crop seed or plant parts in the soil; specific requirements are listed in individual crop standards. The land must also be free of noxious, restricted, and objectionable weeds (See Section VI).
2. Exceptions to land history limitations may be approved if proven cultural practices such as deep plowing or fumigation or other means which eliminate volunteer plants are followed.

3. Adding manure or other contaminating amendments may remove a field from eligibility for certification.
4. Isolation: The unit of certification shall be a field, or a portion of a field separated from the remainder by a definite boundary (fence, road, non-planted strip, or strip planted to another crop, or other clearly discernable means).
5. Fields must meet the specific isolation distances from fields of any other variety of the same or closely related species (See individual crop regulations). Isolation zones must be clearly marked and harvested separately from the rest of the field.

F. FIELD STANDARDS, MANAGEMENT, AND INSPECTION

1. Field or seedling identity must be maintained throughout the life of the stand. Good cultural practices should be followed in order to maximize yield, quality, and maintenance of genetic purity.
2. Field inspections are made by an authorized representative (hired supervisors, or other authorized personnel such as Ag. field representatives, County Agents, Utah State University personnel, or UCIA Officers and Directors by special assignment) of the Utah Crop Improvement Association. A field inspection report listing acres passed or rejected for certification (based on standards for isolation, off types, varietal or crop mixture, weeds, disease, plant vigor, etc.) is made at this time, and a copy given to the grower. These inspections will be made at the time(s) during crop growth (see individual crop requirements) that the best judgment can be made as to compliance with field standards.

NOTE: The field inspection report is based on visual evaluation of the plant population in the field and thus field conformance with a ZERO or NONE tolerance is subject to the definition in Section II.E.

3. Pre-inspection and Re-inspection: UCIA representatives are available to superficially examine fields and give advice as to necessity for roguing of objectionable weeds, other crops, and off-types or diseased plants in order to meet the field standards of the particular crop. However, any necessary roguing must be done before the official pre-harvest inspection. If the field is rejected due to inadequate roguing, the grower may request re-inspection after further roguing to correct the problem. The grower will be charged additional fees to cover expenses for the additional inspection.
4. The UCIA representative may refuse to approve a field for certification or

recommend reclassification or special field or seed treatment if field conditions (such as excessive weediness, poor vigor, lack of uniformity, inadequate stand, disease, insect damage, etc.) present accurate inspection or reflect unfavorable upon the certification program. Such rejection may occur even though tolerances or regulations governing production of specific varieties have not been exceeded or violated.

5. Appeal Procedures -- A grower may appeal decisions regarding field, crop, or seed eligibility reached by the UCIA representative by stating the areas of disagreement in a letter to the UCIA Logan Office with a copy to the UCIA representative involved. Such appeals will be arbitrated by the UCIA Executive Committee.

G. HARVESTING CERTIFIED FIELDS

1. The harvesting machinery and all handling and storage facilities must be cleaned to remove all seeds which might contaminate the crop. It is very important for the grower to thoroughly clean his equipment and to handle the seed in a manner which will maintain the identity of the seed without contamination.

Harvesting machines may be cleaned utilizing (1) a detailed "wet method" for small fields or high value crops where it is not desired to discard any of the seed, or (2) an abbreviated "dry method" for harvesting larger fields where a portion of the seed can be discarded as commercial grain. A UCIA representative must inspect and approve the equipment or have a checklist signed by the grower before harvesting begins.

2. Fields or portions of fields of the same variety but of different classes must be harvested, transported, and stored separately. Fields or portions of fields planted with different seed lots of the same variety and class may be mixed upon prior approval of a UCIA representative. Any special harvesting instructions or markers placed by a UCIA representative as to isolation zones, avoidance of restricted weeds, etc. must be strictly adhered to.

VI. REGULATED WEEDS

- A. Utah Noxious, Restricted, and Objectionable Weeds Crops planted for certification must be planted on land free of the following weeds:

1. Utah Noxious Weeds

Bermudagrass*

Cynodon dactylon

Bindweed (Wild Morning-glory)

Convolvulus spp.

Broad-leaved Peppergrass

Lepidium latifolium

(Tall Whitetop)

Canada Thistle

Cirsium arvense

Dalmation Toadflax

Linaria dalmatica (L.) Miller

Diffuse Knapweed	<u><i>Centaurea diffusa Lam.</i></u>
Dyers Woad	<u><i>Isatis tinctoria L.</i></u>
Hoary cress	<i>Cardadia spp.</i>
Houndstongue	<i>Cynoglossum officinale (L.)</i>
Leafy Spurge	<u><i>Euphorbia esula</i></u>
Medusahead	<u><i>Taeniatherum caput-medusae</i></u> <u><i>(L.) Nevski</i></u>
Musk Thistle	<u><i>Carduus nutans</i></u>
Oxeye daisy	<i>Chrysanthemum leucanthemum (L.)</i>
Perennial Sorghum spp., including but not limited to Johnson Grass (<i>Sorghum halepense (L.) Pers.</i>) and Sorghum Almum (<i>Sorghum alatum (L.) Moench</i>).	
Poison Hemlock	<i>Conium maculatum (L.)</i>
Purple Loosestrife	<i>Lythrum salicaria L.</i>
Quackgrass	<u><i>Agropyron repens</i></u>
Russian Knapweed	<u><i>Centaurea repens</i></u>
Salt Cedar (Tamarix)	<i>Tamarix ramosissima Ledeb.</i>
Scotch Thistle (Cotton Thistle)	<u><i>Onopordium acanthium</i></u>
Spotted Knapweed	<u><i>Centaurea maculosa Lam.</i></u>
Squarrose Knapweed	<u><i>Centaurea squarrosa Roth.</i></u>
St. Johnswort, common	<i>Hypericum perforatum (L.)</i>
Sulfur cinquefoil	<i>Potentilla recta (L.)</i>
Yellow Starthistle	<u><i>Centaurea solstitialis L.</i></u>
Yellow toadflax	<u><i>Linaria vulgaris (Mill.)</i></u>

*Bermudagrass (*Cynodon dactylon*) shall not be a noxious weed in Washington County and shall not be subject to provisions of the Utah Noxious Weed Law within the boundaries of that county.

2. Utah Restricted Weeds

Dodder	<u><i>Cuscuta spp.</i></u>
Poverty Weed	<u><i>Iva axillaris</i></u>
Wild Oats	<u><i>Avena fatua</i></u>
Halogeton	<u><i>Halogeton glomeratus</i></u>
Jointed Goatgrass	<u><i>Aegilops cylindrica</i></u>

3. Objectionable Weeds

Other weed seeds may be a problem in certain crops and are listed in the individual crop regulations. Other weed species may be declared objectionable by the UCIA Executive Committee on a case by case basis.

B. Chemical Control and Roguing In the event that noxious, restricted, and/or objectionable weeds are found on the land after a crop has been planted for certification, the weeds must be under control at the time of inspection. This means weeds must show evidence of having been mechanically or chemically treated to prevent, restrict, or eliminate surface growth and to prevent seed development. If the weed cannot be chemically controlled in a given crop (i.e., jointed goatgrass in small grains), all plants must be rogued and removed from the field. A field or

portions of a field may be rejected if it does not appear that chemical control or roguing of the weed will be successful.

- C. Tolerances for Weed Seeds The Utah Seed Law prohibits the sale or distribution of seed containing seed of Utah Prohibited Noxious weeds. Tolerances in certified seed for seeds of Restricted and Objectionable weed seeds are listed in individual crop standards.

VIII. CONDITIONING, SAMPLING, AND LABELING OF CERTIFIED SEED

A. DEFINITION

1. Seed Conditioning means the mechanical handling of seed from harvest until marketing. This may include separating impurities from the seed such as inert matter, other crop seed, and weed seed. In addition, a seed conditioner may scarify, size, and/or apply a seed treatment before packaging and labeling seed for sale.
2. Mechanical Standards refers to requirements such as purity, germination, etc. in the Seed Standards (see individual crops) other than genetic standards.

B. "CERTIFIED ELIGIBLE" SEED MOVEMENT

Great care must be taken in transporting seed in order to prevent contamination or loss of identity. Equipment must be clean and be inspected by a UCIA representative before moving seed from farm storage to conditioning plants. Non-tagged seed transported between conditioning plants or from a grower to an out-of-state conditioner must be accompanied by an official "Transfer of Seed Pending Certification" certificate specifying certification number, lot, amount, and other information relating to the shipment. (See Part E. 2 below)

C. REQUIREMENTS FOR CONDITIONING FACILITIES

Approval of commercial conditioning plants to clean certified seed will be based on periodic inspection and the annual filing of an application form along with an application fee of \$5.00. A Certificate of Approval will be issued yearly to eligible conditioners. Requirements are as follows:

1. Necessary equipment available to complete cleaning of the crop(s) seeds involved.
2. The facility (machinery, elevators, etc.,) so built and installed as to provide for thorough cleanup.
3. Facility established chiefly to clean crops for seed purposes.

4. Records of all operations must be complete and adequate to account for and maintain identity of all certifiable seed. These shall include:

a. Receiving record:

- (1) Variety, kind, and class.
- (2) Date received.
- (3) Name and address of producer or shipper.
- (4) Shippers lot number and/or producers certification number.
- (5) Number of bags and/or weight of seed received.
- (6) Receiving lot number assigned to the seed.

b. Record of conditioning (or re-conditioning, blending, rebagging, etc.):

- (1) Variety, kind, and class.
- (2) Date of conditioning process.
- (3) Lot number(s) of component lot(s) used in making final or blended lot
and
number. lot
- (4) Number of bags and/or weight of each component and final number
of bags and/or weight.
- (5) Weight of refuse or screenings and its disposition.

NOTE: Any reconnditioning, blending, rebagging, etc. must have prior approval of UCIA. Completion of a UCIA Blending Report Form is required for blended lots.

c. Record of disposition of certified seed:

- (1) Variety, kind, and class
- (2) Date sold or shipped
- (3) Name and address of buyer or consignee
- (4) Certification number and lot number

(5) Number of bags and/or weight of shipment

5. Conditioners shall permit inspection by the UCIA of all conditioning, seed handling, and storage facilities, and of all records of seed conditioned, including both certified and non-certified seed.
6. Machinery, hoppers, floors, etc. must be thoroughly cleaned prior to inspection and be approved by a UCIA representative before processing a given variety. Cleanup between classes or lots of the same variety is required at the discretion of the inspector.
7. Temporary or special conditioning approval: A commercial or on-the-farm conditioning facility may be approved for cleaning specific lots of certified eligible seed provided:
 - a. All requirements regarding adequate equipment and maintenance of seed lot identity are met.
 - b. The conditioning facility must be free of contaminants, and be inspected and approved by a UCIA representative prior to conditioning the seed.

D. SEED SAMPLING PROCEDURE

1. A sample of the conditioned seed considered for certification (except mint and potatoes) must be submitted to the Utah State Seed Laboratory for germination, purity, and disease analysis. A sample will be drawn under the supervision of a UCIA representative and placed in a cloth bag or envelope available from the seed laboratory. An evaluation as to the seed lot meeting certification standards (see individual crop standards) will be based on the seed test results.
2. In order to secure a representative sample, seed should be sampled according to official AOSCA procedures. Equal portions shall be taken from evenly distributed parts of the quantity of seed to be sampled. A probe or trier long enough to sample all portions shall be used for free flowing seed in bags or bulk. Non-free flowing seed may be sampled by thrusting the hand into the bags or bulk and withdrawing representative portions.
 - a. Bagged Seed -- for lots of one to six bags, sample each bag; for lots of more than six bags, sample five bags plus 10% of the number of bags in the lot, not to exceed 30 bags.
 - b. Bulk Seed -- Samples from at least seven uniformly distributed parts of the quantity. Automatic or periodic hand samples at the point where seed has finished the conditioning process is permissible at the discretion of the UCIA representative.
 - c. Minimum Sample Size -- (1) Four ounces of grass seed not otherwise mentioned, white or alsike clover or seeds of similar size. (2) Eight

ounces of alfalfa, red or crimson clover, rye grass, bromegrass, onions, or seed of similar size. (3) One and one half pounds of proso, sudangrass, or seeds of similar size. (4) Three pounds of cereals, beans, or seeds of similar size.

NOTE: Foundation class samples must be twice the normal size.

3. Resampling: Seed lots for which the sample is found to exceed the tolerance for specific weed seed, disease, or purity standards for certification (as listed in the individual crop standards), may be resampled. An official sample three times the normal size may be submitted, and determination of certification eligibility, rejection, or necessity for reconditioning will be made in accordance with the retesting results on twice the normal amount of the sample examined. NOTE 1: Contamination of conditioned seed with any Utah Prohibited Noxious Weed may make the lot ineligible for certification, even if subsequent recleaning removes detectable levels of the contaminant. NOTE 2: Allowing re-sampling further qualifies and defines the term "none" or "zero" (0) as listed under Section II.E. in that this tolerance is now based on the re-sampling and re-testing results.

E. LABELING OF CERTIFIED SEED

1. All seed stocks, when sold or otherwise distributed as certified seed, must have an official Utah Crop Improvement Association tag properly affixed to each container (in a manner that prevents removal and reattachment without tampering being obvious) or shall be sold with a bulk sale certificate (see below). Heavy staples may be used, though for certain high value lots of some crops (alfalfa, onions, forbs, grasses, etc.), UCIA may require or a grower may request that tags be attached with a seal or sewn into the bag. Tags shall be attached by or under the supervision of a UCIA representative.
2. A Bulk Sale Certificate may be used in lieu of certification tags for seed sold or otherwise distributed in bulk to the consumer. Such transactions must be under the supervision of a UCIA representative in order to verify equipment and vehicle cleanliness, amount of seed, and compliance with certification standards. Certified eligible seed which has been conditioned and tested and is being transferred in bulk between dealers must also be accompanied by a bulk sale certificate. In this case a basic \$5.00 fee for the certificate will be charged, as long as one of the parties pays, in addition, the normal bulk certification or tagging fee before the seed is distributed to consumers (See Part F below).
3. Substandard Certified Seed -- Certain lots of seed which do not meet certification standards for factors other than those relating to genetic purity or seed origin may be needed for seed increase or to alleviate shortages of a certain variety. Such seed, at the discretion of the UCIA, may be tagged but must have the word "SUBSTANDARD" written on the tag along with a listing of those factors for which the seed does not meet regular Utah Certification standards.

4. Responsibility for any obligations arising from the sale or shipment of seed which has been certified rests with the grower or subsequent handler making the sale or shipment. This includes compliance with the Federal Seed Act, Plant Variety Protection Act, Utah Seed Act, the standards of the Association of Official Seed Certifying Agencies, and the Requirements and Standards of UCIA.
5. Interagency Certification: Two or more official certifying agencies may participate in performing the services required to certify the same lot or lots of seed.
 - a. Documentation must accompany the seed lot as to its eligibility for certification from the originating state, to include: variety and kind, quantity of seed, class of seed, field inspection results, and inspection or lot number traceable to the previous certifying agency's records.
 - b. Seed shipped into Utah for completion of certification must, at the time of tagging, meet the Utah seed standards for the particular crop.
6. Growers desiring to plant back their own seed (of proper class for certification) must complete certification on such seed through bagging and tagging or bulk sales certificates.
7. NOTICE: IT IS UNLAWFUL IN THE STATE OF UTAH TO SELL, ADVERTISE, EXPOSE OR OFFER FOR SALE ANY SEED AS CERTIFIED THAT HAS NOT BEEN OFFICIALLY TAGGED OR THAT WILL NOT BE ACCOMPANIED BY AN OFFICIAL BULK SALE CERTIFICATE. GROWERS OR CONDITIONERS IN VIOLATION WILL BE SUBJECT TO PENALTY UNDER THE LAW AND MAY LOSE UCIA MEMBERSHIP PRIVILEGES.
8. Tag color used to identify classes of certified seed shall be:
 - a. White for Breeder and Foundation class seed.
 - b. Purple for Registered class seed.
 - c. Blue for Certified class seed. Also indicates U.S. #1 Seed Potato Grade (see Potato Requirements and Standards) and Tested class seed (see Pre-Variety Germplasm Standards).
 - d. Yellow designates a contract grade for seed potatoes only (see Potato Requirements and Standards), and for Source Identified class seed (see Pre-Variety Germplasm Standards).
 - e. Green for Selected class seed (see Pre-Variety Germplasm Standards).

F. TAGGING AND BULK CERTIFICATION FEES

Tagging and Bulk Certification Fees are updated each year and can be found in the current UCIA Certified Seed Directory or supplied on request.

NOTE: When the crop from any field passing the pre-harvest field inspection is sold for seed, UCIA reserves the right to collect the bulk certification rate for such seed, whether or not certification is completed (sealing and/or tagging, or bulk certificates written). This will ensure that UCIA services will not be wasted and encourages completion of certification of quality seed.

SMALL GRAIN SEED CERTIFICATION REQUIREMENTS AND STANDARDS

I. BASIC RULES

The UCIA General Seed Certification Requirements and Standards are basic and with the following constitute the Requirements and Standards for small grains (wheat, triticale, barley, oats) certification.

II. SEED PRODUCTION

A. APPLICATIONS

Dates and fees for applications are as listed in the General Requirements and Standards.

B. LAND REQUIREMENTS

1. Dryland suitable for the production of Certified grain seed must be either (a) summer fallowed two years or longer and kept free from weeds and volunteer grain, or (b) virgin land free from volunteer grain, or (c) newly plowed land that has been growing perennial legumes or grasses for three years or longer and on which volunteer grain has not been permitted to seed, or (d) land on which a certified grain of the same variety was produced the preceding crop.
2. Irrigated land suitable for the production of certified grain seed must be either (a) land that has grown other crops the preceding year and is free from volunteer grain, or (b) land on which a certified grain of the same variety was produced the preceding crop, or (c) virgin land free from volunteer grain.
3. Isolation:
 - a. Fields of a different small grains crop or other inseparable crop kind (e.g. safflower) shall be separated by a fence line, mowed strip, or other definable border such that mechanical mixtures during harvest are prevented.
 - b. A field producing any class of certified seed of a specific small grains crop kind shall be separated from fields producing other varieties of the same kind by a minimum distance of 10 feet.
 - c. To reduce incidence of hybridization between jointed goatgrass and wheat or triticale, wheat or triticale fields shall have the following isolation zone from jointed goatgrass plants on fence lines or borders or in adjacent fields or non-crop areas:

Foundation class – 75 ft.
Registered class – 50 ft.
Certified class – 25 ft.

The isolation zone may be maintained outside of the field entered for certification, or the appropriate border may be left within the field adjacent to the jointed goatgrass infestation by harvesting the approved areas of the field first or by removing the isolation zone area before harvesting equipment cleanup.

NOTE: Current field standards state that tolerance for jointed goatgrass plants within a small grains field entered for certification is zero; tolerance for jointed goatgrass X wheat or triticale hybrids will also be zero for Foundation and Registered class fields and one per acre for Certified class fields.

D. FIELD INSPECTION

1. A field inspection will be made after the crop is fully headed when varietal or crop mixtures and other factors can be determined.
2. UCIA representatives are available to give a preliminary inspection of fields and recommend roguing of weeds (especially wild oats), off types, other varieties or crops, etc. Such roguing must be accomplished before the official pre-harvest inspection (see General Requirements and Standards, Section V. F.).

E. FIELD STANDARDS

1. Tolerance in the field for other varieties and crops, weeds, and diseases:

Factor	Maximum (plants per acre) Permitted in each Class		
	Foundation	Registered	Certified
Other varieties, off types, *a	.001%	.002%	.01%
Other small grains and inseparable other kinds *b	(1/100,000)	(1/50,000)	(1/10,000)
Rye	None *f	None	None
Seed-Borne Diseases *c	—	—	—
Noxious Weeds Prohibited	None	None	None
Restricted *d Objectionable *e	None	None	None
	None	None	One (1)

- *a See definition of Offtypes, General Requirements and Standards.
- *b Includes crop plants for which the seed cannot be removed by the usual method of cleaning (e.g. ., safflower in barley).
- *c If seed-borne diseases (loose smut, common smut, dwarf bunt, ergot, etc.) are noted upon field inspection, notation will be made on the report and the lot will be monitored closely during conditioning and seed testing (see Seed Standards).
- *d Wild oats, jointed goatgrass and others listed in General Requirements and Standards.
- *e Jointed goatgrass X wheat hybrids, flanders poppy, and bur ragweed
- *f See General Requirements and Standards. (II. E.) for working definition of "none". Noxious weeds must be rogued or under chemical or mechanical control such that no seeds are produced that would not be separated out in the normal conditioning process.

F. HARVEST

Harvesting equipment and storage bins must be carefully cleaned and will be inspected at the discretion of the UCIA.

III. CONDITIONING, SAMPLING, AND LABELING

A. SEED STANDARDS

Factor	Standards for Each Class		
	Foundation	Registered	Certified
Pure Seed (min.)	99.0%	98.0%	98.0%
Inert Matter (max.) *a	1.0%	2.0%	2.0%
Other Varieties and other small grains (except Rye)	1 per 3 lbs	1 per 1 lb	2 per lb
Rye (max.)	None *e	None	None
Other Kinds	0.01%	0.02%	0.02%
Weed Seeds, Noxious Prohibited Restricted *b Objectionable *c	None None None	None None None	None None None
Weed Seeds, non-regulated weeds (max)	None	0.02%	0.02%
Seed-borne Diseases Loose Smut (max) *d Smut balls (max) Ergot (max)	None 3 per lb 0.05%	None 3 per lb 0.05%	0.2% 3 per lb 0.05%
Germination	85%	85%	85%

*a Inert matter includes broken kernels; inert matter other than broken kernels shall not exceed 0.5%

*b Wild oats, jointed goatgrass, and others listed in General Requirements and Standards.

*c Flanders poppy and bur ragweed.

*d Embryo test required for susceptible varieties; treatment with full rate of carboxin required if stated tolerances are exceeded.

*e See General Requirements and Standards (II E.) for working definition of "none".

B. SEED SAMPLING

1. A representative sample of 3 lbs of each seed lot shall be drawn by or under the supervision of a UCIA representative after the seed has been conditioned by an approved cleaning facility.
2. A representative sample may be drawn before conditioning to check germination, presence of loose smut, etc., and may serve as the official sample if seed standards including purity are met and conditioning is not desired (as in the case of a farmer planting back his own seed or selling Certified class seed in bulk).
3. Foundation class seed samples must be 6 lbs.

C. TAGGING OR BULK CERTIFICATES

Small grains certified seed must be packed in new bags or sold in bulk. Seed is not certified unless the proper tags or Bulk Certificate accompanies the seed. Fees are as listed in the General Requirements and Standards.

IV. ADDITIONAL REQUIREMENTS AND STANDARDS

Under an agreement with Utah State University, the following requirements and standards will be required as a prerequisite for final certification of the variety Lucin CL, which was released under license with BASF corporation:

- A. Production and Processing Standards for Lucin CL Wheat will be in accordance with (1) The Production Protocol (W-80, Clearfield Wheat Production Guidelines), (2) BASF Clearfield Care Protocol (ensuring the lack of Adventitious Presence), and (3) the Quality Control Procedure (Clearfield Confirm Test for Tolerance Purity).
- B. Specific requirements and standards include a) an affidavit stating compliance with herbicide application rates and timing (see (1) above); b) 30 meter isolation from non-CL wheats (see (2) above); and c) Passing the seed confirm test of 92% or above (see (3) above).
- C. Additional inspection fees of \$1.00 per acre will be assessed on all Lucin CL fields to cover the additional compliance verification costs.

GRASS SEED CERTIFICATION REQUIREMENTS AND STANDARDS

I. BASIC RULES

The UCIA General Seed Certification Requirements and Standards are basic and with the following constitute the requirements and standards for grass seed certification.

II. SEED PRODUCTION

A. APPLICATIONS

1. Dates and fees for applications are as listed in the General Requirements and Standards.
2. For the seedling year, fill out “Application for Certification for Annual Crops and Seedling Perennial Crops”; in the second and subsequent years fill out “Application for Certification for Established Perennial Crops”.

B. VARIETY ELIGIBILITY

For some varieties a Registered class is not allowed. Check variety release notice or consult a UCIA representative).

C. LAND REQUIREMENTS

1. Grass entered for certified seed production must be planted on land free from any type of perennial grass plants (including quackgrass and other weedy perennial grasses) as determined by field inspection by a UCIA representative at a time preceding planting when such grasses would be actively growing.
2. Foundation, Registered, and Certified seed must be produced on land which has not grown or been seeded to the same genus during four, three, or two years, respectively, prior to the year of proposed planting.
3. Isolation:
 - a. A fenceline, roadway, or strip at least 5 feet in width and which is mowed, uncropped, or planted to some other crop than the kind in question shall constitute a field boundary (unit of certification).
 - b. A seed field, to be eligible for the production of a class of certified seed, must be isolated from any other strain of the

same species or any other species with which cross pollination occurs, in bloom at the same time, as listed below:

Factor	Minimum Isolation – Feet *b			Border to be Removed *c
	Found.	Reg.	Cert.	
Cross-pollinated *a	900	300	165	0
	600	225	100	9
	450	150	75	15
Strains at least 80% apomictic and highly self-fertile species	60	30	15	0
	30	15	15	9

Varieties that are 95 percent or more apomictic, as defined by the originating breeder, shall have the isolation distance reduced to a mechanical separation only. Varieties less than 95 percent 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.)

*a 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
- (4) *Pascopyron* - western wheatgrasses.
- (5) *Psathyrostachys* - Russian wildryes
- (6) *Thinopyrum intermedium* - intermediate and pubescent wheatgrasses
- (7) *Thinopyrum ponticum* - tall wheatgrasses
- (8) *Pseudoroegneria* - bluebunch (or beardless) wheatgrasses; *Pseudoroegneria* species must also be isolated from R/S hybrid wheatgrass and quackgrass

*b When different classes of the same variety are being grown on the same or adjacent fields, the isolation requirements may be reduced to 25% of that shown in the above table.

*c Isolation distance may be reduced by removing specified border on fields of 5 acres or more. Such removal shall not occur until pollination of the crop to be certified is completed.

*d Isolation for the Certified class is based on the size of the certified field and the percentage of

the field within 165 feet of another variety of grass. If 10 percent or less of the certified field is within the 165 foot isolation zone, no isolation is required--only a definite separation such as a road, fenceline, bare ground, etc. If more than 10 percent of the field is within the isolation zone, that part of the field must not be harvested as certified seed.

The "isolation zone" is that area calculated by multiplying the length of the common border(s) with other varieties of grass by the average width of the certified grass field falling within the 165 ft. isolation distance requirement.

Isolation requirements for perennial crop types within the *Triticeae* tribe; abbreviations: ba = barley, sq = squirreltail, wg = wheatgrass, wr = wildrye. Apply the required distances for cross-pollinated (x) or highly self-fertile (s) crop types, or mechanical separation (.). (x) and (s) on the table diagonal indicate the mode of pollination for the species.

Genera →	Agropyron		Elymus											Hordeum	Leymus						Pascopyrum	Psathyrostachys	Thinopyrum			Pseudoroegneria				
															Early season			Late season												
Crop	Crested wg	Siberian wg	Slender wg	Blue wr	Canada wr	Dahurian wr	Big sq	Bottlebrush sq	Montana (Northern) wg	Snake River wg	Streambank wg	Thickspike wg	R/S hybrid wg	Quackgrass	Meadow ba	Basin wr	Manystem (beardless) wr	Salina wr	American dunegrass	Altai wr	Giant wr	Mammoth wr	Western wg	Russian wr	Intermediate wg	Pubescent wg	Tall wg	Beardless wg	Bluebunch wg	
Crested wg	x	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Siberian wg		x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Slender wg			s	s	s	s	s	s	s	s	s	s	s	s	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Blue wr				s	s	s	s	s	s	s	s	s	s	s	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Canada wr					s	s	s	s	s	s	s	s	s	s	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Dahurian wr						s	s	s	s	s	s	s	s	s	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Big sq							s	s	s	s	s	s	s	s	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bottlebrush h sq								s	s	s	s	s	s	s	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Montana wg									x	x	x	x	x	x	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Snake River wg										x	x	x	x	x	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Streambank wg											x	x	x	x	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Thickspike wg												x	x	x	s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
R/S hybrid													x	x	s	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x
Quackgrass														x	s	.	.	.	.	.	.	.	.	.	.	.	.	.	x	x
Meadow ba															s	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Basin wr																x	x	x	s	s	s	s	.	.	.	.	.	.	.	.
Manystem wr																	x	x	s	s	s	s	.	.	.	.	.	.	.	.
Salina wr																		x	s	s	s	s	.	.	.	.	.	.	.	.
American dunegrass																			x	x	x	x	.	.	.	.	.	.	.	.
Altai wr																				x	x	x	.	.	.	.	.	.	.	.
Giant wr																					x	x	.	.	.	.	.	.	.	.
Mammoth wr																						x	.	.	.	.	.	.	.	.
Western																							x	.	.	.	.	.	.	.

Factor	Maximum Permitted in Each Class		
	Foundation	Registered	Certified
Other Varieties	0.1%	0.5%	1.0%
Other Grasses	0.1%	0.5%	1.0%

G. HARVEST

Grass seed may be moved in bulk (box or truck) or in bags (each clearly identified) from the harvesting machine to farm storage or to conditioning facilities. Identity and purity of seed must be maintained and prior approval of equipment and facilities used for transporting, handling, and storing of seed must be given by a UCIA representative.

III. CONDITIONING, SAMPLING, AND LABELING

A. SEED STANDARDS

1. General

Factor	Standards for Each Class		
	Foundation	Registered	Certified
Total other crops (max)	0.1%	0.5%	1.5%
Other varieties (max) *a	0.1%	0.5%	1.0%
Other kinds (max) *b	0.1%	0.1%	0.25% (turf use)
	0.1%	0.2%	0.5% (forage use)
Weed seed, non-regulated weeds (max)	0.1%	0.2%	0.3%
Weed seed, regulated weeds			
Prohibited *d	None	None	None
Restricted *e	None	None	9 per lb
Objectionable *f	None	9 per lb	18 per lb

*a Other varieties of bluegrass in a bluegrass variety (max): 0.5% Registered; 2.0%, Certified

*b Seed of Critana thickspike wheatgrass (*Agropyron dasystachum*) may contain up to 30% slender wheatgrass (*Agropyron trachycanlum*) type.

*c For Indian ricegrass, 0.25%.

*d Includes the noxious weeds listed in the General Requirements and Standards and the following: perennial sowthistle (*Sunchus arvensis*), bur ragweed (*Franseris discolor*), and halogeton (*Halogeton gloneratus*).

*e Wild oats and jointed goatgrass (*Triticum cylindricum*).

*f Poverty weed

2. Specific

Variety	Type of Re- production *a	Percent Pure Seed (min.%) FRC	Percent Inert Matter (max %) FRC	Percent Germ *b (min.%) FRC
BLUEGRASS Kentucky	A	95	5	80
BROMEGRASS Meadow	C	95	5	85
Smooth	C	95	5	85
FESCUE Tall	C	95	5	85
FOXTAIL (Creeping)	C	85	15	80
ORCHARDGRASS	C	90	10	80
RICEGRASS, Indian	C	95	5	80
TALL OATGRASS	C	90	10	70
WHEATGRASS Beardless	C	90	10	80
Bluebunch	C	90	10	80
Crested	C	90	10	80
Intermediate	C	90	10	80
Pubescent	C	90	10	80
R/S Hybrid	C	87.5	15	80
Siberian	C	90	10	80
Steambank	C	90	10	80
Tall	C	95	5	80
Thickspike	C	90	10	80
Western	C	90	10	80
WILDRYE Russian	C	90	10	80
Basin	C	90	10	80

*a C = cross pollinated; S = self pollinated; A = apomictic

*b Includes dormant seed

B. SEED SAMPLING

A representative sample of 8 oz. of each seed lot shall be drawn by a UCIA

representative after the seed has been conditioned by an approved cleaning facility.

C. TAGS AND SEALS

Each bag sold or distributed as certified seed must be packed in new bags and bear the official tag attached to each container.

ALFALFA

CERTIFICATION REQUIREMENTS AND STANDARDS

I. BASIC RULES

The UCIA General Seed Certification Requirements and Standards are basic and with the following constitute the Requirements and Standards for alfalfa seed certification.

II. SEED PRODUCTION

1. APPLICATIONS

1. Dates and fees for applications are as listed in General Requirements and Standards.

B. SEED AND VARIETY ELIGIBILITY

1. For some varieties a Registered class is not allowed. Check variety release notice or consult a UCIA representative).

2. Limitations on the age of stand and generation classes of seed through which a given variety may be multiplied for both inside and outside the region of adaptation shall be specified by the originator or his designee. Certified seed production outside the area of adaptation shall not exceed six years on a given field if not otherwise specified by the originator or his designee.

C. LAND REQUIREMENTS

1. Foundation, Registered, and Certified seed must be produced on land which has not grown or been seeded to alfalfa during four, three and two years, respectively, prior to the year of proposed planting.
2. The land must be free of volunteer alfalfa plants and noxious weeds during the season preceding planting.
3. No manure or other contaminating amendments shall be applied during the establishment and productive period of the stand.
4. A companion crop is permissible in establishing a stand for the production of Certified class seed as long as the companion crop seed source is certified and has no alfalfa seed contamination.
5. Isolation:

- a. A field under certification must have the following minimum isolation distance from fields of different varieties or fields of the same variety that do not meet the variety purity requirements for certification:

Classes	Fields – Less than 5 Acres	Fields – 5 Acres or More
Foundation	900 ft.	600 ft.
Registered	450 ft.	300 ft.
Certified	(See Below)	
Different Classes of the Same Variety	10 ft.	10 ft.

- b. Isolation for the Certified class is based on the size of the certified field and the percentage of the field within 165 feet of another variety of alfalfa. If 10 percent or less of the certified field is within the 165 foot isolation zone, no isolation is required--only a definite separation such as a road, fenceline, bare ground, etc. If more than 10 percent of the field is within the isolation zone, that part of the field must not be harvested as certified seed.

The "isolation zone" is that area calculated by multiplying the length of the common border (s) with other varieties of alfalfa by the average width of the certified alfalfa field falling within the 165 ft. isolation distance requirement.

- c. Portions of a field that do not meet isolation requirements must be clearly marked and the non-certified seed from this portion may be harvested separately either before or after the certified portion. Documentation (weight receipts, separate storage, or re-inspection by a UCIA representative) to show that seed from the non-certified portion was kept separate must be available upon request, or seed from the entire field will be ineligible for certification.

D. FIELD INSPECTION

1. All fields on which new plantings of alfalfa are contemplated must be inspected prior to planting to check isolation and land requirements.
2. A seedling inspection will be made by a UCIA representative during the first season of growth. Reseeding new alfalfa plantings shall be limited to the first two years, and the field must be inspected before re-seeding. The seed source for reseeded must be of the same class

as the original seed used, or the field will be reclassified to the lowest seed class planted. Additional fees may be charged for re-inspection.

3. At least one field inspection before harvest (during the blossoming period) will be made each year that certified seed is to be harvested. Seed must not be harvested before this inspection is made. Roguing to remove off-type plants and sweet clover, and control of dodder and other regulated weeds is required prior to this field inspection.

E. FIELD STANDARDS

1. Volunteer plants may be cause for rejection or reclassification of a seed field.
2. Tolerance for other varieties and crops:

Factor	Maximum Permitted in Each Class		
	Foundation	Registered	Certified
Sweet clover plants	None	5 per acre	10 per acre
Other varieties*	None	0.01%	0.01%

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

F. HARVEST

Alfalfa seed may be moved in bulk (box or truck) or in bags (each clearly identified) from the threshing machine to farm storage or to conditioning facilities. Identity and purity of the seed must be maintained and prior approval of equipment and facilities used for transporting, handling, and storing of seed must be given by a UCIA representative.

III. CONDITIONING, SAMPLING, AND LABELING

A. SEED STANDARDS

	Standard for Each Class

Factor	Foundation	Registered	Certified
Pure seed (min.)	99.25%	99.25%	99.25%
Inert matter (max.)	0.75%	0.75%	0.75%
Other crops (max.)	0.05%	0.5%	0.1%
Sweet clover (max.)	9 per lb.	9 per lb.	90 per lb.
Discolored seed (max.)	15.0%	15.0%	15.0%
Weed seed, non-regulated weeds, (max.)	0.1%	0.2%	0.2%
Weed seed, regulated weeds, prohibited *a	None	None	None
Restricted and objectionable *b (max.)	18 per lb.	18 per lb.	18 per lb.
Germination and hard seed (min.)	85.0%	85.0%	85.0%

*a Includes the noxious weeds listed in the General Requirements and Standards and the following: dodder (Cascula spp.), yellow starthistle (Centaurea solstitialis), dogbane (Apocynum cannabinum), and perennial sowthistle (Sonchus arvensis).

*b Poverty-weed (Iva axillaris), Bur-ragweed (Franseria dis-color), and Halogeton (Halogeton glomeratus).

B. SEED SAMPLING

A representative sample of 8 oz. of each seed lot shall be drawn by a UCIA representative after the seed has been conditioned at an approved cleaning facility.

C. TAGS AND SEALS

Each bag sold or distributed as certified must be packed in new bags and bear the official tag attached with a seal to each container (See General Requirements and Standards for sealing and tagging fees).

BEAN SEED CERTIFICATION REQUIREMENTS AND STANDARDS

I. BASIC RULES

The UCIA General Seed Certification Requirements and Standards are basic and with the following constitute the requirements and standards for bean seed certification.

II. SEED PRODUCTION

A. APPLICATIONS

Dates and fees for applications are as listed in the General Requirements and Standards.

B. SEED AND VARIETY ELIGIBILITY

For some varieties a Registered class is not allowed. Check variety release notice or consult a UCIA representative).

C. LAND REQUIREMENTS

1. Beans entered for certification shall be planted on land on which preceding crop was of another kind (and free of volunteer beans), or the same variety of beans of a Certified or higher class.
2. Isolation: Fields of different varieties or classes shall be separated by a fenceline, mowed strip, or other definable border such that mechanical mixtures during harvest are prevented.

D. FIELD INSPECTION

Seed fields will be inspected for off-type and diseased plants at least once before harvest. Windrow inspections may be made at the discretion of the UCIA.

E. FIELD STANDARDS

1. Tolerance for other varieties and crop and diseases.

Factor	Maximum Permitted in Each Class		
	Foundation	Registered	Certified
Other varieties	None	0.05%	0.10%
Other crop (inseparable)	None	0.05%	0.10%
Diseases Anthracnose, Bacterial Bean Blights, Wilt, and Brown Spot, Mosaic (common)	None	0.5%	1.0%
	None	0.05%	1.0%

F. HARVEST

Harvesting, handling, storing, and processing of seed shall be performed in such a manner as to prevent mechanical mixture and damage to seed and to maintain identity of various lots of seed. Each bag or box must be tagged at harvest with identification tags supplied by UCIA.

III. CONDITIONING, SAMPLING, AND LABELING

A. SEED STANDARDS

Factors	Standards for Each Class		
	Foundation	Registered	Certified
Pure seed (min)	99.0%	99.0%	98.0%
Foreign material (max)*a	0.5%	0.5%	0.5%
Inert matter (max) *a	1.0%	1.0%	1.0%
Splits and cracks (max) *a	1.0%	1.0%	1.0%
Badly discolored (max) *a	1.0%	1.0%	1.0%
Other crop seeds (max) *a	None	0.05%	0.1%
Other varieties (max)	None	None	0.05%
Other kinds (max)	None	None	0.05%
Seed, non-regulated weeds (max)	None	None	None
Weed seed, regulated weeds (max) *b	None	None	None
Germination (min)	85%	85%	85%

*a The total of inert matter, splits and cracks, badly discolored, other kinds and varieties, and weed seed, alone or in combination, shall not exceed 2.0%. Seed lots exceeding the maximum for badly discolored seed may be eligible for disease-free and genetic purity documentation at the discretion of the certifying agency.

- *b Includes Utah Noxious, Restricted, and Objectionable weeds listed in the General Requirements and Standards.
 - B. All unprocessed lots carried over must be reported to the UCIA office each year.
 - C. A representative sample of three pounds of each 5000 lb. lot or portions thereof will be drawn by a UCIA representative after the seed has been conditioned at an approved cleaning plant.
 - D. Each bag of seed sold as certified must be packed in new bags and must bear the official tag attached in an approved manner to each container. Misprints, misbranded, blotted, and reject bags and/or bags turned inside out must not be used.

ONION SEED CERTIFICATION REQUIREMENTS AND STANDARDS

I. BASIC RULES

The UCIA General Seed Certification Requirements and Standards are basic and with the following constitute the requirements and standards for onion seed certification.

II. SEED PRODUCTION

A. APPLICATIONS

Date and fees for applications are as listed in the General Requirements and Standards.

B. VARIETY ELIGIBILITY

1. For some varieties a Registered class is not allowed. Check variety release notice or consult a UCIA representative).

2. Foundation or Registered bulbs must be planted to produce Certified class seed, or Foundation class seed may be planted to produce Certified class seed without a intervening bulb selection process. Shipment of onion bulbs into the state or within the state to be used as Mother bulbs (of the proper class) for seed production must be sacked and sealed by the proper certification agency at the point of origin.

3. For the Utah strain of Yellow Sweet Spanish onions, a bulb selection program may be accomplished under strict supervision of the UCIA for Foundation class production of bulb grading and selection (bulbs to bulbs) and Certified class production of seed and may be repeated as follows: (a) bulb grading and selection (bulbs must originate from a recognized Utah strain selection program) for varietal type improvement (shape and color); (b) Certified class seed production from these selected bulbs; (c) seed planted and the Foundation class mature bulbs again selected as in part (a).

C. LAND REQUIREMENTS

1. Onions shall be grown on land on which the preceding crop was of another kind or produced a class of certified seed of the same variety.

2. Number of varieties per farm

- a. Seed -- Only one variety shall be grown for seed on a farm in any one year unless special permission is granted by the UCIA.
- b. Bulbs -- Two varieties of onions which can easily be identified by color of bulb may be grown on the same farm in any one year.

3. Isolation -- To be eligible for certification a seed field must be isolated from fields of any other variety or fields of the same variety that do not meet the varietal purity requirements for certification as follows:

<u>Class</u>	<u>Feet</u>
Foundation	5,280 (1 mile)
Registered	2,640 (1/2 mile)
Certified	1,320 (1/4 mile)

- 4. The unit of certification is an entire field, and a field of seed cannot be divided for the purpose of certification.

D. FIELD STANDARDS

- 1. Two field inspections will be made, one at the harvest and/or selection of the bulbs (including bulbs originating in another area) and one after the seed heads have been formed from the bulbs the next season.
- 2. Fields must be rogued prior to field inspection, to remove off-type plants and other varietal mixtures. Varietal differences of growing onion plants are slight; therefore, varietal differences must be determined by bulb inspection.
- 3. Bulb standards -- Bulbs of any class must be uniform in size, shape, and color. Varietal mixture shall not exceed 0.5% (0.1% for Foundation). Bulbs must be at least 2 1/4 inches in diameter, firm and free from decay.

E. HARVEST

1. Storage of bulbs -- Growers who have onion bulbs eligible for certification shall work out a satisfactory plan with a UCIA representative for maintaining the identity of the bulbs through harvest and storage. Certified onion bulbs must be kept separate from any non-certified bulbs at all times.
2. Containers used for collecting seed heads must be clean and identity maintained with proper labeling and separation from other lots.

III. CONDITIONING, SAMPLING, AND LABELING

A. Seed Standards

Factor	Standards for Each Class		
	Foundation	Registered	Certified
Pure seed (min.)	99.0%	99.0%	99.0%
Inert matter (max.)	0.5%	0.5%	0.5%
Other crops (max.)	0	0.05%	0.05%
Weed seed, non-regulated weeds (max.)	0.05%	0.05%	0.05%
Weed seed, regulated weeds*	None	None	None
Germination (min.)	80.0%	80.0%	80.0%

* Includes Utah noxious, restricted, and objectionable weeds listed in the General Requirements and Standards.

- B. A representative sample of at least 8 ounces will be drawn from each lot by a UCIA representative for germination and purity tests.
- C. Seed must be stored in new bags, and must have a tag and seal affixed by a UCIA representative with notation of number of pounds on each tag. Re-packaging into smaller bags or boxes (after coating or other processing) must satisfy the UCIA representative that genetic purity and lot identity has been maintained. Certification tags and/or seals must be affixed to the smaller packages if they are to be sold as certified seed.

**SEED POTATOES
CERTIFICATION REQUIREMENTS AND STANDARDS**

I. BASIC RULES

The UCIA General Seed Certification Requirements and Standards are basic and with the following constitute the requirements and standards for seed potato certification.

II. SEED PRODUCTION

A. APPLICATIONS

Date and fees for applications are as listed in the General Requirements and Standards.

B. VARIETY ELIGIBILITY

1. Limited Generation System:

The purpose of this system is to properly identify and assimilate, in an orderly way, various sources of propagating material and various methods of increase into the certification program. Limited generation type propagating materials from either public or private agencies inside or outside of Utah may be accepted at whichever generation level the material can meet the requirements and standards. Documentation as to source of propagating materials must be supplied to UCIA, including identity of clone, number of generations, results of testing, etc.

2. The levels or classes of propagation are:

Pre-Nuclear AC*a	
Pre-Nuclear GC*b	
Nuclear (Generation 1)*c	
Generation 2	
Generation 3	
Generation 4	Foundation
Generation 5	Certified 1
Generation 6	Certified 2

*a Aseptic Culture

*b Greenhouse Culture

*c 1st Year in Field

3. An description of classes is as follows:

- a. Pre-Nuclear AC (Aseptic Culture): Plantlets or "microtubers" produced in aseptic culture from meristem tips or nodal cuttings from shoots grown on tubers originating from a recognized selection testing program. Lines developing from each initial explant must be kept separate until found to be free of virus, fungi and/or bacterial contamination (for specific pathogens and testing protocol see Section IV. A).
- b. Pre-Nuclear GC (Greenhouse Culture): Plants, minitubers, or tubers produced in the greenhouse. Stock material may be either (1) PreNuclear AC plantlets or microtubers, or (2) stem cuttings from tuber sprouts; all cuttings originating from each sprout on a tuber (to be from a recognized selection testing program) are to be kept separate until after testing as specified for Pre-Nuclear AC.
- c. Nuclear (Generation 1): Tubers grown in the field from Pre-Nuclear AC or GC stock. If the stock tubers are cut, they must be tuber-unit planted.
- d. Generation 2: Tubers grown in the field from Nuclear or Pre-Nuclear) stock. If the stock tubers are cut, they must be tuber unit planted.
- e. Generation 3: Tubers grown in the field from Generation 2 or higher stock.
- f. Generation 4: Tubers grown from Generation 3 or higher stock. Foundation: This classification consists of seed lots from other certification or line/tuber unit selection programs (designated Foundation, Approved, Basic, etc.) not originating from a tissue culture/stem cutting nuclear program. Such lots must have documentation that field inspections and winter testing meet the standards of Generation 4 to be accepted at the Foundation level.
- g. Generation 5: Tubers grown from Generation 4 or higher stock. Certified I: Tubers grown from Foundation stock, or other non-nuclear origin stock meeting Generation 5 standards.
- h. Generation 6: Tubers grown from Generation 5 or higher stock. Certified II: Tubers grown from Foundation or Certified I stock. Generation 6 and Certified II class of tubers are not eligible for re-certification unless there is no higher source of seed available and the field readings and winter testing meet the standards of Generation 5/Certified I class.

C. LAND REQUIREMENTS

1. Laboratory and greenhouse facilities: A tissue culture laboratory and/or stem cutting facility desiring to produce Pre-Nuclear propagating materials must demonstrate to the satisfaction of the UCIA that proper pathogen and/or insect excluding facilities and professional ability and integrity are available to produce a quality disease tested product.
2. Field Crop History

<u>Class To Be Produced</u>	<u>Years Out Of Potatoes*^{a,b}</u>
Nuclear (G1)	Six years (new ground preferred)
Generation 2 & 3	Four years
Generation 4 or Foundation	Three years
Generation 5 or Certified I	Two years
Generation 6 or Certified II	Two years

*^a Potatoes of a lower class of the same variety may be grown for a second consecutive year on the same field.

*^b A field will not be eligible for certified seed production of any generation until the fifth year following identification of bacterial ring rot in the field.

3. Areas Not Recommended for Seed Production

The following areas are not recommended for seed production, since virus diseases are spread so extensively during the growing season that field roguing is generally not successful:

Box Elder, Cache, Davis, Salt Lake and Utah Counties, with the exception of a few isolated high elevation areas; Sevier County with the exception of Grass Valley; Weber County with the exception of Ogden Valley; and western Millard County.

4. Isolation:

<u>Class To Be Produced</u>	<u>Isolation Required</u>
Pre-Nuclear AC	Satisfactory laboratory procedures
Pre-Nuclear GC	Satisfactory greenhouse lot separation
Nuclear (G1) and Generation 2 & 3	Location of fields must be approved by UCIA
Generation 4 and 5, Foundation, Certified I	100 ft. from lower generation lots

Generation 6 and Certified II Distinct separation (fenceline, roadway, skip row, etc.) from non-certified potatoes or certified potatoes of another variety or generation/class.

5. Weeds: The field should be free of noxious weeds as listed in the General Requirements and Standards, Section VII. Also, perennial ground cherry (*Physalis longifolia*) is a host plant for mosaic diseases of potatoes. This weed present in a field may disqualify the field or part of the field for certification. All other weeds must be controlled so as to not interfere with timely inspections of the field.

D. FIELD INSPECTIONS

1. At least one visual inspection of propagating materials in laboratory and/or greenhouse facilities will be made by UCIA before such material is sold and/or planted for the next generation increase. Samples for testing will be taken as outlined in Section IV.
2. At least two visual inspections (more if necessary) will be made of each field planting of certified eligible potatoes to evaluate compliance with field standards.
3. Roguing to remove weak plants, varietal mixtures, diseased plants, and objectionable weeds from the field should commence as soon as they become apparent and continue through the growing season. Roguing may be delayed until after the first field inspection and determination is made of potential problems. Plants infected with virus or bacterial diseases should be removed from the field along with the seed pieces and new tubers.
4. If ring rot is found in any potato field on a farm (or it is determined that any seed lot planted on the farm is contaminated with ring rot or was stored in a cellar with potatoes that were contaminated with ring rot), all fields on that farm may be downgraded to Generation 6 or Certified II, or may become ineligible for certification depending upon individual circumstances of contamination.

E. FIELD STANDARDS

1. Fields will be rejected when seriously infected or damaged by psyllid yellows, late blight, insects, drought, wind, hail, or frost, or other diseases or causes which interfere with proper inspection of potatoes. Poor stands, low soil fertility, poor cultural conditions, or excessive weed growth will also disqualify a field for certification.

2. Fields showing symptoms of some disease new to Utah may be disqualified or may have certification withheld pending further investigation.
3. No volunteer potato plants will be permitted in any field, except where the previous potato crop was of a higher generation and the same variety as the one currently being produced.
4. Inspection tolerances (see Table E.4 Field Standards, next page): Based on percent visible disease symptoms. Zero tolerance (0) means none found during the normal inspection procedures. Zero is not a guarantee that the lot inspected is free of the disease. See also Section II, General Requirements and Standards.

F. HARVEST AND STORAGE

1. Growers who have fields eligible for certification should notify the local UCIA representative prior to harvest and work out with him a satisfactory plan for maintaining the identity of the potatoes through harvest and storage. A lot is eligible for tags only lot is eligible for tags only when this identity is maintained. Harvesting equipment and storage areas must be properly disinfected before handling certified lots.
2. Lots eligible for certification in storage must be clearly distinguished from other seed lots and stored separately from commercial potatoes. Empty bins or tight walls (concrete block, wood, interlocked hay bales, etc.) that prevent mixing are acceptable. A cellar chart showing the variety, seed lot origin, and field from which harvested from each bin should be made to aid the UCIA representative in making his inspections. If the inspector is unable to distinguish, to his own satisfaction, the identity of any seed in the storage place, all or any part of the seed in the storage place may be declared ineligible for certification.

TABLE E.4, FIELD STANDARDS

<u>Factor*</u> ^a	<u>Nuclear (G1)</u>		<u>Gen 4 &</u>		<u>Gen 5 &</u>		<u>Gen 6 &</u>	
	<u>& Gen 2</u>	<u>Gen 3</u>	<u>Foundation</u>		<u>Certified I</u>		<u>Certified II</u>	
		<u>1st &</u> <u>2nd</u>	<u>1st</u>	<u>2nd</u>	<u>1st</u>	<u>2nd</u>	<u>1st</u>	<u>2nd</u>
Blackleg								
(visible)* ^b	0	0.1	0.5	0.5	1.0	1.0	5.0	5.0
Bacterial Ring								
Rot	0	0	0	0	0	0	0	
Total Non-Latent Virus	0	0.1	1.0	0.5	1.0	1.0	2.0	2.0
Mosaic	0	.05	0.5	0.25	1.0	0.5	1.5	1.0
Leafroll		0.02	0.1	0.05	0.2	0.1	0.5	0.25
Calico		0.05	0.5	0.25	1.0	0.5	2.0	1.0
Haywire		0.05	0.5	0.25	1.0	0.5	2.0	1.0
Other Virus	0	.02	0.2	0.1	0.5	0.25	1.0	0.5
Nematode * ^c	0	0	0	0	0	0	0	0
Eumartii Wilt	0	0	0	0	0	0	0	0
Other Wilts and Foliar Diseases * ^d								
Varietal Mixture	0	0	0.2	0.1	0.25	0.15	0.5	0.25
PVX (Optional Lab test, see IV.B.2.b)	0	0.5	--	1.0	--	3.0	--	6.0

*^a Inspection tolerances are defined in Part E.4. Tolerances listed are percent (%) of plants.

*^b Tolerance is based on the presence of visible symptoms commonly associated with the blackleg disease, and does not take into consideration Erwinia sp bacteria that may be present on the plant but not causing visible symptoms.

*c Nematode evaluation based on visible external symptoms.

*d Verticillium wilt will be a factor only when it makes adequate field inspections impossible (normally about 10.0%). Other fungus diseases such as Rhizoctonia, early blight, or late blight will be noted when observed, as storage problems may result.

3. Storage inspections will be made as soon after harvest as possible before the potatoes are sorted.
 - a. Any certified seed lot stored in a cellar with other potatoes found to be infected with ring rot (other seed lots or commercial potatoes) will be immediately downgraded to generation 6 or Certified II (not eligible for recertification on), and depending on the circumstances may be rejected for certification.
 - b. Scab, rhizoctonia, early and late blight tuber lesions, etc. are considered to be grade defects, to be graded and/or removed during the sorting process. Seed potatoes may be rejected for certification if they have been improperly stored as indicated by excessive black heart, sprouting, shriveling, or soft rot breakdown, or they are so marred in general appearance by dirt, blight, scab, or other diseases or condition that it is obvious sorting will not produce good quality seed potatoes.

III. SORTING, GRADES, AND LABELING OF SEED POTATO TUBERS

A. SORTING REGULATIONS

1. No ring rot, nematodes (based on visible external symptoms), or tuber moth larvae are allowed in certified seed.
2. All equipment that contacts the tuber (sacks, truck beds, pilers, bin boards, etc.,) should be disinfected each year before use and between each lot. Disinfection is not effective or satisfactory unless preceded by scouring for removal of dirt, debris, rot smears, etc.
3. Lots showing a disease new to Utah may be disqualified or have certification withheld pending further investigation.
4. Because of the extreme danger in spreading disease, washed potatoes will not be eligible for certification.

B. GRADE STANDARDS, INSPECTION AND TAGGING

1. Grade Inspection: A shipping point inspection is required for the first load of each lot of certified potato seed during the sorting and grading process and before it is loaded for shipment. This inspection will be conducted by a representative of the Federal State Inspection Service (Utah District Agricultural Inspectors) in cooperation with the UCIA. Subsequent inspections are made at the discretion of the UCIA or the request of the grower.
2. Tags and Certificates: Certification tags (sewn in or affixed by a seal) or a bulk certificate indicating Generation or Class and grade of seed must

accompany the seed potatoes when sold as certified seed. The grower will be responsible for attaching the tags or issuing bulk certificates under the control of a UCIA representative. See General Requirements and Standards (Section VII) for fees. In addition, a fee (currently 4.5 cents/cwt) is charged for those loads receiving a Federal-State inspection, payable to the Utah State Department of Agriculture. NOTE: On loads not officially inspected by the Federal State Inspection Service, the grower assumes total responsibility and liability in assuring that the seed meets grade specified on the tags or bulk certificate.

3. Grade Standards

a. Blue Tag Grade

The Certified "Blue Tag" grade shall meet the grade requirements of U.S. No. 1 Seed Potatoes. Copies of the publication "United States Standards For Grades of Seed Potatoes" are available from the UCIA or Utah District Agricultural Inspectors. The Blue Tag (or Bulk Certificate) will carry the information of variety, certification number, generation level or class, and tuber size if otherwise specified from the U.S. No. 1 seed grade. Lots including tubers sized up to 18 oz. will be labeled as OVERSIZE; tubers larger than 18 oz. will be considered yellow tag contract grade (see below). Lots including tubers less than 1 1/2 inches will be labeled UNDERSIZE. Exact size range of UNDERSIZE and OVERSIZE may be written on the tag or bulk certificate.

b. Yellow Tag (Contract) Grade

Contract Grade shall consist of potatoes that meet all of the genetic and specific disease requirements for certification at a given generation or class level. Factors of grade and condition, however, may be established by a buyer-seller agreement except that not more than two (2) percent soft rot and/or wet break down, or excessive dirt and debris will be allowed. An example might be where the buyer would specify U.S. No. 1 Seed Grade except for increased allowance of misshapen tubers, excessive scab, up to 2% soft rot, etc.

The Yellow Tag or Bulk Certificate will carry the same information (variety, certification number, etc.) as the Blue Tag or Bulk Certificate. Evidence of the contract agreement between buyer and seller must be presented before grade inspection or tagging will be carried out by the UCIA representative.

IV. DISEASE SAMPLING AND TESTING

A. PRE-NUCLEAR STOCK

1. UCIA does not have facilities for sophisticated disease testing, but will accept testing done in an established State, University or private commercial laboratory, or grower's in-house testing procedures subject to accreditation and periodic cross-checking with an outside lab. Testing procedures may include serology, bioassays, molecular hybridization, selective media, gel diffusion, electron microscopy, etc., taking into account the state-of-art in testing for a given pathogen, and the realistic assessment of time and cost factors.
2. Initial explants or mother plants used for subsequent propagation shall be tested for PVX, Y, A, M, S, and LR viruses, spindle tuber viroid, and systemic bacteria (*Erwina sp.* and *Corynebacterium sepidonicum.*) and fungi. Tolerance is zero for these pathogens.
3. Sampling Schedule:
 - a. After a node is excised for reproduction, the basal portion of each explant or mother plant must be tested for systemic bacteria and fungi, and the remaining portion of the plant tested for the viruses and PSTV. Bulking of material for testing at this stage is not permissible.
 - b. Monitoring the pathogen status of the propagating material during production (bulking up) stages shall be at the discretion of the producer, though subject to periodic inspection and/or sampling of plants and/or inspection of production records by UCIA.
 - c. Sampling of each lot (line, or variety, if lines have been bulked) before sale to growers and/or planting in greenhouse or field will be accomplished by UCIA representatives. It will consist of a leaf from 1.0% of the plantlet population (minimum of 10 plantlets samples) for PLRV, PVX, and PVY virus testing. In addition, the basal stem and roots of 0.5% of the plantlet population (at least 5 plants but not more than 50 plants) must be collected and tested for systemic bacteria and fungi. These plant samples may be bulked for testing, except that a minimum of two separate tests for the viruses and two separate tests for systemic bacteria and fungi must be accomplished for each lot.
 - d. Sampling of plants before harvest of pre-nuclear tubers in the greenhouse will follow the protocol of Part c. above, except that a tuber instead of basal stem and roots will be sampled and tested for systemic bacteria and fungi.

B. FIELD GROWN STOCK

1. Winter Testing (Field)
 - a. Each lot of seed of Nuclear (G1) through Generation 5 (Certified I) must be sampled for winter testing; for Generation 6 (Certified II) it is optional

though recommended. Tuber samples for the winter tests must be collected by October 20 and arrangements made for delivery to UCIA at Utah State University. The samples will then be included in the Idaho Crop Improvement Association winter plots in Oceanside, CA.

b. Sampling Procedures:

1. The sample should be representative of the entire lot being tested, therefore, the samples should be collected all through the harvest period. A sample taken off the top or end of the bin or cellar or after harvest may not be representative. New bags should be used for samples.
2. Contact the UCIA before harvest for instructions as to the number and size of tubers to collect from each seed lot for winter testing.

- c. The winter test results must not exceed by more than 50% the 2nd inspection field standards (see Section II E.). If the tolerance is exceeded at a given generation or class level the seed lot will be downgraded to the next level; Generation 5 or Certified I seed may be ineligible for re-certification depending on the extent of the virus infection.

2. Laboratory Testing

- a. Laboratory disease testing will be accomplished at the ICIA laboratory in Idaho Falls, ID. Such testing may in the future replace the field winter test.
- b. PVX testing is optional, but will follow the leaf sampling and testing protocol as outlined by the ICIA. Seed so tested may be labeled "PVX tested" if the tolerances on Table E.4 are met.

3. Special testing fees

- a. Winter grow out test (Oceanside): Approx. \$75 per sample.
- b. Laboratory Tests: Cost basis depending on number of samples and number of tests performed.

SAINFOIN (ONOBRYCHIS VICIAEFOLIA) CERTIFICATION REQUIREMENTS AND STANDARDS

I. BASIC RULES

The UCIA General Seed Certification Requirements and Standards are basic and with the following constitute the requirements and standards for Sainfoin seed certification.

II. SEED PRODUCTION

A. APPLICATIONS

1. Dates and fees for applications are as listed in the General Requirements and Standards.
2. For the seedling year fill out “Application for Certification for Annual Crops and Seedling Perennial Crops”; in the second and subsequent years fill out “Application for Certification for Established Perennial Crops”.

B. LAND REQUIREMENTS

1. A crop of the same kind must not have been grown or planted on the land for 5, 3, and 2 years prior to stand establishment for producing the Foundation, Registered, and Certified seed classes, respectively.
2. The land must be free of volunteer plants of Sainfoin during the year immediately prior to establishment; and no manure or other contaminating material shall be applied the year previous to seeding or during the establishment and productive life of the stand.

III. FIELD STANDARDS

A. General

1. Isolation
Minimum distance from a different variety or a non-certified crop of the same kind shall be:

Distance in Feet for Specific Area*

Class	Field of less than 5 acres	Field of more than 5 acres
Foundation	900	600
Registered	450	300
Certified	330	165

*The isolation distance between classes of the same variety may be reduced to 10 feet, regardless of class or size of field.

2. Volunteer plants
Volunteer plants may be the cause for rejection or reclassification of a seed field.

3. Length of Stand
Fields of all classes of certified seed may produce five successive seed crops immediately following establishment.

B. Specific

Maximum permitted - Ratio of Plants

Factor	Foundation	Registered	Certified
Other varieties	1:1000	1:400	1:100

IV. SEED STANDARDS

Standards for each class

Factor	Foundati on	Register ed	Certifie d
Pure seed (minimum)	99.00%	99.00%	98.0%
Inert matter (maximum)	1.00%	1.00%	2.00%
Weed seeds (maximum)	0.10%	0.10%	0.20%
Total other crop seeds (maximum)	0.10%	0.25%	1.10%
Other varieties (maximum)	0.10%	0.25%	1.00%
Other kinds (maximum)	0.00%	0.00%	0.10%
Germination (minimum)	----	85.00%	80.0%

*Restricted weed seed may be permitted in the certified class only but shall not exceed 9 per pound.

CHICKPEA CERTIFICATION STANDARDS

I. APPLICATION OF GENETIC CERTIFICATION STANDARDS

The general requirements for seed certification found in section I through IV of the Genetic and Crop Standards apply to (are basic) all crops, and together with the following specific standards, constitute the certified Chickpea standards.

II. LAND REQUIREMENTS

Chickpeas shall be planted on land on which the preceding crop was of another kind, or the same variety of a certified class.

III. FIELD STANDARDS

A. General

1. Isolation

Field shall be separated from any other variety or uncertified fields of the same variety a distance adequate to prevent mechanical mixture.

2. Management

Poor stands, poor vigor, lack of uniformity, excess weeds or conditions which are apt to make inspection inaccurate or bring certified seed into disfavor shall be cause for rejection.

3.

B. Specific

Factor	Foundati on	Register ed	Certifie d
Other varieties (maximum)	1:10,000	1:2,000	1:1,000
Inseparable other crops (maximum)	None	1:2,000	1:1,000

IV. SEED STANDARDS

Factor	Foundati on	Register ed	Certified
Pure seed (minimum)	98.00%	98.00%	98.00%
Inert (maximum)	2.00%	2.00%	2.00%
Other crop seed (maximum)	None	0.05%	0.20%
Other varieties (maximum)	0.1%	0.2%	0.2%
Weed seed (maximum)*	None	0.10%	0.25%
Germination (minimum)	80.00%	80.00%	80.00%
Ascochyta blight ^{†**}	N.S.	N.S.	N.S.

*Total weed seed shall not exceed 10 per lb.

**Testing and treating of all seed is recommended.

N.S. – No standard

WOODY PLANTS AND FORBS CERTIFICATION STANDARDS

I. APPLICATION OF GENETIC CERTIFICATION STANDARDS

A. The Genetic Certification Standards, pages 1 through 17, are basic.

B. The Genetic Standards are modified as follows:

1. Section IV LIMITATION OF GENERATIONS

Both sexual (seed) and asexual (cuttings, rhizomes, etc.) means of reproduction and establishment are addressed by these standards, with one asexual generation being equivalent to one sexual generation (i.e., Breeder, Foundation, Registered, and Certified).

2. Appendix II (B) LENGTH OF STAND REQUIREMENTS

The life of the stand shall be unlimited as long as 75% of the plants present in the stand are those that were planted originally. Exceptions may be other-wise specified by the originator of the variety or his designee.

II. LAND REQUIREMENTS

A field, to be eligible for the production of certified classes of seed, must not have grown, been seeded to, or had volunteer plants producing seed of the same species (except for plants or seed of the same variety of equal or higher classification) during the previous four (4) years for Foundation, three (3) for Registered, or two (2) years for Certified.

III. FIELD STANDARDS

A. General

1. Field Inspection

Seed field inspection will be made in the year of establishment, and at least once each year that seed is to be harvested. This inspection should be made at the stage of plant development when off-types or other varieties, disease status, weed contamination, etc. can be readily detected.

2. Isolation

- a. For seed production, minimum distance from a different variety or PVG (which may have the potential to hybridize), fields of the same variety that do not meet the varietal purity requirements for certification, or wild hybridizing populations, are as follows:

	Minimum of Isolation - Feet	
	Fields of 5 Acres or Less	Fields of More than 5 Acres
Foundation	900	600
Registered	450	300
Certified	330	165

- b. For seed production of different classes of the same variety or for asexual reproduction, only a distinct separation (fenceline, roadway, etc.) is necessary.
- c. NOTE: Fourwing saltbush (*Atriplex canescens*) will hybridize with many of the perennial *Atriplex* species such as *A. garrettii*, *A. gardneri*, *A. confertiofolia*, *A. Cuneta*, *A. tridentata*, *A. falcata*, and *A. obovata*.

3. Volunteer plants may be a cause for rejection or reclassification of a seed field (see Section I.B.2).

B. Specific

Factor	Ratio in Field		
	Foundation	Registered	Certified
*Other Varieties & Off Types	0.1% (1/1000)	0.2% (1/500)	0.4% (1/250)
Other Kinds (inseparable other species)	0.05% (1/2000)	0.1% (1/1000)	0.2% (1/500)
**Noxious Weeds (prohibited)	None	None	None
***Restricted or Objectionable Weeds	Varies with Species		

*Some species may have a phenotypically variable population; this should be accounted for in the breeder's description such that true off-types will not exceed the stated ratio. Exceptions may be otherwise specified by the breeder or his designee.

**Must be under cultural or chemical control such that mature noxious weed seed will not be harvested with crop seed.

***Restricted weeds and/or objectionable weeds that pose a particular problem for a given species must be limited in the field to the extent that the maximum allowed in the seed standards may be reasonably met.

IV. SEED STANDARDS

A. General

Sampling and testing seeds: 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 Governmental laboratories as determined by the certifying agency.

A representative sample of vegetatively propagated materials must be inspected to insure varietal purity. Quality factors may be established by individual certifying agencies.

B. Specific

1. All propagating material:

	Maximum Permitted in Each Class		
	Foundation	Registered	Certified
Other Varieties	0.25%	0.50%	0.75%
Other Kinds	0.15%	0.25%	0.50%
Total Other Crops	0.40%	0.75%	1.25%
Noxious Weeds (Prohibited)	None	None	None
Restricted or Objectionable Weeds			

2. Standards for species that have released varieties

Name	Scientific	Pure	Inert %	Weed	Viability%
		Seed% (min)	(max)	Seed% (max)	(min)
		(F, R, C)	(F, R, C)	(C)*	Germ. + Dorm. <u>OR</u> TZ
Common	Scientific				
Fourwing Saltbush	<i>Atriplex canescens</i>	85	15	0.5	30
	<i>Atriplex canescens aptera</i>	85	15	0.5	30
Prostrate Kochia	<i>Bassia prostrata</i>	65	35	0.2	35
Blue Flax	<i>Linum perenne</i>	95	5	0.2	70
Utah Sweetvetch	<i>Hedysarum boreale</i>	95	5	0.5	60
Rocky Mountain Penstemon	<i>Penstemon strictus</i>	85	15	0.5	60
Palmer Penstemon	<i>Penstemon palmerii</i>	85	15	0.5	60
Small Burnet	<i>Sanquisorba minor</i>	95	5	0.2	80
Lousiana Sage	<i>Artemesia ludoviciana</i>	80	20	0.5	30
Antelope Bitterbrush	<i>Purshia tridentata</i>	95	5	0.2	75
Mountain Big Sagebrush	<i>Artemesia tridentata</i>	10	90	0.5	50
Winterfat	<i>Ceratoides lanata</i>	60	40	0.5	40
Mountain Mahogany	<i>Cercocarpus montanus</i>	85	15	0.3	60

*Foundation and Registered standards for weed seed are one half the Certified tolerance

PRE-VARIETY GERMLASM CERTIFICATION STANDARDS

I. APPLICATION OF GENETIC CERTIFICATION STANDARDS

- A. The Genetic Certification Standards, pages 1 through 17, are basic.
- B. The Genetic Standards are modified as follows:

1. Section II. ELIGIBILITY REQUIREMENTS FOR VARIETIES

- 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 species, selections, clones, intraspecific hybrids, etc. (collectively referred to as germplasm types) which have not been released as a variety. Germplasm types are recognized as follows:

1. 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.

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 special tag if required (see item 6.b)

3. 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 the 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.

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. Section III. 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 germplasms. Source Identified, Selected, and Tested 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. Section IV. LIMITATIONS 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.
- 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. Section V. UNIT OF CERTIFICATION (B)

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

5. Section VI. PRODUCTION OF SEED (C)

- a. 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 certification agency.
- b. For Tested seed collected from natural stands, at least one field inspection shall be made prior to pollination. At this time, compliance with regard to roguing and isolation as covered by the applicable agency standards will be checked. For Selected and Tested seed, an inspection will be made just prior to seed maturity or during harvest.
- 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 certification agency for a specific species.
- d. Producers of seedling or otherwise propagated nursery or container stock shall be supervised sufficiently so that the certification agency knows that the stock was produced from the Germplasm type claimed.

6. Section VII. LABELING

- a. The following tag or label colors shall apply:
Source Identified Germplasm – Yellow
Selected Germplasm- Green (Note exception in 6b. below)
Tested Germplasm- Blue
- 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 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
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. If a limitation of generations has

been specified for a designated germplasm, then the generation of the tagged material and the number of increase generations permitted shall be stated on the certification tag, e.g. G1/G3 (read “generation one of three generations permitted). Accelerated downgrading of generation(s) can be specified on the tag to indicate the material is not eligible for further increase, e.g. G3/G3.

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

7. Section VIII. SAMPLING AND TESTING

For seed of species not covered by the rules for testing seeds of the Association of Official Seed Analysts, the analyses 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 judged to be significant 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. The location printed on the tag 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 a certification 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.

**PRE-VARIETY GERmplasm (SOURCE IDENTIFIED, SELECTED, TESTED)
MINIMUM GENETIC REQUIREMENTS AND STANDARDS***

Species ¹		G1				G2				G3, G4, ect. ²			
Repro	Habit	L ³	I ⁴	F ⁵	S ⁶	L	I	F	S	L	I	F	S
X Poll.	Annual	3	900-600	1000	0.25	2	450-300	500	0.5	1	330-165	250	0.75
X Poll.	Perennial ⁷	3	900-600	1000	0.25	2	450-300	500	0.5	1	330-165	250	0.75
Self Poll.	Annual	3	0 ⁸	1000	0.25	2	0	500	0.5	1	0	250	0.75
Self Poll.	Perennial ⁷	3	0	1000	0.25	2	0	500	0.5	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.b.). 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; the first number is for fields under 5 acres, the second number is for field over 5 acres.
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**

Mechanical seed standards are generally not required in Utah as seed is sold on a pure live seed basis, and PVG is based on geographic source of the plant material. However, a PVG may be subject to the mechanical seed standards of comparable individual species or crop groupings (e.g., alfalfa, clover, grass, or woody plants and forbs). In all cases, State and Federal laws regarding analysis labeling must be observed.