

HYBRID CORN

1. Seed Class Requirements

- A. Only the Certified class is recognized in hybrid corn.
- B. Hybrid corn seed shall mean seed to be planted for the production of feed or for any use other than seed increase. It may be any one of the following.
 - 1) Single cross – the first generation of a cross between two inbred lines or an inbred line and a foundation backcross or of two foundation backcrosses.
 - 2) Double cross – the first generation of a cross between two foundation single crosses.
 - 3) Three-way cross – the first generation of a cross between a foundation single cross and an inbred line or foundation backcross.
 - 4) Topcross – the first generation of a cross between an open-pollinated variety and an inbred line or a foundation backcross or a foundation single cross.
- C. Eligibility of seedstocks – All seedstocks used as male (pollen) and female (seed) parents in the production of certifiable hybrid seed corn shall be of the certified Foundation class or whose source assures their identity and are approved by the certifying agency.

Evidence of eligibility for each seed lot used in the production field shall be an official certified Foundation tag or label obtained from a bag containing such seed or other approved documents described in the General Standards.
- D. A male sterile female (seed) parent can be used to produce Certified hybrid corn seed by either of two methods.
 - 1) Hybrid seed produced on the fertile female (seed) parent shall be mixed with the hybrid seed produced on sterile female (seed) parent, of the same pedigree, either by blending in the field at harvest or by size at conditioning time. The ratio of the male sterile parent seed to fertile parent seed shall not exceed 2:1.
 - 2) The male (pollen) parent shall involve pollen restoring line or lines so that not less than one-third of the plants grown from hybrid corn seed resulting from these crossing will produce pollen which appears to be normal in quantity and viability.

2. Land Requirements

Seed fields shall not be planted on land that has grown corn of another color or endosperm type during the preceding crop season.

3. Field Inspection

The current guidelines for field inspection procedures are available upon request from the Association office.

- A. Before pollination, each separate field shall be inspected by a representative of the Association at least once for purity of plant type and isolation from contaminating sources of pollen.
- B. During pollination, each separate field shall be inspected by a representative of the Association at least once every 48 hours except as detailed under the OECD program or NCIA partial accreditation program.

4. Field Standards

- A. Unit of certification
 - 1) The entire acreage of a specific pedigree in an isolation shall be inspected for certification.

- 2) Portions of an isolation may be considered as separate fields depending upon such factors as maturity differences, boundaries, waterways, roads, etc. (if separate field inspection reports are necessary).
- 3) More than one hybrid may be produced in an isolation provided the same pollinator is used for all hybrids. The areas occupied by each different crossing block shall be clearly labeled with the field name and variety as it appears on the field application.

B. Isolation from contaminating pollen

- 1) A specific hybrid shall be located so that the female (seed) parent is not less than 660 feet from corn of a different color or texture. For dent corn, this includes sweet, pop, white, or other colored corn. For hybrid seed production fields of dent sterile popcorn, no isolation from yellow dent field corn is required. Sweet corn plots of 1/4 acre or less may be isolated from hybrid seed production fields not less than 330 feet and must have at least 10 pollen parent border rows that are providing an isolation pollen buffer.
- 2) A specific hybrid shall be located so that the female (seed) parent is not less than 660 feet from other corn of the same color or texture. This distance may be modified by the planting of pollen parent rows as an isolation buffer and depending on the size of the crossing field according to the following table.

Minimum Distance from Other Corn to the First Seed Parent Plant	Field Size	
	1 to 19 Acres	20 Acres or More
Feet	Minimum Number of Border Rows	Minimum Number of Border Rows
660	0	0
570	4	2
490	6	2
410	8	4
330	10	6
270	12	8
210	14	10
150	16	12
90	18	14
<90	24 ¹	16 ²

¹minimum of 60 feet including border rows

²minimum of 40 feet including border rows

3) Border (buffer) row requirements

- a) Because of the difficulty in establishing and maintaining an acceptable stand for buffer purposes, the planting of at least double the minimum number of border rows shown in table above is recommended.
- b) An adjacent hybrid crossing block(s) planted with the same eligible male (pollen) parent may be used as an isolation buffer, provided it is inspected and meets all field requirements.
- c) Border rows shall be considered unacceptable if:
 - (1) Pollen is not being shed simultaneously with silk emergence of the female (seed) parent.
 - (2) Pollen is not being shed as plentifully as in male (pollen) parent rows of crossing blocks, for any reason, including:

- (a) Below average stands
 - (b) Differential planting dates
 - (c) Border rows are more than 33 feet from the seed parent rows
 - (d) Gap(s) in border rows of greater than 50 feet.
 - (e) Border rows have been detasseled.
 - (f) Natural barriers such as hills, trees, buildings, or similar objects are not acceptable in place of border rows.
- 4) Differential maturity dates are permitted for modifying isolation distance provided there are not receptive silks in the seed parent at the same time pollen is being shed in the contaminating field.
 - 5) Corrections for improper isolation shall be made by the applicant by one of the following methods or its equivalent.
 - a) By completely destroying or by detasseling the necessary contaminating corn before silks appear in the female (seed) parent in the field to be certified.
 - b) By disqualifying from certification and clearly marking the crossing blocks improperly isolated from contaminating corn before the final field inspection during the pollination period.
 - c) By removing the improperly isolated area before the certified seed field is harvested. Additional inspection to verify this will be required.

C. Roguing Off-type and Volunteer Plants

- 1) Definitely off-type plants in a parent line planted for the production of single cross or three-way cross hybrid corn seed to be used for grain or forage production must be completely destroyed so that suckers will not develop.

Plants showing definite hybrid vigor or a definitely different type from the parent being inspected shall be classified as definitely off-type.
- 2) An isolation in which more than 0.1% (1 per 1000) of definitely off-type plants, in the male (pollen) parent or female (seed) parent, have shed pollen at a time when more than 5% of the seed parent plants have apparently receptive silks shall be disqualified for certification.
- 3) An isolation in which more than 0.1% (1 per 1000) of definitely off-type plants are present in the female (seed) parent at the final inspection shall be disqualified for certification.

D. Detasseling and pollen control

The following requirements shall apply when 5% or more of the female (seed) parent plants within an isolation have receptive silks.

- 1) A field shall be disqualified from certification if at any one inspection more than 1% of the female (seed) parent plants have shed pollen or if the total number having shed pollen for any three inspections on different dates exceeds 2%.
- 2) When more than one hybrid combination is being grown in the same isolation and the female (seed) parent of one or more of the hybrids is shedding pollen in excess of 1% all the female (seed) parents having 5% or more apparently receptive silks at the time will be disqualified unless adequately isolated from the shedding seed parent.
- 3) Any tassel or portion of tassel shall be counted as shedding pollen when two inches or more of the central stem or the side branches or a combination of the two have the anthers extended from the glumes and are shedding pollen.
- 4) The detasseling (cutting or pulling) of cytoplasmic male sterile female (seed) parent is permitted.

- 5) Applicants must provide their cutting/detasseling schedule to NCIA no later than the day before the activity begins. Field inspectors will monitor silking percentage, pollen shedding, and cutting/detasseling effectiveness relative to this schedule. Failure to provide this information in a timely manner may result in field rejection.

5. Seed Sampling and Testing

- A. Post control genetic purity testing. The final certification of seed lots, as determined by the Association, may be contingent upon determination of percent hybridization and varietal purity using the following methods. The total purity standard for either method is 95% or greater. Testing will be conducted by NCIA or an approved 3rd party organization.
- 1) Biochemical methods by lot and/or grade size
 - 2) Field growouts by lot and/or grade size
- B. A conditioned representative sample of at least two pounds from each certifiable grade size within a seedlot shall be submitted to the Association laboratory for determination of germination and purity for certification and labeling purposes.

6. Seed Quality Standards

A. Genetic

Quality Standards	Certified Seed Class
Other varieties of a different color or texture (max %)	0.5

B. Mechanical

Quality Factors	Certified Seed Class
Pure seed (min %)	99.0
TOTAL other crop seeds—including other varieties (max %)	0.5
TOTAL weed seed (max %)	None
TOTAL inert matter (max %)	1.0
Germination (min %)	90
Moisture (max %)	14.0

FOUNDATION SINGLE CROSS CORN¹

1. Seed Class Requirements

- A. Only the certified Foundation class is recognized for seed of such single crosses, backcrosses, and male sterile inbreds produced according to these standards.
- B. Foundation single cross corn seed shall mean seed to be planted for the production of certified hybrid corn seed. It shall consist of the first generation of a cross of any one of the following:
 - 1) Two inbred lines
 - 2) An inbred line and a Foundation backcross
 - 3) Two Foundation backcrosses
- C. Foundation backcrosses shall be either of the following:
 - 1) A **first-generation Foundation backcross** is the first generation cross between a foundation single cross of related inbred lines and an inbred line which is the same as one of the inbreds in the Foundation single cross.
 - 2) A **second-generation Foundation backcross** is made by using a first generation back cross as the female (seed) parent; the male (pollen) parent is an inbred line. The inbred line is the same as the inbred parent used in making the first generation back cross female (seed) parent.
- D. Additional Requirements for **Male Sterile Lines**
 - 1) A male sterile inbred line may be substituted for its fertile counterpart as one parent of a Foundation single cross provided:
 - a) The male sterile line has been backcrossed for not less than five generations to its fertile counterpart, and
 - b) The male sterile line is the same in other characteristics as its fertile counterpart.
 - 2) Male sterile inbred lines propagated by hand pollination shall be eligible for certification.
- E. Additional Requirements for **Pollen-Restoring Lines**

A pollen-restoring line may be substituted for its non-restoring counterpart in a Foundation single cross, provided the pollen-restoring line is the same in other characteristics as its non-restoring counterpart.

2. Eligibility of Seed Stocks

All seedstocks used as male (pollen) and female (seed) parents in the production of Foundation single cross and Foundation backcross corn seed shall be of the certified Foundation class or whose source assures their identity and are approved by the certifying agency.

Evidence of eligibility for each seedlot used within the isolation shall be an official certified Foundation tag or label obtained from a bag containing such seed, or other such approved documents described in the General Standards.

3. Land Requirements

Seed fields shall not be planted on land that has grown corn of another color or endosperm type during the preceding crop season.

¹ For the purpose of certification, the propagation of male sterile inbred lines shall be subject to these same requirements and standards.

4. Field Inspection

The current guidelines for field inspection procedures are available upon request from the Association. Each Foundation single cross within a separate field or isolation shall be inspected by a representative of the Association as follows:

A. Before pollination

At least one inspection for purity of plant type. Isolation distance from contaminating sources of pollen is also checked and recorded at this time.

B. During pollination

At least three inspections shall be made. Additional inspections may be required at the discretion of the certifying agency. Inspections shall be made without previous notice to the applicant.

5. Field Standards

A. Unit of Certification and Pollen Parent Requirements

- 1) All crossing blocks of a specific pedigree within an isolation shall be inspected for certification. The maximum distance a female (seed) parent may be from a male (pollen) parent within a crossing block is nine feet.
- 2) More than one Foundation single cross may be produced within an isolation provided the same male (pollen) parent is used for all crosses. The areas occupied by each different single cross shall be clearly labeled with the field name and variety as it appears on the field application.

B. Isolation from Contaminating Pollen

- 1) A specific Foundation single cross shall be located so the female (seed) parent is not less than 660 feet from any other corn, except male (pollen) parent rows and other female (seed) parents in the same isolated field.
- 2) Differential maturity dates are permitted for modifying the isolation distance for Foundation single crosses and male sterile inbred line increases provided there are no receptive silks in the female (seed) parent at the same time pollen is being shed in the contaminating field.
- 3) Corrections for improper isolation shall be made by the applicant by one of the following methods or its equivalent.
 - a) By completely destroying or by detasseling the contaminating corn before it sheds pollen, or before silks appear in the female (seed) parent being inspected, or
 - b) By completely destroying, before the final field inspection, the seed-producing plants which are improperly isolated from the contaminating corn.
 - c) By removing the improperly isolated area before the certified seed field is harvested. Additional inspection to verify this will be required.

C. Roguing Off-type and Volunteer Plants

- 1) Definitely off-type plants in either parent of a Foundation single cross shall be completely destroyed so that suckers will not develop. Any plants showing definite hybrid vigor or a definitely different type from the inbred being inspected shall be classified as definitely off-type.
- 2) Female (Seed) and Male (Pollen) Parents - An isolation in which more than 0.1% (1 per 1,000) of definitely off-type plants in either the male (pollen) or female (seed) parent have shed pollen, at a time when more than 5.0% of the female (seed) parent plants have apparently receptive silks, will be disqualified for certification. (See below Section D.4., Pollen Control)

- 3) Female (Seed) Parent - An isolation in which more than 0.1% (1 per 1,000) of definitely off-type plants are present in the female (seed) parent at the final inspection will be disqualified for certification.

D. Detasseling and Pollen Control

The following requirements shall apply when 5% or more of the female (seed) parent plants within an isolation have receptive silks.

- 1) An isolation of a specific Foundation single cross shall be disqualified for certification if at one inspection more than 0.5% of the female (seed) parent plants have shed or are shedding pollen or if the total number having shed pollen for any three inspections on different dates exceeds 1%.
- 2) When more than one Foundation single cross is being grown in the same isolation and the female (seed) parent of one or more of them is shedding pollen in excess of 0.1% (1:1000), all female (seed) parents within the isolation have 5% or more apparently receptive silks at this time will be disqualified unless adequately isolated from the shedding female (seed) parent.
- 3) Male Sterile Inbreds - Any plant shedding pollen in male sterile rows shall be completely destroyed by the applicant to eliminate the possibility of its producing seed. Detasseling (cutting or pulling) shall be acceptable to control plants shedding pollen when the male (pollen) parent is a fertility-restoring line.
- 4) Any tassel or portion of tassel shall be counted as shedding pollen when two inches or more of the central stem, or the side branches, or a combination of the two have the anthers extended from the glumes and are shedding pollen.
- 5) Applicants must provide their cutting/detasseling schedule to NCIA no later than the day before the activity begins. Field inspectors will monitor silking percentage, pollen shedding, and cutting/detasseling effectiveness relative to this schedule. Failure to provide this information in a timely manner may result in field rejection.

6. Seed Sampling and Testing

- A. Post control genetic purity testing. The final certification of seed lots is contingent upon the determination of percent hybridization and varietal purity using the following methods. The total purity standard for either method is 98% or greater. Testing will be conducted by NCIA or an approved 3rd party organization.
 - 1) Biochemical methods by lot and/or grade size
 - 2) Field growouts by lot and/or grade size
- B. A conditioned representative sample of at least two pounds from each certifiable grade size within a seedlot shall be submitted to the Association laboratory for determination of germination and purity for certification and labeling purposes.

7. Seed Quality Standards

A. Genetic

Quality Standards	Foundation Seed Class
Other varieties of a different color or texture (max %)	0.5

B. Mechanical

Quality Factors	Foundation Seed Class
Pure seed (min %)	98.0
TOTAL other crop seeds—including other varieties (max %)	0.5

TOTAL weed seed (max %)	None
TOTAL inert matter (max %)	1.0
Germination (min %)	N.S.
Moisture (max %)	14.0

N.S. : No Standard

FOUNDATION INBRED CORN

1. Seed Class Requirements

- A. Only the certified Foundation class is recognized for seed of eligible inbreds produced according to these Standards. For the purpose of certification, the propagation of male sterile inbred lines shall be subject to the same requirements and standards as Foundation Single Crosses.
- B. Foundation inbred corn seed shall mean seed to be planted for the production of certified Foundation single cross seed or Certified hybrid corn seed.
- C. An inbred line to be considered for certification shall be a relatively true breeding strain resulting from controlled self-fertilization, or back-crossing to a recurrent parent with selection or its equivalent.

An inbred line to be considered eligible for certification shall be required to meet the provisions stated in the General Standards.

D. Addition of Specific Genetic Factors to a Line

- 1) When a specific genetic factor(s) is added to an inbred line, the line shall be backcrossed to its recurrent parent at least five generations. The line shall be homozygous for the specific genetic factor(s) except for the pollen restoration factor(s) and the genetic male sterile maintainer line.
- 2) For a recovered pollen restorer inbred line, selection shall be relative to a specific cytoplasmic male sterile source.
- 3) Proof of the genetic nature of a recovered line shall be supplied by the originator.
- 4) A genetic male sterile maintainer line, consisting of duplicate-deficient and male-sterile in an approximate 1:1 ratio, shall be no more than two generations removed from Breeder seed. The maintainer shall be designated according to generation as:
 - a) **Breeder Seed** – The hand pollinated selfed seed from a known duplicate-deficient plant heterozygous at a particular male sterile locus.
 - b) **Foundation I Seed** – The product of random-mating among fertile plants arising from Breeder seed.
 - c) **Foundation II Seed** – The product of random-mating among fertile plants arising from Foundation I seed.
- 5) A genetic male sterile line shall be a strain homozygous for a particular male sterile recessive allele.
- 6) The genetic male sterile lines shall be identified as to the recessive genes they carry (e.g., B37 ms-1, N26ms-10.) The maintainer lines shall be identified not only for the male sterile gene for which it is heterozygous, but for the specific translocation from which it was derived (e.g., B37 Mt-1 ms-1, N28 Mt-1 ms-10.)

E. Inbred lines increased by hand pollination shall be eligible for certification.

F. An inbred used as a pollinator in a Certified Hybrid or Foundation single cross isolation may be certified, provided all the female (seed) parents within the isolation are inspected and meet all field requirements for certification.

2. Eligibility of Seedstocks

All seedstocks used in the production of Foundation inbred corn seed shall be of the certified Foundation class or whose source assures their identity and are approved by the certifying agency.

Evidence of eligibility for each seedlot used with the inbred isolation shall be an official certified Foundation tag or label obtained from a bag containing such seed, or other such approved documents described in the General Standards.

3. Land Requirements

Seed fields shall not be planted on land that has grown corn of another color or endosperm type during the preceding crop season.

4. Field Inspection

The current guidelines for field inspection procedures are available upon request from the Association. Each Foundation inbred within a separate field or isolation shall be inspected by a representative of the Association as follows:

A. Before pollination

At least one inspection shall be made for purity of plant type. Isolation distance from contaminating sources of pollen is also checked and recorded at this time.

B. During pollination

At least three inspections shall be made. Additional inspections may be required at the discretion of the certifying agency. Inspections shall be made without previous notice to the applicant.

5. Field Standards

A. Unit of Certification

All rows of a specific inbred within an isolation shall be inspected for certification. At the discretion of the applicant and with the approval of the Association, only a specific portion of an inspected isolation may be approved for certification of seed quality, provided the remainder is harvested and maintained separately from the certifiable seed.

B. Isolation from Contaminating Pollen

- 1) A specific Foundation inbred shall be so located that it is not less than 660 feet from any other corn of the same color or texture, or not less than 1320 feet from corn of other color or texture, except when the inbred is grown as a male (pollinator) in a Certified hybrid or Foundation single cross production field. In this case, all female (seed) parent(s) in the same isolation shall be inspected and meet all field requirements for certification.
 - a) Differential maturity dates are permitted for modifying isolation distances provided there are no receptive silks in the female (seed) parent at the same time pollen is being shed in the contaminating field.
 - b) Foundation inbred production fields of dent sterile popcorn need not be isolated from yellow dent field corn.
 - c) No isolation is required for the production of hand-pollinated seed.
- 2) Corrections for improper isolation shall be made by the applicant by one of the following methods or its equivalent:
 - a) By completely destroying or by detasseling the contaminating corn before it sheds pollen or before silks appear in the inbred being inspected.
 - b) By completely destroying, before the final field inspection, the plants which are improperly isolated from the contaminating corn.
 - c) By removing the improperly isolated area before the certified seed field is harvested. Additional inspection to verify this will be required.

C. Roguing Off-type and Volunteer Plants

- 1) Definitely off-type plants shall be completely destroyed so that suckers will not develop. Any plants showing definite hybrid vigor or a definitely different type from the inbred being inspected shall be classified as definitely off-type.
- 2) An isolation in which more than 0.1% (1:1000) of definitely off-type plants have shed pollen, at the same time more than 5.0% of the plants have apparently receptive silks, shall be disqualified for certification.
- 3) Any tassel and portions of tassel of off-type plants shall be counted as shedding pollen when two inches or more of the central stem or the side branches or a combination of the two have the anthers extended from the glumes and are shedding pollen.

6. Seed Sampling and Testing

- A. Post control genetic purity testing. The final certification of seed lot is contingent upon the determination of varietal purity using the following methods. The total purity standard for either method is 98% or greater. Testing will be conducted by NCIA or an approved 3rd party organization.
- 1) Biochemical methods by lot and/or grade size
 - 2) Field growouts by lot and/or grade size
- B. A conditioned representative sample of at least two pounds from each certifiable grade size within a seedlot shall be submitted to the Association laboratory for determination of germination and purity for certification and labeling purposes.

7. Seed Quality Standards

A. Genetic

Quality Standards	Foundation Seed Class
Other varieties of a different color or texture (max %)	0.5

B. Mechanical

Quality Factors	Foundation Seed Class
Pure seed (min %)	98.0
TOTAL other crop seeds—including other varieties (max %)	0.5
TOTAL weed seed (max %)	None
TOTAL inert matter (max %)	1.0
Germination (min %)	N.S.
Moisture (max %)	14.0

N.S.: No Standard

GRASS

1. Seed Class Requirements

- A. Limitations on the length (age) of stand or the classes of certified seed through which a given variety may be multiplied for both inside and outside its region of adaptation or in regard to other production practices affecting genetic or mechanical purity or other seed quality factors shall be those specified by the originator of the variety or designee.
- B. All classes of certified seed may be produced from vegetatively propagated planting stock in accordance with the procedure specified by the originator; but in such cases, the standards for vegetatively propagated grasses shall apply.
- C. Application to establish eligibility of a field and seed source shall be made within one year of seeding.

2. Land Requirements

- A. A field to be eligible for the production of Foundation seed shall not have grown or been seeded to the same or any objectionable species during the previous five years.
- B. A field to be eligible for the production of Registered seed (if permitted for the variety) shall not have grown or been seeded to the same or any objectionable species during the previous three years except when seeded with Foundation, Registered, or Certified seed of the same variety.
- C. A field to be eligible for the production of Certified seed shall not have grown or been seeded to the same or any objectionable species during the previous two years, except when seeded with Foundation, Registered, or Certified seed of the same variety.
- D. As an additional precaution, no amendments or materials which could be a source of contaminating seeds, such as certain animal wastes, shall be applied during the establishment and productive life of the stand.
- E. Any eligible field which has not been inspected for certification purposes for two or more consecutive growing seasons shall not be accepted for certification unless approved by the Association office.

3. Field Inspection

- A. As conditions require a seedling inspection shall be made to check for volunteer plants, isolation, potential weed problems, and other quality factors in production at the discretion of the certifying agency.
- B. After establishment, each eligible field shall be inspected each year certifiable seed is to be harvested. For most species and production sites, seed harvest will be possible generally no later than two years after seeding.
- C. Each field shall be inspected at least once after heading and prior to harvest when varietal purity, other grasses, objectionable weeds, and other quality factors can best be identified. Additional inspections may be required at the discretion of the certifying agency.

4. Field Standards

- A. Isolation requirements

A strip at least 5 feet in width and which is mowed, uncropped, or planted to some crop other than the kind in question shall constitute a field boundary.

Each field eligible for the production of Foundation, Registered, or Certified seed shall be isolated from any other strain of the same species or of compatible species or fields of the same strain which do not meet varietal purity requirements for certification and that are in bloom during the same time as follows.

Types of Reproduction	Border to be Removed ² (feet)	Minimum Isolation Distance ³ (feet)		
		Foundation	Registered	Certified
All cross pollinated species	0	900	300	165 ⁴
	9	600	225	100
	15	450	150	75
Strains at least 80% apomictic	0	60	30	15
	9	30	15	15
Strains at least 95% apomictic and highly self-fertile species	0	60	30	5
	9	30	15	0

¹Apomixis refers to a type of asexual production of seed, as in Kentucky bluegrass.

²When a border is required to be removed; such removal shall not occur until pollination of the crop to be certified is completed. The removal of border is permitted only if a field is more than five acres.

³The distance required for isolation between different classes of seed of the same variety may be reduced to 25% of the distance shown in the above table.

⁴No isolation distance is required for the certified seed class other than the boundary for mechanical separation for fields planted to cross-pollinated species and varieties less than 95% apomictic when there is an isolation zone of less than 10% of the entire field area. The isolation zone is calculated by multiplying the length of the common border with contaminating fields by the average width of the certifiable field found within the basic 165 feet isolation requirement. The use of the isolation zone is permitted only if a field is more than five acres.

B. Variety Purity and Other Quality Factors

Factors	Maximum Permitted in Each Class (Ratio of Plants)		
	Foundation	Registered	Certified
Other varieties and off-types ¹	0.05% (1:2000)	0.1% (1:1000)	0.3% (3:1000)
Other grasses (inseparable)	0.05% (1:2000)	0.05% (1:2000)	0.2% (1:500)
Primary and Prohibited noxious weeds	None	None	None
Restricted noxious and objectionable weeds ²	Lack of evidence of control of weed seed production		

¹Other varieties shall be considered to include plants that can be differentiated from the variety that is being grown for seed.

²A field containing an excessive (uncontrolled) population of weeds designated as Restricted or objectionable (for the species being grown), such as downy brome, hairy chess, cheat, docks, quackgrass, or giant foxtail shall be disqualified from certification.

5. Seed Sampling and Testing

A. A conditioned representative sample, at least equal in size to the amount suggested below for the applicable grass species, shall be submitted to the Association laboratory for determination of germination and purity for certification and labeling purposes.

B. Suggested representative sample sizes.

1) Non-chaffy seeded grass species

- a) 1/8 pound – Kentucky bluegrass and sand lovegrass
- b) 1/4 pound – Reed canarygrass, chewings fescue, and orchardgrass
- c) 1/3 pound – Perennial ryegrass and tall fescue
- d) 1/2 pound – Smooth brome, crested wheatgrass, switchgrass, and Russian wildrye
- e) 1 pound – All wheatgrasses except crested

2) Chaffy seeded grass species

- a) 1/4 pound – Prairie sandreed
- b) 1/2 pound – Big bluestem, little bluestem, indiangrass, and sideoats grama
- c) 3/4 pound – Sand bluestem

3) For other species not listed, contact the Association laboratory.

6. Seed Quality Standards for Non-chaffy Seeded Forage and Turf Grasses

Species/Seed Classes	Type of Reproduction ¹	% Pure Seed (min)	OTHER CROPS						% Inert Matter	WEEDS							Total Viable ⁴
			% Total Other Crop Seed (max)		% Other Varieties (max)		% Other Kinds of Crops (max)			% Total Weed Seed (max)		Primary & Prohibited Noxious Weeds ²	Seed/lb of Restricted Noxious Weeds (max)		% Annual Brome ³ (max)		
			F/R	C	F/R	C	F/R	C		F/R	C	F/R/C	F/R	C	F/R	C	
Bluegrass, Kentucky	A	95	0.1	2.0	0.1	2.0	0.1	0.5	5.0	0.10	0.3	None	45	90	0.15	0.3	80
Brome, Smooth	C	90	0.2	1.0	0.1	1.0	0.2	1.0	10.0	0.25	0.5	None	9	45	0.15	0.5	85
Buffalograss	C	95	0.2	1.0	0.1	1.0	0.2	1.0	5.0	0.25	0.5	None	0	6	0.15	0.5	70
Canarygrass, Reed	C	96	0.2	1.0	0.1	1.0	0.2	1.0	4.0	0.25	0.5	None	25	50	0.15	0.5	75
Fescue, Chewings	C	95	0.1	1.0	0.1	1.0	0.1	0.5	5.0	0.10	0.3	None	15	45	0.15	0.3	85
Red	C	98	0.1	1.0	0.1	1.0	0.1	0.5	2.0	0.10	0.3	None	9	45	0.15	0.3	85
Tall	C	98	0.1	1.0	0.1	1.0	0.1	0.5	2.0	0.10	0.3	None	9	45	0.15	0.3	85
Lovegrass, Sand	S	97	0.2	1.0	0.1	1.0	0.2	1.0	3.0	0.50	1.0	None	45	90	--	--	80
Needlegrass, Green	S	75	0.2	1.0	0.1	1.0	0.2	1.0	25.0	0.25	0.5	None	9	45	0.15	0.5	80
Orchardgrass	C	90	0.2	1.0	0.1	1.0	0.2	1.0	10.0	0.25	0.5	None	15	45	0.15	0.4	80
Ricegrass, Indian	C	85	0.5	1.0	0.1	2.0	0.1	0.25	15.0	0.25	0.5	None	9	45	0.15	0.4	80
Ryegrass, Perennial Turf-type	C	97	0.1	3.0	0.1	3.0	0.1	0.5	3.0	0.10	0.3	None	9	45	0.15	0.5	85
Switchgrass	C	95	0.2	1.0	0.1	1.0	0.2	1.0	5.0	0.50	1.0	None	15	45	--	--	75
Wheatgrass, Bluebunch	C	90	0.2	1.0	0.1	1.0	0.2	1.0	10.0	0.25	0.5	None	9	45	0.15	0.4	80
Crested/Fairway	C	90	0.2	1.0	0.1	1.0	0.2	1.0	10.0	0.25	0.5	None	9	45	0.15	0.4	80
Intermediate	C	90	0.2	1.0	0.1	1.0	0.2	1.0	10.0	0.25	0.5	None	9	45	0.15	0.4	80
Pubescent	C	90	0.2	1.0	0.1	1.0	0.2	1.0	10.0	0.25	0.5	None	9	45	0.15	0.4	80
Slender	S	85	0.2	1.0	0.1	1.0	0.2	1.0	15.0	0.25	0.5	None	9	45	0.15	0.4	80
Streambank	C	90	0.2	1.0	0.1	1.0	0.2	1.0	10.0	0.25	0.5	None	9	45	0.15	0.4	80
Tall	C	90	0.2	1.0	0.1	1.0	0.2	1.0	10.0	0.25	0.5	None	9	45	0.15	0.4	80
Thickspike ⁵	C	90	0.2	1.0	0.1	1.0	0.2 ⁵	1.0 ⁵	10.0	0.25	0.5	None	9	45	0.15	0.4	80
Western	C	85	0.2	1.0	0.1	1.0	0.2	1.0	15.0	0.25	0.5	None	9	45	0.15	0.4	70
Wildrye, Canada	S	85	0.2	1.0	0.1	1.0	0.2	1.0	15.0	0.25	0.5	None	9	45	0.15	0.4	70
Russian	C	90	0.2	1.0	0.1	1.0	0.2	1.0	10.0	0.25	0.5	None	9	45	0.15	0.4	80

¹A=strains at least 80% apomictic, C=cross-pollinated species, S=highly self-fertile species.

²Prohibited noxious weeds in non-chaffy grasses shall include the species listed in the General Standards plus dodder, horsenettle, perennial sowthistle, quackgrass, white top, and wild garlic.

³Annual bromes include Japanese chess, hairy chess, downy brome, and cheat.

⁴Includes dormant seed.

⁵Foundation and Registered seed of thickspike wheatgrass may contain up to 1% slender wheatgrass, seed of the Certified class may contain up to 15% slender wheatgrass.

7. Seed Quality Standards for Chaffy Seeded Forage Grasses

Species and Seed Class	Type of Reproduction ¹	Pure Live Seed Index ² (min)	Other Crops				Weeds		
			% Total Other Crop Seeds (max)	% Other Varieties (max)	% Other Forage Grasses (max)	% Other Kinds of Crops (max)	% Total Weed Seed (max)	Seeds/lb of Primary and Prohibited Noxious Weeds (max)	Seeds/lb of Restricted Noxious Weeds (max)
FOUNDATION:									
Bluestem, Big	C	25	0.2	0.1	0.1	0.1	1.0	None	9
Bluestem, Little	C	12	0.2	0.1	0.1	0.1	1.0	None	9
Bluestem, Sand	C	20	0.2	0.1	0.1	0.1	1.0	None	9
Foxtail, Creeping	C	60	0.2	0.1	0.1	0.1	1.0	None	9
Grama, Blue	C	24	0.2	0.1	0.1	0.1	1.0	None	9
Grama, Sideoats ³	C	30	0.2	0.1	0.1	0.1	1.0	None	9
Indiangrass	C	25	0.2	0.1	0.1	0.1	1.0	None	9
Prairie Sandreed	C	30	0.2	0.1	0.1	0.1	1.0	None	9
REGISTERED:									
Bluestem, Big	C	25	0.2	1.0	0.1	0.1	1.0	None	9
Bluestem, Little	C	12	0.2	1.0	0.1	0.1	1.0	None	9
Bluestem, Sand	C	20	0.2	1.0	0.1	0.1	1.0	None	9
Foxtail, Creeping	C	60	0.2	1.0	0.1	0.1	1.0	None	9
Grama, Blue	C	24	0.2	1.0	0.1	0.1	1.0	None	9
Grama, Sideoats ³	C	30	0.2	1.0	0.1	0.1	1.0	None	9
Indiangrass	C	25	0.2	1.0	0.1	0.1	1.0	None	9
Prairie Sandreed	C	30	0.2	1.0	0.1	0.1	1.0	None	9
CERTIFIED:									
Bluestem, Big	C	25	2.0	2.0	0.5	0.5	2.0	None	45
Bluestem, Little	C	12	2.0	2.0	0.5	0.5	2.0	None	45
Bluestem, Sand	C	20	2.0	2.0	0.5	0.5	2.0	None	45
Foxtail, Creeping	C	60	2.0	2.0	0.5	0.5	2.0	None	45
Grama, Blue	C	24	2.0	2.0	0.5	0.5	2.0	None	45
Grama, Sideoats ³	C	30	2.0	2.0	0.5	0.5	2.0	None	45
Indiangrass	C	25	2.0	2.0	0.5	0.5	2.0	None	45
Prairie Sandreed	C	30	2.0	2.0	0.5	0.5	2.0	None	45

¹C=Cross-pollinated species.

²When pure live seed index (PLS) is used as a basis for certification, the analysis labels shall bear the percent germination, dormant seed, and purity or its equivalent as permitted by the current Nebraska Seed Law.

³In determining germination for sideoats grama, the seed unit shall be defined as a spike containing one or more caryopses.

MILLET

SELF-POLLINATED

1. Land Requirements

A millet crop shall be planted on land on which the last crop grown was of another kind or was planted to a certified crop of the same variety of an equal or higher seed class.

2. Field Inspection

Each field shall be inspected by a representative of the Association at least once after the seed begins to assume its mature color and when varietal mixtures and other quality factors can best be determined. Additional inspections may be required at the discretion of the certifying agency.

3. Field Standards

A. A field shall be separated by a strip of ground adequate to prevent mechanical mixtures. The strip may be mowed, uncropped, or planted to some crop other than the kind being certified.

B. Varietal Purity and Other Quality Factors

Factors	Maximum Permitted in Each Class (Ratio of Plants)		
	Foundation	Registered	Certified
Other varieties ¹	1:3000	1:2000	1:1000
Inseparable other crops ²	1:10,000	1:10,000	1:2000
Wild proso millet	None	None	None

¹Other varieties and off-types shall include those plants that can be differentiated from the variety being inspected as described by the originator.

²Inseparable other crops shall include crop plants, the seed of which cannot be thoroughly removed from the seed crop by usual methods of conditioning.

4. Seed Quality Standards

Factors	Standards for Each Class		
	Foundation	Registered	Certified
Pure seed (min %)	98.0	98.0	98.0
Inert matter (max %)	2.0	2.0	2.0
Total other crop seed (max %)	0.01	0.02	0.04
Other varieties ¹ (max %)	0.005	0.01	0.02
Other kinds (max %)	0.005	0.01	0.02
Total weed seed (max %)	0.05	0.10	0.10
Primary and Prohibited noxious	None	None	None
Wild proso millet	None	None	None
Wild buckwheat (max seeds/lb)	2	4	8
Germination (min %)	80	80	80

¹Other varieties and off-types shall include those seeds that can be differentiated from the variety being analyzed as described by the originator.

FIELD PEAS

1. Land Requirements

A field shall be planted on land on which the last crop grown was of another kind or was planted to a certified crop of the same variety of an equal or higher seed class.

2. Field Inspection

Each field shall be inspected by a representative of the NCIA at least once prior to harvest. Additional inspections may be required at the discretion of the certifying agency.

3. Field Standards

- A. A certifiable field shall be isolated from any other variety or uncertified seed of the same variety by a distance adequate to prevent mechanical mixture.
- B. Varietal Purity and Other Quality Factors

Factors	Maximum Permitted in Each Class (Ratio of Plants)		
	Foundation	Registered	Certified
Other varieties ¹	1:2000	1:1000	1:500
Other crops inseparable ²	None	None	None
Diseases ³			
Mosaic (common)	None	1:200	1:100
Anthraxnose	None	1:10,000	1:5000
Bacterial Blights	None	None	1:10,000
Wilt	None	1:10,000	1:5000

¹Other varieties and off-types shall include plants that can be differentiated from the variety being inspected as described by the originator.

²Includes any other crops of which the seed cannot be thoroughly removed by the usual methods of conditioning.

³ Further testing to confirm field diagnosis will be conducted at the discretion of the certifying agency.

4. Seed Quality Standards

Factors	Standards for Each Class		
	Foundation	Registered	Certified
Pure seed (min %)	98.0	98.0	98.0
Inert matter (max %)	2.0	2.0	2.0
Total other crop seed (max %)	0.05	0.1	0.2
Other varieties ¹ (max %)	0.05	0.1	0.2
Other kinds (max %)	None	0.05	0.1
Total weed seed (max %)	None	0.05	0.1
Primary and Prohibited noxious	None	None	None
Restricted noxious (max/lb)	1	1	1
Germination + hard seed (min %)	80	80	80

¹Other varieties and off-types shall include those seeds that can be differentiated from the variety being analyzed as described by the originator.

SMALL GRAINS

SELF-POLLINATED

1. Land Requirements

A field shall be planted on land on which the last crop grown was of another kind or was planted to a certified crop of the same variety of an equal or higher seed class.

2. Field Inspection

Each field shall be inspected by a representative of the Association at least once after the plants are fully headed, and before harvest, when varietal mixtures and other quality factors can best be determined. Additional inspections may be required at the discretion of the certifying agency.

3. Field Standards

A. Isolation Requirements

- 1) A field producing any class of certified seed of a specific crop kind shall be separated from fields producing inseparable crop kinds or from fields of the same variety by a distance adequate to prevent mechanical mixing.
- 2) Wheat, Oats, Barley, Triticale – A field producing any class of certified seed of a specific crop kind shall be separated from fields producing other varieties of the same kind by a minimum distance of 10 feet. If the separation is made after pollination begins between different varieties to be certified a 20-foot-wide strip equally divided between the two varieties must be established before harvesting the fields.
- 3) Rye – A field producing any class of certified seed of a specific crop kind must be isolated by at least 660 feet from fields of any other variety or fields of the same variety that do not meet the varietal purity requirements of the class of seed inspected.

B. Varietal Purity and Other Quality Factors

Factors	Maximum Permitted in Each Class (Ratio of Plants)		
	Foundation	Registered	Certified
Other varieties ¹	0.02% (1:5000)	0.05% (1:2000)	0.1% (1:1000)
Inseparable other crops ²	0.01% (1:10,000)	0.01% (1:10,000)	0.05% (1:2000)
Objectionable Other Crops and Weeds ³	None	--	--
Loose Smut or Bunt ⁴	recommended	recommended	recommended

¹Other varieties shall include plants that can be differentiated from the variety that is being inspected as described by the originator.

²Inseparable other crops shall include crop plants the seed of which cannot be thoroughly removed by the usual methods of conditioning. Both winter and spring types of the same crop shall be considered inseparable.

³The seed, of any certified class, produced from fields found to contain such factors as jointed goatgrass or rye in other small grains shall be subject to special handling and conditioning procedures as directed by the Association.

⁴If loose smut or other seed-borne diseases are noted during field inspection seed treatment is recommended.

4. Seed Quality Standards

FACTORS												
Class/Crop	% Germ (min)	% Pure Seed (min)	% Inert Matter (max)	Other Crops				Weed Seed				
				% Other varieties ¹ (max)	% Other kinds of crops (max)	Rye/Triticale (max)	Other small grains (max)	Seeds/lb of primary & prohibited noxious weeds (max)	Seeds/lb of restricted noxious weeds (max)	Seeds/lb of wild buckwheat ² (max)	Seeds/lb of jointed goatgrass ² (max)	Seeds/lb of total weed seed (max)
FOUNDATION												
Wheat	85	98	2	0.05	0.01	None	None	None	1	2	None	5
Oats	90	98	2	0.20	0.01	—	None	None	1	2	None	5
Barley	85	98	2	0.05	0.01	—	None	None	1	2	None	5
Rye	80	98	2	0.05	0.01	—	None	None	1	2	None	5
Triticale	80	98	2	0.05	0.01	None	None	None	1	2	None	5
REGISTERED												
Wheat	85	98	2	0.1	0.02	None	2/lb.	None	1	4	0	5
Oats	90	98	2	0.3	0.02	—	2/lb.	None	1	4	0	5
Barley	85	98	2	0.1	0.02	—	2/lb.	None	1	4	0	5
Rye	80	98	2	0.1	0.02	—	2/lb.	None	1	4	0	5
Triticale	80	98	2	0.1	0.02	None	2/lb.	None	1	4	0	5
CERTIFIED												
Wheat	85	98	2	0.2	0.05	None	5/lb.	None	1	8	0	10
Oats	90	98	2	0.5	0.05	—	5/lb.	None	1	8	0	10
Barley	85	98	2	0.2	0.05	—	5/lb.	None	1	8	0	10
Rye	80	98	2	0.2	0.05	—	5/lb.	None	1	8	0	10
Triticale	80	98	2	0.2	0.05	None	5/lb.	None	1	8	0	10

¹Other varieties shall include seeds that can be differentiated from the variety that is being analyzed, as described by the originator.

²The seed lots produced from fields found to contain such factors as jointed goatgrass, wild buckwheat, or hairy vetch in any small grain or dock in oats shall be subject to special handling, sampling, conditioning, and testing procedures as directed by the Association.

SOYBEANS

1. Land Requirements

A field shall be planted on land on which the last crop grown was of another kind or was planted to a certified crop of the same variety of an equal or higher seed class.

2. Field Inspection

Each field shall be inspected by a representative of the NCIA at least once prior to harvest. Additional inspections may be required at the discretion of the certifying agency.

3. Field Standards

A certifiable field shall be isolated from any other soybean variety or uncertified seed of the same variety by a distance adequate to prevent mechanical mixture.

Factors	Maximum Permitted in Each Class (Ratio of Plants)		
	Foundation	Registered	Certified
Other varieties ¹	0.1% (1:1000)	0.2% (2:1000)	0.5% (5:1000)
Corn plants with developed seed and objectionable weeds ²	None	None	None

¹Other varieties shall include plants that can be differentiated from the variety that is being inspected, as described by the originator.

²The seed produced from fields found to contain corn plants with developed seeds, black nightshade, cocklebur, or other objectionable weeds shall be subject to special handling and conditioning procedures as directed by the certifying agency.

4. Seed Quality Standards

Factors	Standards for Each Class		
	Foundation	Registered	Certified
Pure seed (min %)	98.0	98.0	98.0
Inert matter (max %)	2.0	2.0	2.0
Total other crop seed (max %)	0.20	0.30	0.60
Other varieties ¹ (max %)	0.10	0.20	0.50
Other kinds (max/lb)	None	3	3
Corn kernels (max)	None	None	None
Total weed seed ² (max/lb)	5	5	5
Primary and Prohibited noxious	None	None	None
Restricted noxious (max/lb)	1	1	1
Cocklebur or black nightshade ³	None	None	None
Germination (min %)	80	80	80

¹Other varieties shall include seeds that can be differentiated from the variety that is being analyzed, as described by the originator. Seeds with off-colored coats or hila due to environmental conditions during production shall not be considered other varieties.

²The percent of total weed seed present shall not exceed 0.05% for any certified seed class.

³The seedlots produced from fields found to contain corn plants with developed seed, black nightshade, cocklebur, or other objectionable weeds shall be subject to special handling, sampling, conditioning, and testing procedures as directed by the certifying agency.