

# **Seed Certification Standards**

## **Specific Crop Standards**

### **Alfalfa and Trefoil**

#### **I. Classes of Seed**

##### **A. Foundation Seed**

Fields producing Foundation seed shall be on land on which no alfalfa was grown or planted during four years prior to the one in which the present stand was planted.

##### **B. Registered Seed**

Fields producing Registered seed shall be planted with Foundation seed on land on which no alfalfa was grown or planted during the three years prior to the one in which the present stand was planted.

##### **C. Certified Seed**

Fields producing Certified seed shall be planted with Foundation or Registered seed on land on which no alfalfa was grown or planted during the year prior to the one in which the present stand was planted.

#### **II. Handling of the Crop Prior to Inspection**

Rouging of off-type plants, sweet clover and dodder will be required prior to official inspection.

#### **III. Field Inspections**

Each year that a seed crop is produced for certification, at least one official inspection shall be made prior to harvest. The inspection shall be made when the crop is in bloom.

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

A. A portion of a field may be Certified. A clear line of demarcation shall be established between the certified and non-certified portion of the field.

B. Volunteer plants shall be cause for rejection of a seed field.

C. As an additional precaution, no manure or other contaminating materials may be applied during the establishment and productive period of the stand.

Factor	Foundation	Registered	Certified
Other varieties*	.10%	.25%	1.00%
Other crops (inseparable sweet clover)	None	.25%	.50%
Isolation** : Fields less than 5 acres	900'	450'	165'
Fields 5 acres or more	600'	300'	165'

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

\*\* Isolation: A field producing Foundation, Registered or Certified seed must have minimum isolation distances from fields of any other variety or fields of the same variety that do not meet the varietal purity requirements for certification as shown in the table. Isolation distances between Certified classes of the same variety may be reduced to ten feet regardless of class or size of the field.

#### V. Alfalfa Land Requirements and Length of Stand Limitations

Land must have been free of all alfalfa for at least four years prior to seeding to produce Foundation, three years for Registered, one year for Certified. Length of stand limitations on a variety for both inside and outside its region of adaptation (AOSCA Genetic and Crop Standards) shall be specified by the originator or designee. Seed production outside the region of adaptation shall not exceed six years unless otherwise specified. Alfalfa fields not inspected for certification two or more years are ineligible for certification.

#### VI. Seed Samples and Laboratory Analysis

An official laboratory analysis shall be made of a representative sample of each lot of seed.

#### VII. Seed Standards

Factor	Foundation	Registered	Certified
Pure seed (minimum)	99.00%	99.00%	99.00%
Inert (maximum)	1.00%	1.00%	1.00%
Total other crop (maximum)	0.20%	0.35%	1.00%
Other crop seed (sweet clover)	None	90/lb.	180/lb.
Total weed seed (maximum)	.10%	.20%	.25%
Prohibited weed seed	None	None	None
Restricted weed seed	None	None	*9/lb
Other varieties (maximum)	.10%	.25%	1.00%
Total germination & hard seed (minimum)	80.00%	80.00%	80.00%

\* One restricted noxious weed seed of field pennycress (*Thlaspi arvense*) or wild mustard (*Brassica spp.*) would be allowed in a 50 gram working sample of alfalfa in the Certified class only. No dodder would be allowed in any of the classes of Certified seed.

## **Buckwheat**

### **I. Land Requirements**

A crop of buckwheat will not be eligible for certification if planted on land on which the same kind of crop was grown the year previous unless the previous crop was grown from Certified seed of the same variety.

### **II. Field Inspection**

A. All field inspections of buckwheat will be made in the bloom stage.

B. A field harvested before inspection is made will not be eligible for certification.

### **III. Field Standards**

#### **A. Isolation**

1. At the time of inspection, the field must be separated from fields of other crop kinds by a fence row, natural boundaries or by a strip at least ten feet wide which is either mowed, uncropped or planted to some other separable crop.
2. When it is necessary to remove a strip to obtain proper isolation, a part of the strip to be removed must be cut into the field to be inspected.
3. All buckwheat fields producing Certified seed must be isolated by at least 660 feet from buckwheat fields of any other variety or fields of the same variety that do not meet the varietal purity requirements for certification.

#### **B. Roguing**

1. All roguing must be done before field inspection is made. Rogued plants must not be left in the field to be harvested.
2. Patches of prohibited weeds must be either removed by cutting or must be controlled by other means so that no seed is produced.

#### **C. Specific Requirements**

	<b>Maximum Tolerance</b>		
<b>Factor</b>	<b>Foundation</b>	<b>Registered</b>	<b>Certified</b>
Other varieties*	1:10,000	1:5,000	1:2,000
Inseparable other crop seed	1:10,000	1:7,500	1:5,000
Prohibited weeds**	None	None	None

\*Other varieties shall be considered to include plants that can be differentiated from the variety that is being inspected. However, other varieties shall not include variations which are characteristic of the variety.

\*\* Includes only field bindweed, leafy spurge and Russian knapweed. The tolerance for other prohibited weeds in the field will be determined by the inspector on the basis of stages of development of both the crop and the weed.

#### IV. Seed Standards

<b>Factor</b>	<b>Foundation</b>	<b>Registered</b>	<b>Certified</b>
Pure seed (minimum)	99.00%	99.00%	99.00%
Total weed seed (maximum)	.05%	.05%	.10%
Other varieties*	.01%	.01%	.01%
Other crop seed (maximum)	1 per 2 lbs	1 per lb.	3 per lb.
Inert matter (maximum)**	1.00%	1.00%	1.00%
Prohibited noxious weed seed	None	None	None
Restricted noxious weed seed (maximum)***	1 per 4 lbs	1 per 2 lbs.	2 per lb.
Germination	85.00%	85.00%	85.00%
Moisture (maximum)****	14.00%	14.00%	14.00%

\*Other varieties shall not include variations which are characteristic of the variety.

\*\* Foreign matter other than broken seed shall not exceed 0.2%.

\*\*\* See restricted noxious weeds. Restricted noxious weed seed and rate of occurrence must be listed on the analysis label.

\*\*\*\* Effective through December 31.

## Field Bean

### I. Land Requirements

A. A crop will not be eligible for certification if planted on land that was in any class of field beans the preceding two years or soybeans the preceding year.

B. A field on which bacterial blight has been found will not be eligible to grow certified beans until it has been cropped three cropping seasons to crops other than beans and soybeans.

C. Dry land fields planted in rows closer than 18 inches and irrigated fields planted in rows closer than 24 inches shall not be eligible for certification.

### II. Field Inspections

Three inspections shall be made for off-type and diseased plants by the certifying agency during the growing season.

### III. Field Standards

A. The unit of certification shall be a field, or a portion of a field, separated from any other bean field by a definite boundary not in beans at least ten feet wide.

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

#### C. Specific Requirements

Factor	Maximum Tolerance		
	Foundation	Registered	Certified
Other varieties	None	.05%	.10%
Inseparable other crop seed	None	None	None
Bacterial bean blights & anthracnose	None	None	None
Mosaic	None	.05%	.10%
Wilt (bacterial)	None	.01%	.02%

#### IV. Seed Standards

<b>Factor</b>	<b>Foundation</b>	<b>Registered</b>	<b>Certified</b>
Pure seed (minimum)	99.00%	99.00%	99.00%
Inert matter (maximum)	1.00%	1.00%	1.00%
Other varieties (maximum)	None	.05%	.10%
Other crop seed (maximum)	None	None	None
Badly discolored (maximum)	---	1.00%	1.00%
Noxious weed seed	None	None	None
Common weed seed	None	None	.10%
Germination (minimum)	---	85.00%	85.00%
Bacterial blight infected seed (maximum)*	None	None	None

\* Final certification will be contingent on the results of a seedling blight test. The grower shall be responsible for having a bacterial blight test on the harvested seed of each field of dry edible beans. A seed treatment to reduce surface bacterial contamination of the seed coat is recommended.

#### V. Tags

Each bag of seed sold as Certified must be packed in new bags and bear the official tag or label issued by the South Dakota Crop Improvement Association.

## Field Peas, Chickpeas, and Lentils

### I. Land requirements.

A crop will not be eligible for certification if planted on land that was in any class of the same type/kind of crop the preceding two years or soybeans the preceding year.

### II. Field Inspections

Field inspections on field peas, chickpeas, or lentils shall be made for off-type and diseased plants by the certifying agency during the growing season.

### III. Field Standards

A. The unit of certification shall be a field, or a portion of a field, separated from any field by a definite boundary not in the same crop at least ten feet wide.

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

C. Specific Requirements (chickpeas, lentils).

	Maximum Tolerance		
Factor	Foundation	Registered	Certified
Other varieties*	none	1:5,000	1:2,000
Corn and sunflower plants bearing seed	none	none	none
Prohibited noxious weeds **	none	none	none
Objectionable weeds ***	none	none	none

\*Other varieties shall be considered to include plants that can be differentiated from the variety that is being inspected. However, other varieties shall not include variations which are characteristic of the variety.

\*\* Includes only field bindweed, leafy spurge and Russian knapweed. The tolerance for other prohibited weeds in the field will be determined by the inspector on the basis of stages of development of both the crop and the weed.

\*\*\* Objectionable weeds include nightshade species and cocklebur.

C.1. Specific requirements (Field peas).

	Maximum Tolerance		
Factor	Foundation	Registered	Certified
Other varieties*	none	1:1,000	1:1,000
Other crops (inseparable)	none	none	none
Prohibited noxious weeds **	none	none	none

\*Other varieties shall be considered to include plants that can be differentiated from the variety that is being inspected. However, other varieties shall not include variations which are characteristic of the variety.

\*\* Includes only field bindweed, leafy spurge and Russian knapweed. The tolerance for other prohibited weeds in the field will be determined by the inspector on the basis of stages of development of both the crop and the weed.

#### IV. Seed Standards

<b>Factor</b>	<b>Foundation</b>	<b>Registered</b>	<b>Certified</b>
Pure seed (minimum)	98.00%	98.00%	98.00%
Inert matter (maximum)	2.00%	2.00%	2.00%
Total weed seed (maximum)	5/lb.	5/lb.	5/lb.
Other varieties	None	.01%	.01%
Other crop seed (maximum)	None	1 per lb.	3 per lb.
Noxious or Objectionable weed seed	None	None	None
Germination	85.00%	85.00%	85.00%



## **Grass**

### **I. Land Requirements**

- A. A field to be eligible for the production of Foundation seed must not have grown or been seeded to the same species during the previous five years.
- B. A field to be eligible for the production of Registered or Certified seed must not have grown or been seeded to the same species during the previous year unless the crop was a Certified class of the same variety.
- C. When not specified by the developer or owner of a variety, the certifying agency will determine the length of time the fields will be eligible for certification.
- D. Fields must be rogued prior to harvest to remove off-type plants and other grasses or weeds, the seeds of which cannot be separated by mechanical equipment. Rogued material must be removed from the field if it is sufficiently mature to cause contamination. Exceptionally weedy areas should be removed prior to harvest.

### **II. Field Inspection**

- A. A field inspection must be made each year that a class of Certified seed is to be harvested from the field.
- B. The field will be inspected after the crop is fully headed but before it is cut. The seed from fields harvested before an inspection is made is automatically ineligible for that year.

### **III. Field Standards**

- A. The seed field is the unit for certification. A portion of a field may be accepted for certification if the boundary is well defined. A fence or a strip of ground at least five feet wide which is mowed, uncropped or planted to some crop other than the kind in question constitutes a field boundary.

**B. Isolation**

A grass seed field to be eligible for the production of one of the classes of Certified seed must be isolated from any other strain or strains of the same species in bloom at the same time in accordance with the requirements given in the following table:

<b>MINIMUM ISOLATION DISTANCE* REQUIRED IN (FEET)</b>					
	<b>Symbol</b>	<b>Foundation</b>	<b>Registered</b>	<b>Certified</b>	<b>**Border to be Removed</b>
All cross-pollinated species	C	900	300	165	0
		600	225	100	9
		450	150	75	15
Strains entirely apomictic	A	60	30	15	0
		30	15	15	9
Highly self-fertile species	S	60	30	15	0
		30	15	15	9

\* Isolation between classes of the same variety may be reduced to 25% of the distance otherwise required.

\*\* Area in feet to be removed from border of field after flowering and not used for seed. (Applies only to fields five acres or more).

When it is necessary to remove a strip to provide isolation, this strip may be:

1. Mowed in the contaminating field if it is done before the plants in the seed producing field start blooming.
2. Mowed in the field to be Certified if done after the plants in the seed producing field have bloomed.

**C. Specific Requirements--Field Standards**

	<b>Foundation</b>	<b>Registered</b>	<b>Certified</b>
Other varieties and off-type plants	0.1% (1:1000)	1.0% (1:100)	2.0% (1:50)
Prohibited noxious weed seed	None	None	None
Other crop plants	0.1% (1:1000)	0.5% (1:200)	0.5% (1:200)

#### IV. Seed Standards

Refer below for specific seed standards for the non-chaffy grass seed species.

No Prohibited Weed Seed is allowed in any class.

				Foundation & Registered						Certified						
Other varieties (maximum)				.10%						1.00%						
MINIMUM				MAXIMUM												
Species	Type of Reproduction	Percent Pure Seed		Percent Germination All Classes **	Percent Other Crop		Percent Other Grass		Percent Inert Matter		Restricted Weed Seeds		Percent Total Weed Seed		Percent Annual Brome*	
		F & R	C		F & R	C	F & R	C	F & R	C	F & R	C	F & R	C	F & R	C
Bromegrass	C	90	85	80%	1.0	1.0	0.1	2.0	10	15	9/lb.	45/lb.	.25	1.0	.15	0.5
Crested Wheatgrass	C	90	90	80%	0.2	1.0	0.1	2.0	10	10	9/lb.	45/lb.	.25	0.5	.15	0.5
Pubescent Wheatgrass	C	90	90	80%	0.2	1.0	0.1	2.0	10	10	9/lb.	45/lb.	.25	0.5	.15	0.5
Slender Wheatgrass	S	90	90	80%	0.2	1.0	0.1	2.0	10	10	9/lb.	45/lb.	.25	0.5	.15	0.5
Intermediate Wheatgrass	C	90	90	80%	0.2	1.0	0.1	2.0	10	10	9/lb.	45/lb.	.25	0.5	.15	0.5
Tall Wheatgrass	C	90	90	80%	0.2	1.0	0.1	2.0	10	10	9/lb.	45/lb.	.25	0.5	.15	0.5
Western Wheatgrass	C	85	85	60%	0.2	1.0	0.1	2.0	15	15	9/lb.	45/lb.	.25	0.5	.15	0.5
Russian Wildrye	C	90	90	80%	0.2	1.0	0.1	2.0	10	10	9/lb.	45/lb.	.25	0.5	.15	0.5
Creeping Foxtail	C	75	70	80%	0.2	1.0	0.1	2.0	20	20	9/lb.	45/lb.	.25	0.5	.15	0.5
Reed Canarygrass	C	95	90	75%	0.2	1.0	0.1	2.0	5	10	9/lb.	45/lb.	.25	0.5	.15	0.5
Switchgrass	C	90	90	50%	0.2	1.0	0.1	2.0	10	10	9/lb.	45/lb.	.25	1.0	.15	0.5

\*Japanese chess, hairy chess, downy brome, cheat

\*\* Germination % equals normal germination plus dormant seed

#### Chaffy Grass Seed Species

Field and Seed Certification Standards for the chaffy grasses (Bluestem (*Andropogon and Schizachyrium spp.*); buffalograss (*Buchloe spp.*); grama(*Bouteloua spp.*); and Indiangrass (*Sorghastrum nutans*)) will be governed by standards established by the Association of Official Seed Certifying Agencies (AOSCA). Copies of specific standards are available from the Certification office to individual applicants upon request.

## **Hybrid Corn Certification Standards (Commercial)**

### **I. Definitions**

A hybrid is one to be planted for any use except seed production. It may be any of the following:

1. A single cross, i.e., a first generation cross between two inbred lines.
2. A double cross, i.e., the first generation of a cross between two single crosses.
3. A three way cross, i.e., the first generation of a cross between a single cross and an inbred line.
4. A topcross, i.e., the first generation of a cross between an inbred line and an open-pollinated variety, or the first generation of a cross between a single cross and an open-pollinated variety.

### **II. Eligibility of Stock Seed**

1. Only certified Foundation single-cross and Foundation back cross seed planted for the production of double-cross, single cross, three-way cross, or top-cross hybrids are eligible and they must have been officially certified by a recognized seed certifying agency.
2. Inbred line seed planted for the production of single cross or three-way cross hybrid corn seed to be used for grain or forage production or for export must meet requirements for the definition of an inbred line and be certified. Evidence of eligibility shall be a Certification tag taken from the seed planted.
3. Only the class "Certified" is recognized.

### **III. FIELD INSPECTION**

At least three field inspections shall be made in a manner approved by the Certifying Agency during the pollinating period.

### **IV. FIELD STANDARDS**

A. Unit of Certification: Portions of an isolation may be treated as separate fields depending upon such things as: maturity differences, boundaries, waterways, roads, etc., if separate field inspection reports are necessary.

#### **B. Isolation**

1. The plot must be so located so that the seed of the female parent is not less than 660 feet from fields of sweet, pop, or other colored corn. When the contaminating source is other dent corn, the distance can be modified by the size of the crossing field and by the planting of border rows of pollen or male parent. The planting of pollen rows on the sides and ends of fields not adequately isolated from other corn is called buffering. Buffer rows shall have at least an average stand of plants and should be planted at the same time as the rest of the pollen parent. Natural barriers such as hills, trees, buildings or similar objects shall not be accepted in the place of buffers.
2. All buffer rows or any other adjacent hybrid seed parent will be inspected when necessary, at extra cost, to assure proper isolation.
3. The following table indicates the minimum buffer or border rows required for fields of various sizes when located at different distances from other corn:

Hybrid Corn Isolation Table			
<b>Field Size Less than 20 acres*</b> Minimum distance from other corn to the first seed parent plant (in feet)	Minimum Number of Border Rows of Male Parent Required	<b>Field Size 20 acres or more*</b> Minimum Distance from other corn to the first seed parent plant (in feet)	Minimum Number of Border Rows of Male Parent Required
660'	0	660'	0
570'	4	570'	2
490'	6	490'	2
410'	8	410'	4
330'	10	330'	6
270'	12	270'	8
210'	14	210'	10
150'	16	150'	12
90'	18	90'	14
< 90'	24 <sup>1</sup>	< 90'	16 <sup>2</sup>

<sup>1</sup> Minimum of 60 feet including border rows

<sup>2</sup> Minimum of 40 feet including border rows

\* The buffering requirements shall be determined on the basis of total acreage of the seed parents within a single isolation using a common pollinator.

4. To illustrate the use of the table if a crossing field of 20 acres or less is 410 feet from the contaminating corn, then the number of buffer rows required is eight.

a. The above requirements for border rows apply to all sides of the crossing field exposed to contamination from another field, whether located directly opposite or diagonally to the sides of the crossing field.

b. More than one hybrid may be produced in an isolation, provided only one pollinator is used.

5. Dent sterile popcorn requires no isolation from dent corn.

6. The isolation distance required between a sweet corn pollen source and the seed parent may be administratively modified by the agency based on the size of the sweet corn pollen source, maturity dates, and other factors.

C. Differential Maturity Dates: Differential maturity dates are permitted for modifying isolation distances provided there are no receptive silks in the ear parent at the same time pollen is being shed in the contaminating field.

D. Nicking: If conditions arise in which the nicking of a seed field is questionable, certification of the field shall be subject to approval by the certifying agency.

E. Detasseling

1. Tassels shall be removed thoroughly enough that not more than 1.0 percent of the plants in seed rows on any one inspection, or not more than 2.0 percent as the total of any three inspections shall have shed pollen while more than 5.0 percent of the seed parent plants have receptive silks, such percentage to be determined on the basis of stalks large enough to be in the detasseling stage.

2. The following shall be used in defining a shedding tassel and a receptive silk:

- a. In fertile fields, a shedding tassel shall be considered as shedding or having shed pollen when there are two inches or more of the exposed center spike and/or panicle branches showing exerted anther sacs. One fifth of a shedding tassel shall be counted if a total of less than two inches of the center spike and/or panicle branches show exerted anther sacs.
- b. In sterile fields, tassels shedding less than 50% pollen shall be counted as 1/10 of a full tassel. The exerted anther sacs on cytoplasmic male sterile seed parents must be shedding if classed as a shedding tassel.
- c. Receptive silks shall be regarded as susceptible for fertilization when any fresh turgid silks are showing on the ear. As soon as a silk wilts it is regarded as fertilized, although it may not become brown or dry for one or two days after fertilization.

F. Male Sterile Ear Parent: Cytoplasmic male-sterile commercial hybrid corn seed shall be produced in accordance with the standards for the production of other commercial hybrid corn by either of two methods:

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

G. Volunteer Corn and Off-Type Plants

- 1. Pollen rows tassels of definitely off-type plants or of volunteer plants shall be removed thoroughly enough so that not more than .1% shall have shed pollen while more than 5% of the seed parent plants have receptive silks.
- 2. Seed rows the maximum number of volunteer corn and off-type plants shall not exceed .1% at the time of the last field inspection.

H. Determination of Hybridization and Genetic Purity Final Determination of hybridization and genetic purity may be determined using one of the following methods.

- 1. Growout testing One sample each of flats and rounds shall be submitted to the certifying agency for a winter purity test. At least 1,000 kernels per sample are required for testing.
- 2. Biochemical testing – One sample each of flats and rounds shall be submitted to the certifying agency for an electrophoretic isozyme analysis. At least 250 kernels per sample are required for testing. 100 seeds of each of the parental lines are also required.

## VI. Seed Standards

### A. Genetic

Factor	Standard Certified Class
Other varieties and off-types (max.)	0.5%
Off-textured kernels in opaque 2, flowery 2, and waxy (max.)	1.0%

B. Quality\*\*

<b>Factor</b>	<b>Recommended Standard</b>
Pure seed (minimum)	99.0%
TOTAL other crops-including other varieties (maximum)	0.5%
TOTAL weed seed (maximum)	None
TOTAL inert matter (maximum)	1.0%
Germination (minimum)	90.0%
Moisture (maximum)	14.0%

\*\* Quality standards listed here are recommendations only. Seed lots failing to meet the minimum quality standards will not be rejected for purposes of certification.

## **Hybrid Corn and Hybrid Sorghum (Production Inspected)**

An inspection service is available to producers of commercial hybrids. This inspection is not certification since the pedigree is not revealed. The inspection will assure South Dakota farmers that the seed has been properly produced and conditioned. The inspection service is designated to serve as a third party Quality Assurance program to seedsmen in the production of hybrid seed corn and hybrid sorghum seed in South Dakota. The present minimum field and seed requirements for the production of Certified hybrid seed corn and hybrid sorghum seed will apply to "Production Inspected" seed.

## **Hybrid Sorghum**

Standards for certification adopted by AOSCA for hybrid sorghum are available from the Seed Certification Office upon request.



## Millet (Proso and Foxtail) (Self-Pollinated Species)

### I. Application and Amplification of General Certification Standards

The General Seed Certification Standards are amplified as follows to apply to millet.

Eligibility requirements: only the Foundation and Registered seed classes are eligible for recertification. The Certified class is not eligible to be recertified except in the case of an older variety for which Foundation seed is not being maintained.

### II. Land Requirements

No other variety of millet may have been grown on the field the previous year except a crop of the same variety which was inspected and passed for certification.

### III. Field Standards

A. Fields producing a class of Certified seed will be inspected before harvest when the seed begins to mature and/or take on color.

#### B. Isolation

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

#### C. Unit of Certification

The field shall be considered the unit of certification and a portion of a field can be accepted for certification provided that portion of the field meets the isolation requirements stated in B above.

#### D. Specific Requirements

Factor	Foundation	Registered	Certified
Other varieties (max.)	1:3,000	1:2,000	1:1,000
Inseparable other crops (max.)*	1:10,000	1:10,000	1:2,000
Noxious weeds whose seed is inseparable (max.)	None	None	None

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

### VI. Seed Standards

Factor	Foundation	Registered	Certified
Pure seed (minimum)	98.00%	98.00%	98.00%
Inert matter (maximum)	2.00%	2.00%	2.00%
Weed seed (maximum)	.05%	.25%	.25%
Noxious weed seed (maximum)	None	None	None
Total other crop seed (maximum)	.01%	.02%	.04%
Other varieties (maximum)	.05%	.10%	.20%
Other kinds (maximum)	.005%	.01%	.02%
Germination (minimum)	80.00%	80.00%	80.00%

### **Millet (Cross-Pollinated Species)**

Standards for certification adopted by AOSCA for cross-pollinated millet are available from the Seed Certification Office upon request.

## **Wheat, Oats, Barley, Rye, Triticale and Flax**

### **I. Land Requirements**

Small grain intended for certification shall not be grown on land which produced the same kind of crop the previous year unless Certified seed of the same variety was planted.

### **II. Field Inspection**

A field inspection must be made by an authorized inspector after the grain is fully headed and prior to harvest to make the necessary count for varietal purity, other crop plants, disease infection and weeds. Flax will be inspected when crop is in full bloom.

### **III. Field Standards**

#### **A. Unit of Certification**

1. The field shall be considered the unit for certification, and a field can be divided for the purpose of certification. A strip of ground sufficient in width to prevent mechanical mixture which is either mowed, uncropped, swathed or planted to some crop other than the kind in question shall constitute a field boundary for the purpose of these standards. When it is necessary to remove a strip to obtain proper isolation, the part to be removed must be cut from the field that is to be inspected by a distance adequate to prevent mechanical mixture.

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

##### **1. ISOLATION**

- a. Wheat: A field producing Foundation or Registered classes of Certified seed must be isolated at least ten feet from wheat 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. For different classes of Certified seed of the same variety grown next to each other, a strip ten feet in width must be cut from the field representing the seed\*\*\* class closest to Breeder seed. Seed from this buffer strip may be harvested along with the seed representing the lower of the two adjoining seed classes.
- b. Triticale: The same standard would apply to Foundation and Registered classes of triticale with respect to isolation from other triticale.
- c. Rye: A field producing Foundation seed must be isolated by at least 60 rods (990 feet) while Registered and Certified seed fields must be isolated by at least 40 rods (660 feet) from rye 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>Factor</b>	<b>Foundation</b>	<b>Registered</b>	<b>Certified</b>
Other varieties (maximum)*	.02% (1:5000)	.03% (1:3000)	.1% (1:1000)
Inseparable other crop seed**	.001% (1:100,000)	.01% (1:10,000)	.05% (1:2,000)
Noxious weeds whose seed is inseparable	None	None	None

\* Other varieties shall be considered to include plants that can be differentiated from the variety that is being inspected. However, other varieties shall not include variations which are characteristic of the variety.

\*\* Inseparable other crops shall include crop plants, the seed of which cannot be thoroughly removed by the usual methods of cleaning. Rye in winter wheat and barley in oats are well known examples. In some areas climatic conditions do not take care of winter grains in spring grains and vice versa. In such instances these must also be considered as "inseparable other crops." **No rye or Jointed Goatgrass is permitted in seed production fields of winter wheat.**

\*\*\* An uncropped strip of 1-3' must be present at the time of inspection between the two adjacent seed classes of the same variety to identify the boundary.

#### IV. Small Grain and Flax Seed Standards

	Pure Seed (Minimum)	*Other Distinguishable Varieties (Maximum)	** Other Small Grain Crops (Maximum)	***Inert Matter (Maximum)	Total Noxious Weeds	Common Weed Seed	Germination (Minimum)
<b>FOUNDATION</b>							
Wheat	---	1 seed/lb.	1 seed/lb.	---	None	---	---
Oats	---	1 seed/lb.	1 seed/lb.	---	None	---	---
Barley	---	1 seed/lb.	1 seed/lb.	---	None	---	---
Rye	---	1 seed/lb.	1 seed/lb.	---	None	---	---
Triticale	---	1 seed/lb.	1 seed/lb.	---	None	---	---
Flax	---	-----	-----	---	None	---	---
<b>REGISTERED</b>							
Wheat++	98%	1 seed/lb.	1 seed/lb.	2%	None	.05%	85%
Oats	98%	1 seed/lb.	1 seed/lb.	2%	None	.05%	85%
Barley	98%	1 seed/lb.	1 seed/lb.	2%	None	.05%	85%
Rye	98%	1 seed/lb.	1 seed/lb.	2%	None	.05%	70%
Triticale	98%	1 seed/lb.	1 seed/lb.	2%	None	.05%	80%
Flax	98%	8 seeds/lb.	8 seeds/lb.	2%	None	.10%	80%
<b>CERTIFIED</b>							
Wheat+	97%	10 seeds/lb.	3 seeds/lb.	3%	None	0.1%	85%
Oats++	97%	10 seeds/lb.	3 seeds/lb.	3%	None	0.1%	85%
Barley	97%	10 seeds/lb.	3 seeds/lb.	3%	None	0.1%	85%
Rye	97%	10 seeds/lb.	3 seeds/lb.	3%	None	0.1%	70%
Triticale	97%	10 seeds/lb.	3 seeds/lb.	3%	None	0.1%	80%
Flax	97%	16 seeds/lb.	16 seeds/lb.	3%	None	0.1%	80%

\* Other distinguishable varieties shall not include variations which are characteristic of the variety. Other distinguishable varieties shall be considered to include off-type seeds/plants that can be differentiated from the variety being analyzed.

\*\* This does not apply to seeds of winter grains in spring grains and vice versa, except in such cases where climatic conditions do not take care of the situation. **No rye or Jointed Goatgrass is permitted in winter wheat.**

\*\*\* Wheat, barley or rye of the certified class shall not contain more than 2% inert matter other than broken seed.

+ Germination minimum for durum wheat is 80%.

++ **Certified oats (Certified Grade II) may contain up to 10seeds/lb of other crop seed and be sold only for forage production or reclamation seeding and labeled accordingly.**

## **Hybrid Wheat**

Standards for certification adopted by AOSCA for hybrid wheat are available from the Seed Certification Office upon request.

## Soybeans

### I. Land Requirements

Soybeans to be eligible for certification must be preceded by some crop other than soybeans unless Certified seed of the same variety was planted.

### II. Field Inspections

Fields producing Foundation seed shall be inspected at flowering and a second inspection when the crop is approaching maturity when pod and pubescence color and other plant characteristics can be determined. Fields producing Certified seed shall be inspected at least once when the crop is approaching maturity, preferably after the leaves have dropped.

### III. Isolation

Distance adequate to prevent mechanical mixture is necessary (five feet).

### IV. Field Standards

Factor	Foundation	Registered	Certified
Other varieties (maximum)*	0.1% (1:1,000)	0.2% (1:500)	0.5% (1:200)
Inseparable other crop plants (seed )(max.)	None	1:5000	1:2000
Noxious or objectionable weeds**	None	None	None
Corn/Sunflower plants bearing seed***	None	None	None

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

\*\* Unless seeds can be readily removed in recleaning.

\*\*\* Either oil or confectionery sunflowers

### V. Seed Standards

Factor	Foundation	Registered	Certified
Pure seed (minimum)	98.00%	98.00%	98.00%
Inert (maximum)	2.00%	2.00%	2.00%
Total weed seed (maximum)	5/lb.	5/lb.	5/lb.
Noxious or objectionable weed seed	None	None	None
Other crop seed (maximum)	None	3/lb.	3/lb.
Corn/Sunflower	None	None	1 per 4 lbs.
Other varieties (maximum)**	.10%	.20%	.50%
Germination (minimum)	80.00%	80.00%	80.00%
Moisture (maximum)***	15.00%	15.00%	15.00%

\*\* Off-colored beans due to environmental factors shall not be considered other varieties.

\*\*\* Effective from harvest through December 31<sup>st</sup>.

## **Sunflower**

### **I. General**

A. The General Seed Certification Standards, are basic and are modified for sunflower as follows:

1. A commercial hybrid is one to be planted for any use except seed production.
2. Only the class "Certified" is recognized in seed of commercial hybrids.
3. The classes "Breeder" and "Foundation" shall be recognized for parental materials used for the production of commercial hybrids.
4. A commercial hybrid to be Certified must be produced from Breeder or Foundation seed stock approved by the certifying agency.

### **II. Land Requirements**

A crop will not be eligible for certification if planted on land where sunflowers were grown the previous year.

### **III. Field Inspection -- Open Pollinated Varieties and Hybrids**

At least three field inspections shall be made: one inspection during the bud to early bloom stage and two inspections during bloom.

### **IV. Field Standards**

A. Flowering. In a crossing field for the production of Certified hybrid sunflower seed, at least 50% of the male parent plants must be flowering and producing pollen at the time the female parent is in full bloom. Female parent plants flowering and shedding pollen before the male parent plants are shedding pollen must be removed and disposed of in a manner that will prevent contamination.

B. Isolation. Fields to be used for the production of all classes of Certified seed must be isolated at least 5280 feet from other varieties, hybrids, strains, wild *Helianthus* species, volunteer sunflowers and non-certified crops of the same type.

C. The unit of certification shall be a field or a portion of a field separated by a strip at least ten feet wide which is either; mowed, uncropped or planted to some other separable crop.

D. Roguing. In increase fields of parental materials to be used for the production of commercial hybrids and in the male rows of commercial hybrid production fields, all off-types must be removed before pollination has taken place. The heads of rogued plants must be disposed of in a manner which will prevent their pollen from being disseminated. Corn plants bearing seed must be removed before harvest as well as other crops the seed of which are difficult to separate in the conditioning process.

E. Standards for seed-borne diseases in sunflowers are not specified; however, disease may be cause for rejection if the overall quality of the seed will be adversely affected.



**F. Off-types, all seed classes:**

	Ratio of Plants (maximum) Hybrids		
	Open-Pollinated Varieties	Female Parent	Male Parent
Wild-type branching		1:1,000	1:1,000
Purple plants		1:1,000	1:1,000
White seeded		1:1,000	1:1,000
*Total (including above types but not including pollen shedding plants in the female parent)	1:200	1:250	1:250
		Ratio of female:male rows in seed field	
		4:1 or more	3:1 or less
Pollen shedding plants in female parent		1:125	1:83

\* Other varieties (off-types) shall be considered to include plants that can be differentiated from the variety that is being inspected. Other varieties shall not include variations which are characteristic of the variety.

**V. Seed Standards**

Factor	Foundation	Registered	Certified
Pure seed (minimum)	98.00%	98.00%	97.00%
Inert matter (maximum)	2.00%	2.00%	3.00%
Weed seed (maximum)	0.05%	0.05%	0.10%
Noxious weed seed	None	None	None
Other varieties (maximum)*	1/lb.	1/lb.	5/lb.
Other crop seed (maximum)	1 per 2 lbs.	1 per 2 lbs.	1 per lb.
Corn seed (maximum)	None	None	1 per lb.
Germination (minimum)	85.00%	85.00%	85.00%
Sclerotium	4/lb.	4/lb.	4/lb.

\* Not more than two purple seeds or two white seeds per pound will be allowed in the Certified class. Other varieties shall not include variations which are characteristic of the variety.

**VI. Pre-Control Test Standards**

A. Samples from all Certified inbred and hybrid seed fields shall be entered in approved pre-control tests.

B. If field inspection shows one or more of the following, the applicant may request that seed certification be based on the percent of hybrids shown in the pre-control test:

- inadequate isolation
- too few male parent plants shedding pollen when female parent plants are receptive
- excess off-types not to include wild types
- excess pollen shedding plants in female parent

In such cases, 2000 plants must be observed in the pre-control test before hybrid seed can be Certified from fields with problems listed above.

#### VII. Post-Control Test Standards

Factor	Maximum Permitted*	
	Hybrid	Inbred
Sterile plants	5.0%	--
Sterile or fertile plants	5.0%	5.0%
Morphological variants	0.5%	0.5%
Wild types	<u>0.2%</u>	<u>0.2%</u>
Total including above types	5.0% cum	5.0% cum

\* For non-oil types, seed which contains not more than 15% sterile plants may be Certified. If the seed lot contains 85% to 95% hybrid plants, the percentage of hybrid shall be shown on the certification label.

## **Tree and Shrub**

### **I. The Purpose of Seed and Plant Certification**

The purpose of seed and plant certification is to maintain and make available to the public high quality seed, seedlings, cuttings, and other propagating materials so produced, handled and distributed as to insure proper identity and genetic purity.

### **II. Eligibility Requirements for Certification of Tree and Shrub Varieties and Species**

Only those varieties and species that are accepted by the South Dakota Agricultural Experiment Station and/or the State Seed Certification Board will be eligible for certification. Application forms for acceptance of privately developed varieties are available from the Horticulture-Forestry Landscape and Parks Department, South Dakota Agricultural Experiment Station.

### **III. Categories of Certified Tree Seed**

Three classes of seed shall be recognized, i.e., Certified, Selected and Source-Identified.

A. *Certified* seed (blue tag) shall be seed of known genetic identity obtained from trees of proven genetic superiority as defined by the Agricultural Experiment Station.

B. *Selected* seed (green tag) shall be seed from rigidly selected trees, shrubs or stands that have promise of genetic superiority but that have not been progeny tested.

C. *Source-Identified* seed (yellow tag) may be seed from (a) natural stands with geographic origin known and (b) plantations or shelterbelts of known origin.

### **IV. Handling the Crop Prior to Inspection**

Roguing of off-type plants, objectionable crop plants, and weeds is required prior to field inspection and will be the responsibility of the grower.

### **V. Establishing the Source of Seed**

A. In those cases where the seed planted for the production of Foundation, Registered or Certified seed is obtained from another party, evidence such as a certification tag, sales record, etc. must be submitted to the certifying agency to establish source of seed.

B. The exact geographic source of the parent trees by legal description and the stand history must be known.

### **VI. Samples and Sampling of Seed**

A representative sample of each lot of seed as it is offered for sale shall be taken.

### **VII. Seed House Inspection of Seed**

Inspection of harvested lots of tree seed may be made at any time and any lot not properly protected from mixture may be rejected.

### **VIII. Field Standards**

A. All classes must be inspected at least once prior to use as a seed source.

B. Source-Identified seed cannot be collected from irrigated areas unless predetermined to be of proven origin.

C. Seed Trees

1. Minimum isolation distances will be construed to refer to only genetically related species.

A minimum isolation radial distance of 500 feet will be required except for elm which will be 80 rods.

2. Seed trees must be true to type and must possess desirable qualities of growth, form and vigor. Off-type plants must be removed.

3. Fruit shall be collected from the trees or by tree bagging methods.

4. Fruit collecting and seed cleaning shall be under the supervision of the Seed Certification Service.

D. Planting Stock

1. Seedling and transplant stock shall have isolation sufficient to prevent mechanical mixture.

2. All distinct off-type plants or other species shall be rogued out prior to inspection.

**IX. Grade Standards**

Planting Stock

A. Standard nursery bundles properly tagged as to name and nursery grade shall be used.

B. A minimum viability of 98% at time of last inspection as determined by cutting and other tests is required.

**X. Disease Standards**

Varieties having specific disease standards shall be inspected for disease reaction at appropriate times for accurate readings.