Proposed Amendment
Sunflower Crop Standard

Section Amendment is Proposed:

Field Inspections

Current wording:

In a field producing hybrid sunflowers, at least fifty percent (50%) of the male parent plants must be flowering and producing pollen when the female parent is in full bloom.

Proposed amendment:

In a field producing hybrid sunflower, ~~at least fifty percent (50%) of the male parent plants must be flowering and producing pollen when the female parent is in full bloom.~~ if 5% or more of female plants are flowering before or after the male parent plants are flowering the field shall be sent to growout.

In a field producing **Certified class** hybrid sunflowers, the female-to-male bloom ratio during any point of the reproductive stage (R5) shall be as indicated in the table below. Any planting ratios not contained in the table below will follow the same pattern of minimum female-to-male bloom ratio (i.e. 8x3 planting ratio would indicate an 8:1.5 minimum female-to-male bloom ratio).

Certified Class

Planting Ratio female:male	Min. bloom female:male
4x2	4:1
6x2	6:1
8x2	8:1
10x2	10:1

In a field producing **Foundation class** sunflowers there must be a 2:1 female-to-male bloom ratio during any point of the reproductive stage (R5).

Purpose:

To clarify standards and assist field inspectors in determining when to flag a field for growout and for applicants to understand why a field is being flagged for growout due to “nick off”.

Submitted by: Ashley Koala
Date: September 2024

(*Helianthus annuus)*

GENERAL STANDARDS -- The standards on this sheet are in part condensed and apply to sunflower. For greater detail and additional provisions, see the General Standards.

DEFINITIONS OF TERMS -- Breeder Seed - as applied to hybrid varieties, is seed of male-sterile, maintainer, and restorer lines maintained by the breeder. Foundation Seed - as applied to hybrid varieties, is seed of male-sterile, maintainer, and restorer lines produced from Breeder or Foundation seed. Hybrid Seed - the first generation of seed of a cross produced by controlling the pollination and by combining two (2) or more lines, varieties, or species. Controlling pollination is the use of a method which will produce pure seed which is at least seventy-five percent (75%) hybrid seed. Commercial Hybrid - is one that is planted for any use except seed production, usually grown from hybrid seed. Off-Type - refers to a plant or seed which deviates in one or more characteristics from those described as being usual for the strain or variety.

PLANTING STOCK -- Breeder or Foundation seed must be planted to produce the Certified class of a commercial hybrid.

APPLICATION -- Applications should be submitted electronically on CCIA's website (Application to grow and certify seed) as soon as possible and **no later than three (3) weeks after planting**. New applicants should contact the CCIA office for instructions on obtaining access to the online application system.

FIELD ELIGIBILITY -- The land must not have grown sunflowers the previous three (3) years or the land must have grown two (2) intervening irrigated crops.

ISOLATION -- Fields must be isolated from flowering plants of other varieties, hybrids, strains, volunteer sunflowers, noncertified crops of the same variety, hybrid, or wild annual *Helianthus*
species other than H. agrestis and total no more than 1:5,000 plants in the production field as a tolerance in isolation as follows:

F1 hybrid production from differing other F1 hybrid production and wild types	1.25 miles
Foundation seed production of restorer lines and maintainer lines	1.25 miles

Foundation seed production of male-sterile lines	2 miles
Open-Pollinated varieties	1.5 miles

FIELD INSPECTION -- For open-pollinated sunflower varieties, one (1) field inspection must be made after at least fifty percent (50%) of the plants are in bloom but before they are fully matured. For hybrid sunflower varieties at least two (2) field inspections must be made, the first during the very early bloom stage, and the second during full bloom.

For hybrid varieties intended for OECD certification using the cytoplasmic male sterility method to produce hybrid varieties of *Helianthus annuus*, at least three inspections must be made on each parent line. The first inspection should be made before the flowering stage, the second inspection at the early flowering stage and the third inspection before the end of the flowering stage.

In a field producing hybrid sunflower, ~~at least fifty percent (50%) of the male parent plants must be flowering and producing pollen when the female parent is in full bloom.~~ if 5% or more of female plants are flowering before or after the male parent plants are flowering the field shall be sent to growout.

In a field producing **Certified class** hybrid sunflowers, the female-to-male bloom ratio during any point of the reproductive stage (R5) shall be as indicated in the table below. Any planting ratios not contained in the table below will follow the same pattern of minimum female-to-male bloom ratio (i.e. 8x3 planting ratio would indicate an 8:1.5 minimum female-to-male bloom ratio).

Certified Class

Planting Ratio female:male	Min. bloom female:male
4x2	4:1
6x2	6:1
8x2	8:1
10x2	10:1

In a field producing **Foundation class** sunflowers there must be a 2:1 female-to-male bloom ratio during any point of the reproductive stage (R5).

Every field should be rogued to remove any plants of another crop or variety, including volunteers. 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-type plants should be removed before any pollination has taken place.

Fields must be free of any **prohibited noxious** weeds. **Restricted noxious** weeds, and common weeds difficult to separate must be controlled. Prohibited and Restricted noxious

weeds are
listed in the California Seed Law/CA Code of Regulations/Sections 3854 and 3855. See California Seed Law - Prohibited and Restricted Noxious Weed List. Fields may be refused certification due to unsatisfactory appearance caused by weeds, poor growth, poor stand, disease, insect damage, and any other condition which prevents accurate inspection or creates doubt as to identity of the variety.

FIELD STANDARDS -- Varieties cannot always be differentiated at field inspection. When differences can be distinguished, the maximum mixture of other varieties permitted is the following:

Off-Types	Open-Pollinated Varieties	Female Seed Parent Foundation - Certified	Pollinating Parent
Other than pollen shedding female plants		1:2,000 - 1:2,000	1:2,000
Pollen shedding female plant		1:1,000 - 5:1,000	
Total (including above)	5:1,000	1:1,000 - 5:1,000	1:2,000

If the field inspection shows one (1) or more of the following, the applicant may request that seed certification be based on the results of a pre-certification grow-out test approved by the California Crop Improvement Association:

a. Inadequate isolation
b. Too few male parent plants shedding pollen when female parent plants are receptive
c. Excess off-types not to include wild-types

In such cases at least 2,000 plants must be observed and meet the following standards before hybrid and inbred seed can be certified from fields with problems listed above.

	Maximum Permitted	Maximum Permitted
Factor	**Hybrid**	**Inbred**
Sterile Plant	5.00%	------
Sterile or Fertile Plants	-----	5.00%
Morphological Off-Type	0.50%	0.50%
Wild Types	0.20%	0.20%
Total (including above types)	5.00%	5.00%

For non-oil types, seed which contains not more than fifteen percent (15%) sterile plants may be certified. If the seed contains eighty-five to ninety-five percent (85-95%) hybrid plants, the percentage of hybrid shall be shown on the certification label.

A field inspection report will be sent to the applicant. If the field is approved, a certification number will be assigned. This number must be on all containers of seed before they leave the

field. It is the responsibility of the applicant to make sure his field has been inspected before it is harvested.

HARVESTING -- Harvesting is subject to the supervision of the County Agricultural Commissioner who must be contacted prior to harvest. Any seed moved out of the county for conditioning must be accompanied by an Intercounty Permit or Interstate Transfer issued by the Commissioner.

CONDITIONING AND SAMPLING -- Conditioning of seed for certification may be done only in facilities approved for this purpose by the California Crop Improvement Association. It is the responsibility of the applicant to determine if the plant is eligible before delivering seed for conditioning. Conditioning, sampling, reconditioning, and blending must be supervised by the County Agricultural Commissioner. Conditioning equipment must be free from contaminating seed to the satisfaction of the supervising inspector.

SEED INSPECTION - All seed must be sampled and tested after conditioning and the seed lot must meet or exceed seed certification standards for that crop. A seed lab using the Association of Official Seed Analyst “Rules for Testing” must test the sample. A Registered Seed Technologist must sign each lab analysis. In addition to AOSA rules, specific seed testing may be required to meet CCIA seed certification standards.

The conditioner is required to submit a 1,000 gram sample to the laboratory for analysis. (Submitted Sample Sizes for Certification). In some instances, varietal identity cannot be determined by visual seed inspections. Seed must be well screened and graded, bright in color, of good appearance and meet the following standards:

Pure Seed	98.00% (Minimum)
Inert Matter	2.0% (Maximum)
Other Varieties - in some instances varietal identity cannot be determined by visual seed inspections.	
- Foundation	1 seed per pound (Maximum)
- Registered	1 seed per pound (Maximum)
- Certified	6 seeds per pound (Maximum) - Not more than one (1) purple or white seed per pound.

Other Crop	
- Foundation	1 seed per pound (Maximum)
- Registered	1 seed per pound (Maximum)
- Certified	6 seed per pound (Maximum)
Corn or Castor Bean Seeds	None
Weed Seed	
- Foundation	None
- Registered	None
- Certified	0.10% (Maximum)
Noxious Weed Seed	None
Germination	85.00% (Minimum)

*If *Botrytis* spp. is present in the field, the seed must be tested and have no more than 5% contamination.

*Amount of *Sclerotinia sclerotiorum* must be indicated on analysis report by number found in 500 grams. Sclerotia and sclerotia fragments must not exceed 10 in 500 grams.

The CCIA requires Reports of Analysis for initial certification to be dated no more than a maximum of six (6) months prior to the request for seed certification. The 'Purity Analysis' and 'Germination' must be conducted on the same laboratory seed sample and those results must be presented in a single Report of Analysis.

FINAL CERTIFICATION AND TAGGING -- If the seed sample meets all standards a seed inspection report is issued. Before certification is complete, however, each container must have an official tag or label attached. Certified seed may be sold to a grower in bulk without tagging if a properly filled out Bulk Sale Certificate accompanies the shipment. The tags and Bulk Sale Certificates are issued by the California Crop Improvement Association.

~~Updated November 2019~~ Updated September 2024