

SUNFLOWER

Helianthus annuus

Seed Certification Standards in California

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 (<http://ccia.ucdavis.edu>) no later than three (3) weeks after planting. New applicants should contact the CCIA office for instructions.

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. similis*, *H. ludens*, and *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	2.0 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. 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. 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. 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	4:1,000	
Total (including above)	5:1,000	1:1,000	4:1,000	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.

Factor	Maximum Permitted	
	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. 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	2.00% (Maximum)
Other Crop Seed	
Foundation, Registered	1 seed per pound (Maximum)
Certified	6 seeds per pound (Maximum)
Other Varieties	
In some instances varietal identity cannot be determined by visual seed inspections.	
Foundation, Registered	1 seed per pound (Maximum)
Certified	6 seeds per pound* (Maximum)
Corn or Caster Bean Seeds	None

Weed Seed	
Foundation, Registered	None
Certified	0.10% (Maximum)
Noxious Weed Seed	None
Germination	85.00% (Minimum)
* Not more than one (1) purple or white seed per pound.	

RETAINED SAMPLES – The conditioner must also retain in storage a 1,000 gram sample of each lot certified. These shall be maintained for one year and be made available for any CCIA audits and reference testing.

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 to the County Agricultural Commissioner who supervises their attachment.

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