
SECTION 5

CERTIFIED PRODUCTION OF HYBRID CANOLA AND RAPESEED

In this Section:

- **Canola** and **Rapeseed** includes spring and winter varieties of *Brassica napus*, *Brassica rapa*, and canola-quality *Brassica juncea*, except where otherwise indicated.
- **Mustard** includes varieties of Brown or Oriental types (*Brassica juncea*), White/Yellow types (*Sinapis alba*) and Ethiopian types (*Brassica carinata*).
- **Radish** includes varieties of *Raphanus sativus*.

Section 1, *Regulations for All Pedigreed Seed Crops*, together with the following, constitute the production regulations.

5.1 SEED CLASSES, GENERATIONS, DEFINITIONS AND TYPES

5.1.1 Seed Classes/Generations

- a) Breeder: controlled by the Breeder. No generation limit.
- b) Foundation: one generation, grown by accredited Foundation plot growers. (Refer to Section 13.)
- c) Certified: one generation.

5.1.2 Definitions

- a) Parent line or population: a relatively true breeding strain or selection used for seed crop production.
- b) Inbred line: a relatively true breeding homozygous strain.
- c) A line: line or population which is male sterile.
- d) B line: male fertile line or population capable of maintaining male sterility.
- e) Restorer line: line or population used as male parent which has the capability of restoring fertility to male sterile lines/populations when crossed onto them.
- f) Self-incompatible (S.I.) line: male fertile line or population incapable of self-pollination due to self incompatibility.
- g) Self-compatible (S.C.) line: male fertile line or population which is capable of self pollination.
- h) Composite variety: a plant population in which at least 70% of progeny result from crossing of the parent lines. (Refer to Section 4.)

5.1.3 Types

- a) Single-cross hybrid: the first generation of a cross between two specified inbred parent lines or relatively homogeneous parent populations.
- b) Foundation single-cross: a single-cross used in the production of a double-cross, a Foundation three-way cross hybrid or a top-cross hybrid.
- c) Double-cross hybrid: the first generation of a cross between two Foundation single-cross hybrids.
- d) Three-way cross hybrid: the first generation of a cross between an inbred parent line or parental population and a Foundation single-cross.
- e) Top-cross hybrid: The first generation of a cross between an inbred parent line and an open pollinated variety.

5.2 SEED REQUIREMENTS

- 5.2.1 Breeder or Foundation status seed must be used to establish all stands of Hybrid Canola and Hybrid Rapeseed for pedigreeing.
- 5.2.2 The direction of the cross of a Hybrid Canola or Hybrid Rapeseed or composite variety must remain unchanged throughout the certification of the variety unless adequate data, which verifies that parentage reversal does not change the variety's distinguishing characteristics or performance, are provided to the authority responsible for certification eligibility recognition.

5.3 LAND REQUIREMENTS

- 5.3.1 Crops of *Brassica rapa* or winter *Brassica napus* for Certified status must not be planted on land which has been planted with or produced:
- a) *Brassica rapa* or winter *Brassica napus* during the preceding 5 years;
 - or**
 - b) spring *Brassica napus*, Mustard or Radish during the preceding 3 years.
- 5.3.2 Crops of spring sown *Brassica napus* for Certified status must not be planted on land which has been planted with or produced Canola, Rapeseed, Mustard or Radish during the preceding 3 years.

5.4 CROP INSPECTION

The basic standards for all crops are set out in Section 1.7. In addition, the following apply to crops in this section:

- 5.4.1 It is the grower's responsibility to ensure that crops are inspected by an authorized inspector prior to swathing or harvesting.
- 5.4.2 A crop that is cut, swathed or harvested prior to crop inspection is not eligible for pedigree.
- 5.4.3 The crop must be inspected at a stage of growth when varietal purity is best determined. Crops not inspected at the proper stage for best determining varietal purity may be cause for declining pedigree status.
- 5.4.4 All Hybrid Canola and Hybrid Rapeseed crops must be inspected by an authorized inspector when the crop is in the early flowering stage of the female parent. Additional inspections may be warranted.
- 5.4.5 Crops for inspection include all parent lines (e.g., both A line and Restorer line).

5.5 CROP STANDARDS

5.5.1 Isolation

- a) This first 50 meters of isolation to other crops set out in Table 5.5.2 shall be practically free from plants that may cross pollinate with the inspected seed crop (not more than 1 plant per 100 square meters, on average) and the remaining distance reasonably free from plants that may cross pollinate with the inspected crop (not more than 1 plant per 10 square meters, on average).

- b) Plants that may cross pollinate with the inspected crop within the required isolation distance, depending on density, stage of maturity, location and distance from the inspected crop, may be cause for declining pedigreed status. The species of plants that may cross pollinate with the inspected crop are identified in Table 5.6.2.
- c) The required isolation must be provided prior to the time of flowering and crop inspection.

Table 5.5.2: Minimum Isolation Distances Required from an Inspected Crop to Other Crops

Inspected Crop	Other Crops	Isolation Distance Required
Canola or Rapeseed planted with Breeder or Foundation Seed for Certified Hybrid seed production - <i>B. napus</i> , <i>B. rapa</i> , <i>B. juncea</i> (canola quality)	-Different varieties of <i>B. napus</i> , or <i>B. rapa</i> -Non-pedigreed crops of <i>B. napus</i> , or <i>B. rapa</i>	800 meters (2624 feet) (or more, as specified by the Breeder)
	-Crop planted with Foundation seed of the same pollen bearing (male) parent -Does not apply to S.I. hybrid crop production	3 meters (10 feet), provided the pedigree of the Foundation seed used can be established and provided the adjacent crop is free of <i>B. juncea</i> or <i>B. carinata</i> for a distance of 100 meters (328 feet) and <i>B. napus</i> or <i>B. rapa</i> for 800 meters (2624 feet), from the inspected crop including A-line pollen shedders
	- <i>B. juncea</i> or <i>B. carinata</i> crop	100 meters (328 feet), provided the adjacent crop is free of <i>B. napus</i> or <i>B. rapa</i> for a distance of 800 meters (2624 feet) from the inspected crop
	- <i>S. alba</i> crop - <i>R. sativus</i> crop	3 meters (10 feet), provided the adjacent crop is free of <i>B. juncea</i> or <i>B. carinata</i> for a distance of 100 meters (328 feet) or <i>B. napus</i> or <i>B. rapa</i> plants for a distance of 800 meters (2624 feet) from the inspected crop.

5.5.3 Border Rows

- a) Must be planted with the same seed as the pollen (male) parent rows.
- b) Must be planted such that synchronous flowering occurs with pollen (male) parent rows and, more importantly, with receptive female parent plants of the inspected crop.

5.5.4 Weeds

- a) All crops for pedigree must be free of Prohibited noxious weeds.
- b) The presence of Cleavers (*Galium aparine*) in the area of the crop to be harvested for seed is cause for declining pedigreed status.
- c) Very weedy crops will be declined pedigreed status.
- d) Wild mustard (*Sinapis arvensis*) must not be present in the area of the crop to be harvested for seed at an average of more than 1 plant/10,000 plants.

5.5.5 Maximum Impurity Standards

- a) Impurities in pedigreed crops shall be removed prior to crop inspection.
- b) The impurities outlined in Table 5.5.5 are the maximum levels for impurities. Variants may be specified by the responsible Breeder and are not considered impurities unless reported in excess of the acceptable level specified.
- c) Any combination of impurities may be reason for declining pedigreed status.

- d) Table 5.5.5 indicates the maximum number of plants of other varieties, off-types or other species permitted in approximately 10,000 plants of the inspected crop. The inspector makes 6 counts (10,000 plants each) in the field to determine the number of impurities. The resulting average must not exceed the maximum impurity standards in Table 5.5.5.

Table 5.5.5: Maximum Impurity Standards

Inspected Crop	Off-types/Other Varieties of the same species	Plants of species that may cross pollinate (Table 5.6.2)	Plants of species with difficult-to-separate seeds (Table 5.6.2)
<i>Brassica napus</i> , <i>Brassica rapa</i> and Canola-quality <i>Brassica juncea</i>	1.5	1	3

- e) Percent hybrid seed shall be determined by a method approved by the CFIA.
- f) Percent hybrid seed shall not be less than 80% for hybrid Canola or hybrid Rapeseed and not less than 70% hybridity or heterozygosity for composite varieties of Canola. The balance of the seed should be parent line derivatives, resulting from incompletely controlled pollination in the seed field.
- g) A declaration (CSGA Form 180, Appendix A.10) stating the actual percent hybrid seed of a representative sample of the Hybrid Canola, Hybrid Rapeseed or composite variety seed crop, and the method of determining the percent hybrid seed, must be submitted to the CSGA prior to a crop certificate being issued. Unless otherwise specified in the variety description, the declaration of percent hybrid seed shall also provide the following information: CSGA Sequence number, the test method name or number, the number of seeds tested and the confidence level of the test.

5.6 SPECIFIC REQUIREMENTS

- 5.6.1 The CSGA, at its discretion, may require the results from a recognized laboratory indicating a satisfactory erucic acid and/or glucosinolate content before a crop certificate is issued.
- 5.6.2 Species that may cross pollinate successfully with other species in this Section and species with difficult to separate seeds, are identified in Table 5.6.2

Table 5.6.2: Cross Pollinating Species and Species with Difficult-to-Separate Seeds

Species	Canola (<i>B. napus</i>)	Canola (<i>B. rapa</i>)	Mustard Brown/Oriental (<i>B. juncea</i>)	Mustard White/Yellow (<i>S. alba</i>)	Mustard Ethiopian (<i>B. carinata</i>)	Radish (<i>R. sativus</i>)
<i>B. napus</i>	n/a	CP	CP	DTS	CP	DTS
<i>B. rapa</i>	CP	n/a	CP	DTS	CP	DTS
<i>B. juncea</i>	CP	CP	n/a	DTS	CP	DTS
<i>S. alba</i>	DTS	DTS	DTS	n/a	DTS	DTS
<i>B. carinata</i>	CP	CP	CP	DTS	n/a	DTS
<i>R. sativus</i>	DTS	DTS	DTS	DTS	DTS	n/a

*CP = Some risk of cross pollination

*DTS = Difficult-to-separate