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## SECTION 14.4

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### PRODUCTION OF HYBRID ALFALFA

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In this Section:

- **Hybrid Alfalfa** includes all varieties of Hybrid Alfalfa (*Medicago sativa*) but not interspecific hybrids of *Medicago sativa* and *Medicago falcata*.

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

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#### **14.4.1 SEED CLASSES AND GENERATIONS**

- 14.4.1.1 The number of official pedigreed classes is determined by the Breeder of the variety and either Select Synthetic or Foundation status parental material is normally planted to maintain male sterile parent material and to produce Certified hybrid crops.

Currently in Canada, hybrid alfalfa production involves the blending of parental seed lines in specific ratios. Select Synthetic or Foundation seed of male and female lines are blended in a specific proportion under the supervision of the plant breeder. The ratio of male sterile and either maintainer line or male fertile line shall not be more than 2:1.

#### **14.4.2 LAND REQUIREMENTS**

- 14.4.2.1 Hybrid Alfalfa crops must not be grown on land which in the previous two (2) years grew a non-pedigreed crop of Alfalfa or a different variety of Alfalfa.

#### **14.4.3 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:

- 14.4.3.1 It is the grower's responsibility to ensure that crops are inspected by an authorized inspector prior to swathing or harvesting.
- 14.4.3.2 A crop that is cut, swathed or harvested prior to crop inspection is not eligible for pedigree.
- 14.4.3.3 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 pedigreed status.
- 14.4.3.4 A crop inspection shall be made during the bloom stage, after 75% of the plants are showing one or more blossoms but before most seed has set. At the time of crop inspection, the Pollen Production Index (PPI) of the male sterile (female) parent must be determined as explained in the Specific Requirements in Section 14.4.5.1.

#### **14.4.4 CROP STANDARDS**

##### **14.4.4.1 Isolation**

- a) Hybrid Alfalfa female parent crops for Foundation status must be isolated by a distance of 400 meters (1312 feet) from other varieties of Alfalfa or from a non-pedigreed crop of Hybrid Alfalfa.
- b) Hybrid Alfalfa crops for Certified status, or male parent crops for Foundation status, must be isolated by a distance of 200 meters (656 feet) from other varieties of Alfalfa or from a non-pedigreed crop of Hybrid Alfalfa..
- c) In producing either Foundation parent material or Certified hybrid crops of the same variety, at least 2 metres (6 feet) isolation is required between crops.
- d) The required isolation must be provided prior to the time of flowering and crop inspection.

##### **14.4.4.2 Weeds**

- a) All crops for pedigree must be free of Prohibited noxious weeds.
- b) Very weedy crops may be declined pedigreed status.

##### **14.4.4.3 Maximum Impurity Standards**

The maximum impurity levels outlined in Table 14.1.4.3 apply, unless variants are specified by the responsible Breeder.

**Table 14.4.4.3: Maximum Impurity Standards**

Impurity	Maximum Permitted	
	Foundation	Certified
Other varieties of Alfalfa	1 per 1,000 plants	1 per 1,000 plants

#### **14.4.5 SPECIFIC REQUIREMENTS**

##### **14.4.5.1 Pollen Production Index**

During crop inspection, at the bloom stage after 75% of the plants are showing one or more blossoms but before most seed has set, the Pollen Production Index (PPI) of the male sterile (female) parent must be determined. This is done by examining untripped flowers on 200 plants. Plants must be sampled in a manner that is representative of the crop and inspectors classify each of the 200 plants as:

- Male Sterile (MS) - no pollen
- Partially Male Sterile (PMS) - trace amount of pollen
- Partially Fertile (PF) - substantially less than normal amount of pollen
- Fertile (F) - normal pollen

To determine the PPI, the number of plants in each class of fertility must be multiplied by a factor, the results all classes are added together and divided by the total number of plants examined to come up with an Pollen Production Index (PPI) value for the crop. The factors are as follows:

MS multiply the number of plants by 0  
PMS multiply the number of plants by 0.1  
PF multiply the number of plants by 0.6  
F multiply the number of plants by 1

#### **14.4.5 SPECIFIC REQUIREMENTS**

##### **14.4.5.1 Pollen Production Index**

The maximum allowable PPI for a Foundation crop would be 0.14. The maximum allowable PPI for a Certified crop with a 95% hybridity standard is 0.06. The maximum allowable PPI for a Certified crop with a 75% hybridity standard is 0.42.

If less than 68% of the plants are male sterile, then no further examinations are required because the crop will not meet CSGA requirements. If more than 80% of the plants are male sterile, no further examinations are required because the crop will clearly meet CSGA requirements. If between 68% and 80% of the plants are male sterile, then another 100 plants shall be sampled and included in the calculation.