SECTION 12A

Certification of PARENT LINES of Cytoplasmic Male Sterile (CMS) HYBRID WHEAT with Blended Parent Lines

In this section, Cereals includes:

- ***Wheat*** which includes spring and winter Wheat, Einkorn, Emmer and Spelt (unless otherwise specified). *Durum* is not included.

- Section 1, *Regulations for All Pedigreed Seed Crops*, together with the following, are the production regulations for Parent Lines of cytoplasmic male sterile (CMS) hybrid wheat with blended parent lines.

12A.1 SEED CLASSES, GENERATIONS, DEFINITIONS and REQUIREMENTS

12A.1.1 Definitions:

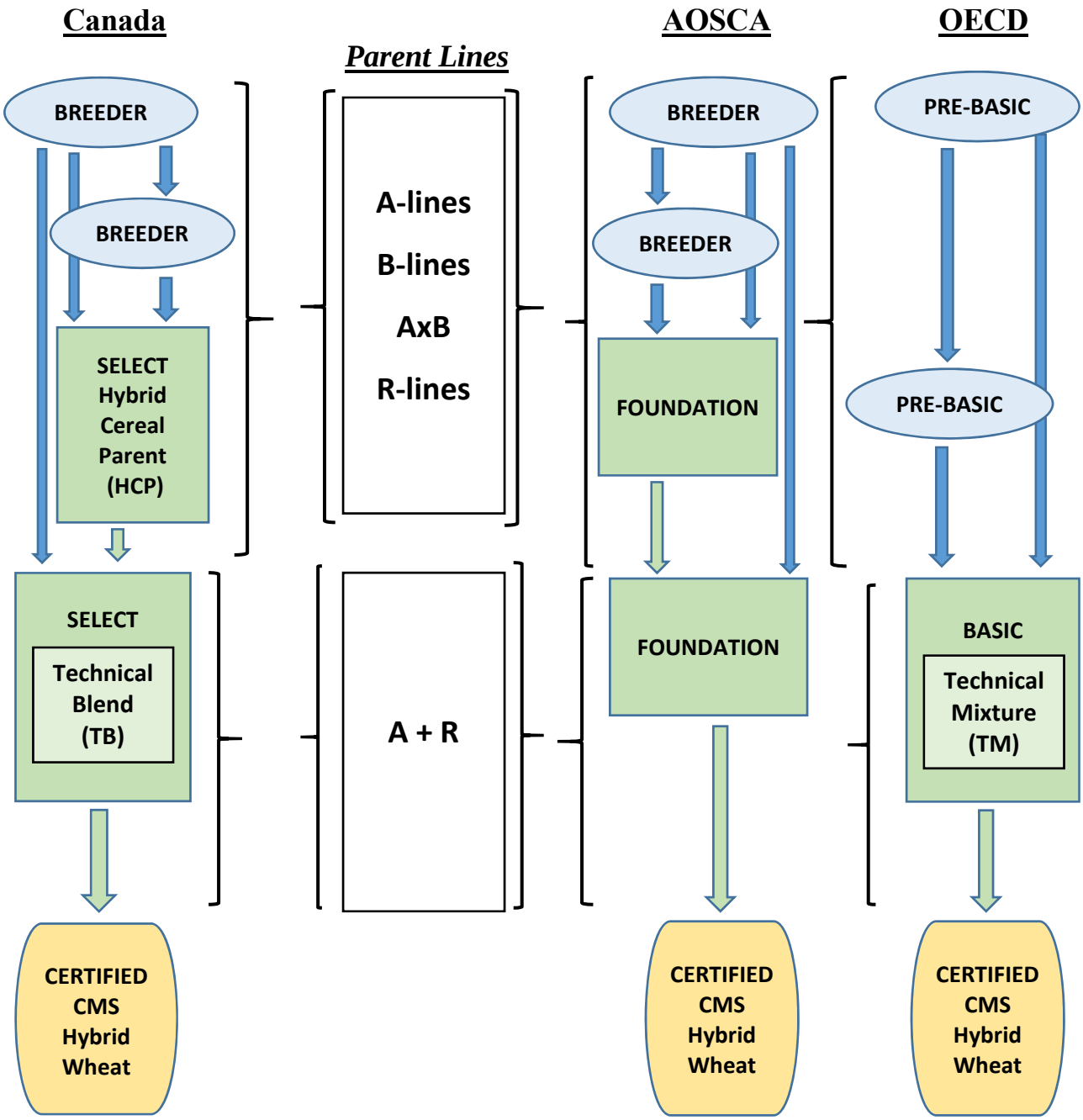
a) Inbred parent line or population: a relatively true breeding homozygous strain; used for parent seed crop production.
b) A-line (female seed parent): a cytoplasmic male sterile line (CMS) which, when pollinated by an R-line (restorer), produces hybrid seed.
c) B-line (male parent maintainer): a male fertile line genetically identical to the A-line but with normal fertile cytoplasm; used to increase A-line seed while maintaining male sterility of the A-line.
d) R-line (male parent restorer): a male fertile line possessing nuclear restoration genes; used as the male parent in the production of Certified hybrid crops.
e) Hybrid: the first generation of a cross between two specified parent lines.

12A.1.2 Classes and generations in the certification of (CMS) hybrid wheat and parent lines:

a) BREEDER class seed
   - used, as well as SELECT HCP class, to produce plots of A-lines, B-lines, AxB increases and R-lines;
   - produced by or under supervision of a Breeder;
   - no generation limit unless prescribed by the Breeder responsible for the variety.
b) SELECT Hybrid Cereal Parent (HCP) class seed
   - used, as well as BREEDER class, to produce certification of plots of A-lines, B-lines, AxB increases and R-lines;
   - produced by CSGA-accredited plot growers;
   - generation limits are prescribed by the variety description.
c) SELECT Technical Blend (TB) class seed
   - a mixture of female parent and restorer lines (A+R);
   - used to produce Certified hybrid seed crops;
   - limited to one generation of certification eligibility;
   - subject to the crop and seed certification requirements of Sections 1 and 12A.
d) CERTIFIED class hybrid seed
   - produced from Select Technical Blend (TB) parent seed or, if imported, from AOSCA Foundation or from OECD Basic class parent seed;
   - sold to commercial producers and not eligible for certification.

- Requirements for BREEDER class plots are in the *Canadian Regulations and Procedures for Breeder Seed Crop Production* and include compliance with the certification standards for SELECT class plots. Requirements for Select Plots are in Section 12.
- Requirements for CERTIFIED CMS Hybrid Wheat crops are in Section 2A.
- Certification Classes for crops of CMS hybrid wheat with blended parent lines are in Table 12A.1.2.

Table 12A.1.2 Certification CLASSES for CMS Hybrid Wheat and Parent Lines



12A.2 SELECT Hybrid Cereal Parent (HCP) Class - Requirements for Plots

The general requirements for Select plots are in Section 12. In addition, the following certification requirements apply to SELECT Hybrid Cereal Parent (HCP) class parent lines of CMS hybrid wheat:

12A.2.1 The area of each Plot of SELECT Hybrid Cereal Parent (HCP) class is limited to 4 hectares (10 acres) in size.

12A.2.2. Plots of SELECT Hybrid Cereal Parent (HCP) must be produced from BREEDER class or SELECT Hybrid Cereal Parent (HCP) class seed; or if imported, from AOSCA Breeder or Foundation class or from OECD Basic or Pre-Basic class parent seed.

12.A.3 SELECT Technical Blend (TB) Class - Requirements for Plots and Seed

The general requirements for Select plots are in Section 12. In addition, the following certification requirements apply to SELECT Technical Blend (TB) class parent lines of CMS hybrid wheat:

12A.3.1 The area of each Plot of SELECT Technical Blend (TB) class is limited to 4 hectares (10 acres) in size.

12A.3.2 Plots of SELECT Technical Blend (TB) must be produced from:

a) BREEDER class or SELECT Hybrid Cereal Parent (HCP) class seed; or if imported, from AOSCA Breeder or Foundation class or from OECD Basic or Pre-Basic class parent seed;
b) a seed mixture, containing male sterile female parent (A-line) seed and restorer (R-line) seed (A+R), that meets the requirements in Section 12A.3.3.

12A.3.3 Seed of SELECT Technical Blends must meet the following minimum requirements:

i) compliance with the general requirements in Section 1 for certification of Select seed which include most requirements of the *Seeds Regulations* for Foundation seed;
ii) produced with mixing equipment, procedures, designated personnel and records that verify homogeneous, uniform finished mixtures; and
iii) packaged with labels that identify the SELECT TB class, the variety name and the certification identities of female (A-line) and male (R-line) parent seed components.

12A.3.4 Certification eligibility of SELECT Technical Blend (TB) seed is limited to one generation. This seed is a mixture of A-line + R-line that is used to produce Certified status crops of CMS hybrid wheat. Seed produced from the planting of SELECT Technical Blend (TB) seed cannot be used to produce subsequent generations of SELECT Technical Blend (TB) seed.

12A.4 LAND REQUIREMENTS

The general land requirements for all crops are set out in Section 1. In addition, the following apply to plots of SELECT Hybrid Cereal Parent (HCP) class and SELECT Technical Blend (TB) class parent lines of CMS hybrid wheat:

12A.4.2 Plots of SELECT Hybrid Cereal Parent (HCP) class and SELECT Technical Blend (TB) class parent lines of CMS hybrid wheat must not be planted on land which has been planted with or produced wheat or durum in the preceding two years.

12A.5 CROP INSPECTION

The general crop inspection requirements for all crops are set out in Section 1. In addition, the following requirements apply to plots of SELECT Hybrid Cereal Parent (HCP) class and SELECT Technical Blend (TB) class parent lines of CMS hybrid wheat:

12A.5.1 Inspection Frequency and Timing

Plots of SELECT Hybrid Cereal Parent (HCP) class and SELECT Technical Blend (TB) class must be inspected as follows:

a) Plots containing male sterile (female seed parent) A-lines require three (3) inspections:

- First inspection shall be completed after heading and before anthesis (flowering), to report off-types or other varieties;

- Second and Third inspections shall be completed during anthesis (flowering), to report pollen shedders in A-line plants.

b) Plots of (male maintainer) B-lines or (restorer) R-lines require one (1) inspection:

- Inspection shall be completed after heads assume mature colour, to report off-types or other varieties.

12A.6 CROP STANDARDS

The general requirements for Select plots are in Section 12. In addition, the following certification requirements apply to SELECT Hybrid Cereal Parent (HCP) class and SELECT Technical Blend (TB) class parent lines of CMS hybrid wheat:

12A.6.1 Isolation

a) The perimeter of SELECT plots must be clearly defined and the isolation distance required in Table 12A.6.1 must be provided prior to crop inspection.

b) Subject to sub-sections c) and d), any plants considered a source of contamination found within 10 meters (33 feet) of the SELECT plot may be cause for declining certification.

c) The first 50 meters of the isolation required in Table 12A.6.1, to other varieties of wheat or non-pedigreed wheat, shall be practically free from plants that can cross pollinate with the inspected seed crop (not more than 1 plant per 100 square meters, on average) and the remaining distance shall be reasonably free from plants that can cross pollinate with the inspected crop (not more than 1 plant per 10 square meters, on average). Contaminants within the required isolation distance, depending on density, stage of maturity, location and distance from the inspected crop, may be cause for declining certification.

d) The required isolation of 2 meters (6 feet) from other crop kinds for 'mechanical' purity is not required if there is a definite physical barrier, defined as a natural or artificial obstacle between two adjacent crops that prevents access and accidental harvest.

e) Staking of a SELECT plot is permitted in lieu of the 1 meter (3 feet) isolation strip required between inspected pedigreed crops of the same* variety provided it meets the following requirements:
   i) Stake locations must be clearly identified on map(s) provided to crop inspectors;
   ii) Stakes must be placed no more than 100 meters apart; and
   iii) Staking must be clearly visible and clearly define the border of the field at the time of inspection.

Table 12A.6.1: Minimum Isolation Required Between Other Crops and SELECT Plots of Hybrid Cereal Parent (HCP) and Technical Blend (TB) class of parent lines of CMS hybrid wheat

Inspected Plot	Other Crops	Isolation Distance Required
Plots containing A-line male sterile Female parent seed	Inspected pedigreed crop of same* Parent Line of same* variety of CMS Hybrid Wheat	1 meter (3 feet) to a crop planted with same pollen (male) parent seed, provided the identity of parent seed planted is verified
	Barley, Buckwheat, Durum, Oat, Rye, Triticale	2 meters (6 feet)
	Different* varieties of Wheat, Non-pedigreed** Wheat	**800 meters** (2,625 feet) to a crop planted with a different pollen (male) parent seed
Plots of B-line or R-line male fertile Male parent seed	Inspected pedigreed crop of same* Parent Line of same* variety of CMS Hybrid Wheat	1 meter (3 feet) to a crop planted with same pollen (male) parent seed, provided the identity of parent seed planted is verified
	Barley, Buckwheat, Durum, Oat, Rye, Triticale	2 meters (6 feet)
	Different* varieties of Wheat, Non-pedigreed** Wheat	**10 meters** (33 feet) or as specified by the variety description

* "Different" variety means crop planted with a different pollen (male) parent seed.
** "Non-pedigreed" means a crop that does not meet the requirements of Circular 6.

12A.6.2 Weeds

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

12A.6.3 Border Rows

a) Border rows are recommended for production of A-line plots but not required. Border rows must be planted with the same seed as the pollen (male) parent rows.
b) Border rows must be planted such that synchronous flowering occurs with receptive female parent plants of the inspected crop.

12A.6.4 Maximum Impurity Standards

a) The standards in Table 12A.6.4 is the maximum level for impurities. Variants may be specified by the responsible Breeder and are not considered impurities unless reported in excess of the acceptable level specified.
b) Table 12A.6.4 indicates the maximum number of plants of off-types or other varieties permitted in approximately 20,000 plants of the inspected plot. The inspector makes 6 counts

(20,000 plants each) in the plot to determine the number of impurities. The resulting average must not exceed the maximum impurity standards in Table 12A.6.4.

Table 12A.6.4: Maximum Impurity Standards for SELECT Plots of Hybrid Cereal Parent (HCP) class and Technical Blend (TB) class of parent lines of CMS hybrid wheat

Inspected Plot	Off-types and Other Varieties	Pollen Shedders in male sterile plants	Other Crop Kinds Difficult to Separate
Plots containing A-line male sterile Female parent seed	**20** per 20,000 plants*	**20** per 20,000 plants*	**2** per 20,000 plants
Plots of B-line or R-line male fertile Male parent seed	**20** per 20,000 plants*		**2** per 20,000 plants

*Equivalent to 1 per 3000 heads when 3 heads per plant

12A.7 OTHER REQUIREMENTS

12A.7.1 CSGA requires submission of a seed sample from Select HCP plots for varietal identity verification testing.