

Wheat – Production of Parent Seed of Hybrid Wheat

The requirements shown here are specifically for production of parent seed of Cytoplasmic Male Sterile (CMS) Hybrid Wheat with Blended Parent Lines. References to Wheat shown here includes Spring and Winter Wheat, Einkorn, Emmer and Spelt (unless otherwise specified).

Durum and **Wheat** are not included and can be found under their own heading.

General Requirements for All Pedigreed Seed Crops

The basic standards for all crops are set out in [General Requirements for All Pedigreed Seed Crops](#). The basic standards for all plots are set out in [General Requirements for Plot Production](#). In addition, the following standards apply to production of parent seed of Hybrid Wheat.

Classes and Generations

The following classes and generations are utilized in the certification of CMS Hybrid Wheat and parent lines (see illustration below):

Breeder:

- 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.

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.

Select Technical Blend (TB) class seed:

- a mixture of CMS 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 Select Plots.

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.

Select Hybrid Cereal Parent (HCP) – Requirements for Plots

1. The area of each plot of Select Hybrid Cereal Parent (HCP) class is limited to 4 hectares (10 acres) in size.
2. Plots of Select HCP must be produced from Breeder class or Select HCP class seed; or if imported from AOSCA Breeder or Foundation class or from OECD Basic or Pre-Basic class parent seed.

Select Technical Blend (TB) – Requirements for Plots and Seed

1. The area of each plot of Select Technical Blend (TB) class is limited to 4 hectares (10 acres) in size.
2. Plots of Select TB must be produced from:
 - a. Breeder class or Select 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 seed requirements described below.

3. Seed of Select TB must meet the following minimum requirements:
 - a. Compliance with the general requirements for certification of Select seed which include most requirements of the *Seeds Regulations* for Foundation seed;
 - b. Produced with mixing equipment, procedures, designated personnel and records that verify homogeneous, uniform finished mixtures; and
 - c. 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.
4. Certification eligibility of Select 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 planting Select TB seed cannot be used to produce subsequent generations of Select TB seed.

Land Requirements

Inspected Crop	Must NOT be grown on land which:
Spring & Winter Select HCP & Select TB	In any of the preceding 2 years has been planted with or produced a crop of: <ul style="list-style-type: none"> • Wheat • Durum

Crop Inspection

1. Plots of Select HCP and Select TB must be inspected as follows:
 - a. Plots containing male sterile (female seed parent) A-lines require three (3) inspections:
 - (i) First inspection must be completed after heading and before anthesis (flowering) to report off-types/other varieties;
 - (ii) Second and third inspections must 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:
 - (i) Inspection must be completed after head assume a mature colour to report off-types/other varieties.

Crop Standards

Isolation - Plots containing A-line (male sterile) female parent seed

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

- | | |
|---|-----------------------------|
| 1. Varietal Purity | Distance |
| a. Inspected pedigreed crop of same* parent line/variety | 1 meter (3 feet)*** |
| b. Different* varieties of Wheat or non-pedigreed** Wheat | 800 meters (2,625 feet)**** |
| 2. Mechanical Purity | Distance |
| a. Barley, Buckwheat, Durum, Oat, Rye, Triticale | 2 meters (6 feet) |

Isolation - Plots containing B-line or R-line (male fertile) male parent seed

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

- | | |
|---|--------------------------|
| 1. Varietal Purity | Distance |
| a. Inspected pedigreed crop of same* parent line/variety | 1 meter (3 feet)*** |
| b. Different* varieties of Wheat or non-pedigreed** Wheat | 10 meters (33 feet)***** |

2. Mechanical Purity**Distance**

- | | |
|--|-------------------|
| a. Barley, Buckwheat, Durum, Oat, Rye, Triticale | 2 meters (6 feet) |
|--|-------------------|

Additional Isolation Requirements:

1. The perimeter of Select plots must be clearly defined and the isolation distance required must be provided prior to crop inspection.
2. Subject to 3 & 4 below, any plants considered a source of contamination found within 10 meters (33 feet) of the Select plot may be reason for declining certification.
3. The first 50 meters of isolation must be practically free from plants that can cross pollinate with the inspected crop (not more than 1 plant per 100 square meters, on average) and the remaining distance must be reasonably free from plant 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.
5. The required isolation of 2 meters (6 feet) 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.
6. Staking of a field 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:
 - a) Stake locations must be clearly identified on map(s) provided to crop inspectors.
 - b) Stakes must be placed no more than 100 meters apart.
 - c) Staking must be clearly visible and clearly define the border of the field at the time of inspection.

* In hybrid crops and crops of pest tolerant varietal blends, "different" variety means a crop planted with a different pollen (male) parent seed.

** "Non-pedigreed crop" means a crop that did not meet the requirements of Circular 6.

*** 1 meter (3 feet) is sufficient to a crop planted with the same pollen bearing (male) parent seed, provided the pedigree of the parent seed planted is verified.

**** 800 meters (2,625 feet) is required to a crop planted with a different pollen (male) parent.

***** 10 meters (33 feet) is required or as specified by the variety description.

Border Rows

1. 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.
2. Border rows must be planted such that synchronous flowering occurs with receptive female parent plants of the inspected crop.

Maximum Impurity Standards

1. **Varietal Purity – Plots containing A-line, B-line or R-line** (off-types/ other varieties on average in 20,000 plants; equivalent to 1 per 3000 heads when 3 heads/plant)
 - a. Select HCP & Select TB – 20
2. **Varietal Purity – Plots containing A-line male sterile female parent seed** (pollen shedders in male sterile plant on average in 20,000 plants; equivalent to 1 per 3000 heads when 3 heads/plant)
 - a. Select HCP & Select TB – 20
3. **Mechanical Purity** (other crop kinds, the seeds of which are difficult to separate from the seeds of the inspected crop, on average in 20,000 plants; for Wheat that includes Barley, Buckwheat, Durum, Oat, Rye and Triticale)
 - a. Select HCP & Select TB – 2

Specific Requirements

1. CSGA requires submission of a seed sample from Select HCP for varietal verification testing.

Certification Classes for CMS Hybrid Wheat and Parent Lines

