CSGA
Canadian Seed Growers' Association

ACPS
Association canadienne des producteurs de semences

Canadian Breeder Seed Requirements

Revised July 1, 2023

This revised version of the *Canadian Breeder Seed Requirements* © supersedes all previous versions of the *Canadian Regulations and Procedures for Breeder Seed Crop Production*.

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Introduction

The Canadian Seed Growers' Association (CSGA) provides an officially recognized, third-party service that establishes and administers requirements for production of pedigreed seed of agricultural field crops. CSGA's authority for certification of Foundation, Registered and Certified seed crops comes from the federal *Seeds Act* and the *Seeds Regulations.* The regulations require CSGA certification of a "crop" for the "seed" from that crop to be eligible for final certification by the Canadian Food Inspection Agency (CFIA). A seed crop certificate from CSGA confers "pedigreed status" to the seed harvested from a specific field (or fields) and is the first step in the official certification of a seed lot. The *Canadian Regulations and Procedures for Pedigreed Seed Crop Production*, commonly referred to as Circular 6, sets out the requirements that a seed grower and a seed crop must meet for the CSGA to issue a seed crop certificate (i.e., certify the seed crop).

CSGA is also responsible for approving Breeder and Select status seed. The *Canadian Breeder Seed Requirements* are used in conjunction with Circular 6 and describe some additional certification requirements and standards that a plant breeder and a Breeder seed crop must meet for the CSGA to approve Breeder seed and issue a Breeder seed crop certificate.

The first section of the Breeder seed requirements entitled "Recognition of Plant Breeders" outlines the requirements for CSGA's peer-reviewed program to become accredited by the CSGA as a Recognized Plant Breeder including the different statuses and the criteria to be eligible for each status. The second section outlines some general requirements applicable to Breeder seed crop production including variety certification eligibility, application for a Breeder seed crop certificate, breeders' quality management system, Breeder seed produced outside of Canada, approval of Breeder seed not certified by the CSGA, and CSGA Breeder seed tags. Along with the crop specific sections of Circular 6, the third section outlines the certification requirements and standards that are applicable to Breeder seed crops. They include requirements for land use and crop inspection as well as individual crop standards including isolation for varietal and mechanical purity; weeds; maximum impurity standards for varietal and mechanical purity; and age of stand for perennial species.

Breeder seed is the highest status seed crop certified by the CSGA and is used as the original parent seed to produce all other classes of pedigreed seed crops. To ensure varietal integrity through subsequent generations it is imperative that Breeder seed be produced in a manner that ensures the varietal identity and purity and specific characteristics of the variety have been maintained. Breeder seed should also be as free as practically possible from other crop kinds, weeds seeds and disease. To support quality assurance, CSGA certified Breeder seed crops must be produced by or under supervision of a CSGA Recognized Plant Breeder and must be produced within a third-party audited quality management system.

Section 1

Recognition of Plant Breeders

This section outlines the requirements to become accredited by the CSGA as a Recognized Plant Breeder or an Associate Plant Breeder including the criteria to be eligible for each status and the authority that comes with each status. This section also includes the requirements related to application for recognition, review of recognition and suspension and cancellation of recognition.

1. Recognized Plant Breeder Status

Recognized Plant Breeder status means that the individual is a fully qualified plant breeder who is authorized to do all activities and complete any forms or documents associated with Breeder seed production, Breeder seed approval or variety certification eligibility.

For pedigreed seed crop certification, a Recognized Plant Breeder (RPB) is any person recognized as such by the CSGA for being knowledgeable in the principles and practices of plant breeding and related disciplines, engaged in the selection and development of varieties and maintaining the identity and purity of varieties. By providing peer reviewed professional recognition of plant breeders' qualifications, the CSGA recognizes the breeders' ability to maintain or supervise the maintenance of Breeder seed plots. Since Breeder seed is the basis of all seed crop varieties, it is important that great care and attention be given to this critical step in the multiplication of seed of varieties.

To be granted Recognized Plant Breeder status an individual must meet at least one of the following criteria:

(1) Ph.D. in plant breeding and one year independent plant breeding experience in a country participating in the OECD Seed Schemes;
(2) M.Sc. in plant breeding and three years independent plant breeding experience in a country participating in the OECD Seed Schemes;
(3) B.Sc.(Agr.) and ten years on the job training (five years in a country participating in the OECD Seed Schemes) and release of a recognized variety;
(4) Ph.D. or M.Sc. in a closely related field and seven years on the job training including at least one year training in a country participating in the OECD Seed Schemes. The number of years of training may be reduced depending on the amount and relevancy of formal training in plant breeding; or
(5) Ph.D., M.Sc., or B.Sc. in an unrelated field and qualification as an Associate Plant Breeder and successful completion of graduate level course work or equivalent in plant breeding.

2. Associate Plant Breeder Status

An Associate Plant Breeder (APB) may produce Breeder seed crops or inbreds for hybrid seed production under the supervision of a CSGA Recognized Plant Breeder. APB status means the applicant meets the requirements for that category but not for RPB status. This status is normally granted to someone who is close to meeting the criteria for a RPB but falls short in either education, experience, or some combination of the two. They only have the authority to do activities or complete forms, or documents associated with Breeder seed production or variety certification eligibility if the supervising RPB expressly authorizes them to do so and has confirmed that authorization with the CSGA.

To be granted Associate Plant Breeder status an individual must meet at least one of the following criteria:

(1) M.Sc. in plant breeding and one year on the job training in a country participating in the OECD Seed Schemes under the supervision of a Recognized Plant Breeder;
(2) B.Sc.(Agr.) and seven years on the job training, one of which must be in a country participating in the OECD Seed Schemes, under the supervision of a Recognized Plant Breeder;
(3) Ph.D. or M.Sc. in a closely related field and five years on the job training under the supervision of a Recognized Plant Breeder and successful completion of an appropriate short course in seed production.

The number of years of training may be reduced depending on the amount and relevancy of formal training in plant breeding and/or closely related field; or

(4) Bachelor's degree in an unrelated field and ten years on the job training under the supervision of a Recognized Plant Breeder, including at least one year training in a country participating in the OECD Seed Schemes. Successful completion of a university course in seed production or demonstration of competence as an Accredited Plot Grower is also required.

3. CSGA Learn Plant Breeder Program

In addition to meeting education and experience criteria, all individuals applying for RPB or APB status must also complete the *CSGA Learn Plant Breeder Program* designed for those applying for recognition. It is an online program that includes several short courses to help the applicant understand the recognition process, plant breeders' responsibilities, the Canadian pedigreed seed system, and the requirements for Breeder seed production in Canada. Previously recognized plant breeders are also encouraged to complete the program.

4. Application for RPB or APB Status

An *Application for Plant Breeder Recognition* (Form 43A) for an individual must be completed and submitted to the CSGA for consideration by the Plant Breeders' Committee. The names and email addresses of at least three persons familiar with the applicant's experience must be provided for references to assist the committee in evaluating the application. At least one of the references should be a CSGA Recognized Plant Breeder. Not more than one of the three references should be from the applicant's employer. The Plant Breeders' Committee reviews applications and makes recommendations to the CSGA Board of Directors.

Those individuals granted APB status must apply again if they wish to be considered for RPB status.

5. Review of Recognition

If individuals with RPB or APB status bring pedigreed seed into disrepute, do not comply with these requirements or the *Canadian Regulations and Procedures for Pedigreed Seed Crop Production* (Circular 6) or do not maintain their professional competence, their recognition will be reviewed by the CSGA and will be subject to appropriate suspension or cancellation measures.

6. Suspension and Cancellation of Recognition

Suspension is a temporary, conditional removal of CSGA recognition of a RPB or APB. Cancellation is a formal withdrawal of CSGA recognition of a RPB or APB.

(1) The CSGA shall suspend the recognition of a RPB or APB where:
   (a) False or misleading information was submitted in support of the application for recognition; or
   (b) The individual does not comply with these requirements.

(2) The CSGA shall not suspend the recognition of an individual where, before the individual is heard, the individual takes corrective measures and the CSGA verifies that those measures have been taken.

(3) The CSGA shall cancel the recognition of a RPB or APB where:
   (a) The individual does not pay crop certification fees prescribed by the CSGA;
   (b) The individual falsely represents any seed to be of pedigreed status;
   (c) The individual provides false or misleading information to the CSGA; or
   (d) The suspension of a recognition has been in effect for one year and the individual has not yet implemented corrective measures.

(4) The CSGA shall not suspend or cancel the recognition of a RPB or APB unless:
   (a) The CSGA has provided the individual with a written report setting out the reasons for the suspension or cancellation;
   (b) The CSGA has given the individual an opportunity to be heard, either by written or oral representation, in respect of the suspension or cancellation; and
   (c) The CSGA has sent a notice of suspension or cancellation or recognition to the individual.

(5) The CSGA shall not cancel the recognition of a RPB or APB for any reason herein where:
   (a) The individual establishes that the basis for the cancellation was the result of an error, and the individual took precautions and exercised due diligence to prevent the occurrence of the error;

(b) The individual undertakes to bring the error to the attention of the persons likely to be affected by the error by placing an announcement in such media, and within such time, not exceeding thirty days, as the CSGA indicates; and
(c) The CSGA verifies that the announcement was made within the time indicated by the CSGA.

(6) A suspension of recognition shall remain in effect until:
(a) The CSGA verifies that the individual has taken corrective measures; and
(b) The CSGA notifies the individual in writing that the suspension has been lifted.

(7) The CSGA shall not accept an application for recognition of an individual for a period of twenty-four months following the cancellation of the recognition of that individual for any of the reasons described herein.

Section 2

General Requirements for Breeder Seed

This section outlines some general requirements applicable to Breeder seed crop production and Breeder seed including variety certification eligibility, application for a Breeder seed crop certificate, breeders' quality management system, Breeder seed produced outside of Canada, approval of Breeder seed not certified by the CSGA, and CSGA Breeder seed tags.

1. Variety Certification Eligibility

(1) Variety certification eligibility must be established before seed of a variety can be certified as required by the Association of Official Seed Certifying Agencies (AOSCA) and the Organisation for Economic Co-operation and Development (OECD) Seed Schemes. It is also required by the Canadian *Seeds Act* and *Seeds Regulations* before seed can be labelled with CFIA tags/labels of an official pedigreed seed class (i.e., Foundation, Registered or Certified).

(2) Most crop kinds in Canada (those listed in Schedule III of the *Seeds Regulations*) are subject to variety registration. For those kinds, variety certification eligibility is determined as part of the application for variety registration. For crop kinds that are not subject to variety registration (e.g., corn and hemp), variety certification eligibility is established by CSGA's Application for Variety Certification Eligibility (Form 300). In both processes, the responsible plant breeder confirms the identity of the variety by providing a variety description, which describes the phenotype of the variety including variants and their expected frequency, and a legal reference sample.

(3) If seed of the variety has already been certified outside of Canada by an official seed certifying agency such as an AOSCA agency or a participating member of the OECD Seed Schemes, certification eligibility has already been determined by the relevant agency.

2. Application for CSGA Seed Crop Certification

(1) Applicants choosing to have their Breeder seed crop inspected by a third-party, must designate the seed crop inspection service that will be conducting the inspection on their *Application for CSGA Seed Crop Certification.* Application deadlines are published by CSGA and vary by crop kind. Authorized seed crop inspectors will complete the crop report and submit it to the CSGA through SeedCert, CSGA's digital platform. An electronic copy of the report also goes to the applicant.

(2) Applicants choosing to inspect their own Breeder seed crops may choose "breeder inspection" when completing their *Application for CSGA Seed Crop Certification.* In that case, the crop report is completed by the breeder and submitted after harvest along with their *Application for a Breeder Seed Crop Certificate* (Form 43) using the template provided with the application.

3. Application for a Breeder Seed Crop Certificate

(1) For CSGA certification of Breeder seed crops, whether produced in Canada or another country, a completed *Application for a Breeder Seed Crop Certificate* (Form 43) must be submitted by the CSGA RPB responsible for the production, following inspection and harvest.

(2) Support documents to be uploaded when completing the Form 43 include the crop report (where the breeder has inspected their own plot), seed analysis for germination and mechanical purity and erucic acid test results for parent production of hybrid canola. Disease test results are not required to be provided to CSGA.

(3) Completion of the Form 43 also includes declarations that the Breeder seed has been produced within a third-party audited quality management system (including the name of the auditor and date of the last audit) and that the seed has been tested for the relevant seedborne diseases if observed in the field during field production.

(4) The information on other crop kinds, off-types (that, by definition, are not part of the variety) which have been removed and variants, provided by the plant breeder in the application should be supplied to

distributors or recipients of Breeder seed. This information can be useful for growers in meeting certification requirements in subsequent seed crops.

4. Quality Management System

(1) Breeder seed crops certified by the CSGA must be produced within a documented third-party audited quality management system (QMS).

(2) The QMS shall address elements related to the CSGA requirements outlined in the *Canadian Breeder Seed Requirements* and the *Canadian Regulations and Procedures for Pedigreed Seed Crop Production* (Circular 6). This generally includes the activities, documents and records listed in the CSGA Assessment Checklist. Breeder seed crops that are certified by CSGA involve many different types of production systems. The RPB and the third-party auditor have traditionally been considered the most qualified persons to identify the appropriate elements to include in the audit.

(3) The Breeder seed crop production QMS must be audited at least once every five years. When auditors find non-conformances, a "corrective action request" or CAR is issued. When a CAR is issued, it is the responsibility of the plant breeder to ensure the required corrective action has been taken and to seek verification from the auditor that their QMS is now in compliance.

(4) Audits of Breeder seed crop production QMSs are supplementary to the professional recognition of plant breeders. CSGA recognizes audits conducted by any auditor who is recognized by either the International Register of Certificated Auditors (IRCA) which is recognized throughout the EU or RABSQA the major ISO auditing agencies which are recognized outside the EU. All qualified third-party auditors of ISO and other recognized quality management systems, including those auditors reporting to Seeds Canada are recognized by one of these two international organizations.

5. Breeder Seed Produced Outside Canada

(1) Seed produced outside of Canada is sometimes inspected and the seed containers tagged or labelled as Breeder class seed by or under the authority of an official certifying agency – a member of the Association of Official Seed Certifying Agencies (AOSCA) or the national designated authority of a country participating in the Organisation for Economic Co-operation and Development (OECD) Seed Schemes.

(2) Imported seed must meet import requirements as required by federal legislation including the *Plant Protection Act* and the *Seeds Regulations*. The plant breeder or agent should consult with the CFIA prior to importation.

(3) Labels and tags must include a) the name of the variety, cultivar or strain, b) the name of the crop kind, c) Breeder seed crop certificate number if issued by the CSGA, d) certification or pedigreed reference number if issued by an official agency in another country, e) if not certified by a certifying agency, the name, signature and address of the CSGA Recognized Plant Breeder responsible for the seed, and f) if applicable, the lot number assigned by the breeder or seed processor.

6. Approval of Breeder Seed Not Certified by the CSGA

(1) Breeder seed that has not been certified by the CSGA that is being planted to produce a pedigreed seed crop in Canada must be approved by the CSGA as eligible parent seed if it is being used to produce Select, Foundation, Registered or Certified status seed.

(2) To obtain approval, an *Application for Approval of Breeder Seed* (Form 40) must be submitted by a CSGA Recognized Plant Breeder or the Variety Maintainer. A separate form is required for each seed source.

(3) When seed is imported into Canada with a Breeder seed label or tag, that has not been issued by an official certifying agency or signed by a CSGA Recognized Plant Breeder, the CSGA may verify that the imported seed would be recognized as equivalent to Breeder seed by the official certifying agency in the state or country of origin.

(4) Upon approval, CSGA will provide confirmation of the classes and the number of generations the seed is eligible to produce. A Pedigreed Reference Number will be issued as proof of eligibility for certification which must be used on crop certification forms including the *Application for CSGA Seed Crop Certification*.

(5) Breeder seed approved in this manner, is not eligible for demotion to a lower class or status.

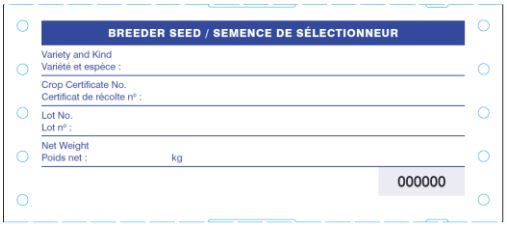
7. Breeder Seed Tags

(1) CSGA Recognized Plant Breeders, or their representatives, may request sequentially numbered Breeder seed tags from the CSGA office for seed that has been certified by the CSGA.

(2) CSGA Breeder seed tags must only be used for seed that has been certified by the CSGA and must include the CSGA Breeder seed crop certificate number. If CSGA has not issued a crop certificate number for the seed, the breeder must use their own tags.

(3) Breeder seed containers must be properly tagged or labelled prior to transfer to another party. If the seed crop is being certified by the CSGA, you must obtain the crop certificate number prior to labelling and transferring the seed.

(4) Although the use of CSGA tags is preferred, a Recognized Plant Breeder may use their own tags. The tags shall include the name of the variety, the name of the crop kind, the Breeder seed crop certificate number, the lot number (if applicable) and the net weight.



8. Transfer and Sale of Breeder Seed

(1) Only seed with a CSGA Breeder seed crop certificate number can be demoted and sold as Foundation or Registered seed provided the seed lot is subject to official variety verification testing and a crop certificate of the demoted class has been issued by the CSGA.

(2) Breeder seed must be transferred in closed containers, labelled with relevant information including the crop kind, variety name and status of the seed. Where applicable the label shall include the CSGA crop certificate number, pedigreed reference number or a signature of a CSGA recognized plant breeder. If a lot number is issued it shall be included on the label.

(3) The requirements and standards for the seed are described in the “Seed Requirements and Standards” portion of Section 3 of this document.

Section 3

Certification Requirements and Standards

This section outlines the certification requirements and standards that are applicable to Breeder seed crops and Breeder seed for certification by the CSGA and is used in conjunction with the *Canadian Regulations and Procedures for Pedigreed Seed Crop Production* (Circular 6). Requirements for land use and crop inspection and individual crop standards for each crop kind can be found in the crop specific sections of Circular 6 which can also be readily accessed by crop kind and class using the search tool on the regulations page of the CSGA website.

Breeder seed crops must meet the same certification requirements and standards as the highest pedigreed class of the relevant crop kind as described in Circular 6. For cereals, small grains, pulses, and soybeans that means the plot requirements for the Select class. For canola, mustard, carinata, and hemp that means the plot requirements for the Foundation class. For forage and turf grasses and legumes, that means the field requirements for the Foundation class.

1. Pedigreed Status or Class of the Parent Seed Planted

(1) Plots for Breeder status must be planted with parent seed that is acceptable to the CSGA. This may include seed which has been certified by the CSGA or it may be parental clones, Breeder lines or their pre-Breeder seed equivalent.

2. Previous Land Use Requirements

(1) Breeder seed crops must not be planted on land where volunteer growth from a previous crop may pose a risk to the varietal identity and purity of the Breeder seed crop.
(2) General requirements respecting previous land use are outlined in the “General Requirements for All Pedigreed Seed Crops” section of Circular 6.
(3) Specific minimum requirements have been established for each crop kind as outlined in the crop specific sections of Circular 6. Breeder seed crops must meet the requirements for the highest pedigreed class of the relevant crop kind.

3. Crop Inspection

(1) Breeder seed crops must be inspected at a stage of growth when varietal identity and purity is best determined to be eligible for certification.
(2) General requirements respecting crop inspection are outlined in the “General Requirements for All Pedigreed Seed Crops” section of Circular 6.
(3) The number of inspections and the proper stage of growth have been established for each crop kind as outlined in the crop specific sections of Circular 6. The number and timing of inspections for Breeder plots are the same as the requirements for the highest pedigreed class of the relevant crop kind.
(4) Crop inspection must be conducted by an authorized inspector, the plant breeder responsible for the plot or another RPB or APB acting under the authority of the plant breeder responsible for the plot.
    a. Authorized inspectors include official CFIA inspectors or inspectors licensed by the CFIA to inspect plots of the relevant crop kind under the supervision of an authorized seed crop inspection service.
    b. CSGA Recognized Plant Breeders are also authorized to conduct inspections of their own Breeder seed plots. Crop inspection reports completed by the plant breeder can be submitted to the CSGA when the *Application for a Breeder Seed Crop Certificate* (Form 43) is submitted using the template provided with the application.

4. Crop Requirements and Standards

Area or Size of Breeder Plots

(1) Each Breeder seed plot is limited to 1 hectare (2.5 acres) in size to ensure the varietal purity requirements for Breeder seed are met and to permit adequate inspection intensity.
(2) Each plot requires a separate inspection and crop report with separate counts for impurities.

(3) There is no limit on the total acreage or number of Breeder seed plots applied for certification provided that each plot is 1 hectare or less with separate inspections and counts for impurities.

Isolation

(1) Breeder seed crops should be planted in areas that will provide maximum protection from outside sources of contamination. They must be isolated from other crops or contaminating plants volunteering in ditches or adjacent crops which pose a risk to the varietal or mechanical purity of the Breeder seed crop.
(2) All crop kinds require isolation between different varieties of the same kind to maintain varietal purity. In some situations where the seeds of the inspected crop are considered difficult-to-separate from the seeds of the adjacent crop, isolated is also required to maintain mechanical purity.
(3) General requirements respecting isolation are outlined in the "General Requirements for All Pedigreed Seed Crops" section of Circular 6. Several isolation requirements related to Select plot production of cereals, small grains, pulses, and soybeans are outlined in the "General Requirements for Plot Production".
(4) Specific minimum requirements have been established for each crop kind as outlined in the crop specific sections of Circular 6. Breeder seed crops must meet the requirements for the highest pedigreed class of the relevant crop kind.

Maximum Impurity Standards

(1) Breeder seed crops must be managed to ensure the continued varietal identity, varietal purity, and mechanical purity of the seed.
(2) All crop kinds have varietal purity standards for the presence of off-types/other varieties. Variants may be specified by the RPB and are not considered impurities unless reported in excess of the acceptable level specified.
(3) Some crop kinds also have mechanical purity standards for the presence of plants of other crop kinds where seeds of the inspected crop are considered difficult-to-separate from seeds of the other kind.
(4) Impurity standards indicate the maximum number of plants of off-types/other varieties or other kinds permitted. For most crop kinds (e.g., wheat, soybeans), the plot standard indicates how many plants are permitted in 20,000 plants (10,000 plants for hemp). For some crop kinds (e.g., alfalfa, timothy), the standard indicates how many plants are permitted in 100 m^2. The inspector makes six (6) counts in the field to determine the number of impurities. The resulting average must not exceed the maximum impurity standard for the crop kind and class.
(5) General requirements respecting maximum impurity standards are outlined in the "General Requirements for All Pedigreed Seed Crops" section of Circular 6.
(6) Maximum impurity standards have been established for each crop kind as outlined in the crop specific sections of Circular 6. Breeder seed crops must meet the requirements for the highest pedigreed class of the relevant crop kind.

Weeds

(1) Breeder seed crops must be free of prohibited noxious weeds, as established by the *Weed Seeds Order*.
(2) Very weedy crops will be declined pedigreed status.

Disease

(1) Plant breeders must take all necessary precautions to ensure Breeder seed is not a source of disease.
(2) Breeder seed plots should be inspected by the plant breeder (or designate) using procedures developed by a plant pathologist familiar with the crop kind to determine disease incidence and severity, especially for seedborne diseases. Multiple inspections may be required for some crop kinds e.g., at least two inspections of field beans plots should be made while plants are still green to determine the presence of bacterial blight and anthracnose.

Age of Stand

(1) For most perennial crops there is a specified maximum number of years during which pedigreed seed may be harvested from one planting, referred to as the age of stand.

(2) General requirements respecting age of stand are outlined in the "General Requirements for All Pedigreed Seed Crops" section of Circular 6.
(3) Specific limits on the number of harvest years for each crop kind are outlined in the crop specific sections of Circular 6. Breeder seed crops must meet the requirements for Foundation fields of the relevant crop kind. The age of stand may be extended with permission of CSGA.

5. Harvesting and Processing

(1) Harvesting and processing of Breeder seed must ensure that the varietal identity, varietal purity, and mechanical purity of the seed is maintained.

6. Seed Requirements and Standards

Varietal Purity

(1) Although field inspection of the seed crop remains the primary method for assessing varietal purity in Canada, the standards for varietal purity of seed for Foundation, Registered and Certified status seed are those established by the Association of Official Seed Certifying Agencies (AOSCA) and published in the AOSCA Certification Handbook.
(2) Exceptions to the AOSCA seed standards are the following maximum impurity standards for off-types and other varieties in field peas: 2/10,000 Foundation; 5/10,000 Registered; 20/10,000 Certified.
(3) The minimum standard for varietal purity for Breeder status seed is the same as the Foundation standard for varietal purity.

Mechanical Purity and Germination

(1) A representative sample (sample size below) of the seed harvested must be sent to an officially recognized seed lab for testing for mechanical purity and germination.
(2) It is recommended that Breeder seed meet the standard for Canada Foundation No. 1 for both mechanical purity and germination. If the seed does not meet that standard, then it must be labelled with the test result.
(3) The minimum standard for mechanical purity for Breeder seed of crop kinds set out in *Schedule I* to the *Seeds Regulations* is the standard for Canada Certified No. 1.

Sections	Crop Kind	Sample Size (g)	Sections	Crop Kind	Sample Size (g)
2 & 12	Barley	1,000 g	6	Bentgrass	6.25 g
	Buckwheat	1,000 g		Bluegrass	12.5 g
	Canary Seed	50 g		Bromegrass	50 g
	Durum	1,000 g		Fescue	25 g
	Flax	100 g		Fescue – Meadow	50 g
	Oat	1,000 g		Foxtail	12.5 g
	Rye	1,000 g		Orchardgrass	25 g
	Triticale	1,000 g		Redtop	6.25 g
	Wheat	1,000 g		Reed Canarygrass	25 g
3 & 12	Bean	1,000 g		Ryegrass	50 g
	Chickpea	500 g		Timothy	25 g
	Fababean	1,000 g		Wheatgrasses	50 g
	Lentil	500 g		Wheatgrass - Crested	25 g
	Lupin	500 g		Wild Rye	50 g
	Pea	1,000 g	7	Alfalfa	50 g
	Soybean	1,000 g		Birdsfoot Trefoil	25 g
4, 5 & 13	Canola/ Rapeseed	50 g		Clover – Alsike	25 g
	Carinata	50 g		Clover – Red	50 g
	Mustard	50 g*		Clover – White	25 g
	Radish	300 g		Clover – Sweet	50 g
8 & 9	Corn	1,000 g		Sainfoin	500 g
10 & 11	Hemp	500 g		Vetch	500 g
14	Sunflower	1,000 g			
	Tobacco	3.12 g			

* *Sinapis alba* 100 g

Seedborne Diseases

(1) For some crop kinds, where there is sufficient risk from certain seedborne diseases (list below), the seed harvested from the plot must be tested for any of those diseases that were observed in the plot during field production and the Breeder must declare that the seed has been tested when they submit their *Application for a Breeder Seed Crop Certificate* (Form 43).

(2) In crop kinds for which there are treatments to control seedborne diseases, Breeder seed should be treated when required. If treatment is not possible and disease presence is suspected, then the requirement for treatment should be clearly marked on the Breeder seed container. If disease incidence is widespread or severe, recipient(s) of the Breeder seed should be advised.

(3) Plant breeders should also be familiar with current quarantine regulations concerning movement of seed within Canada as well as phytosanitary requirements prescribed by the CFIA for importing and exporting seed. The *Seeds Regulations* also specify standards for some crop kinds and maximum disease levels permitted in seed lots offered for sale in Canada (e.g., ergot bodies in wheat).

Crop Kind	Disease	Test Sample Size
Barley & Wheat (all)	True loose smut, *Ustilago nuda/tritici* Spot blotch, *Cochliobolus sativus* Fusarium Head Blight, *Fusarium graminearum*	250 grams
Winter Wheat	All of the above plus Dwarf bunt, *Tilletia controversa*	250 grams
Canola/Rapeseed	Blackleg, *Leptosphaeria maculans*	100 grams
Chickpeas	*Ascochyta rabiei*	500 grams
Field Beans	Bacterial blight, Anthracnose	2 kg
Field Peas	*Ascochyta pisi, Ascochyta pinodella, Mycosphaerella*	500 grams
Oat	Loose smut, *Ustilago avenae* Covered smut, *Ustilago hordei*	250 grams

NOTE: If testing for multiple diseases is required, the sample sizes listed above (for each disease to be tested) will need to be added together to ensure enough seed is submitted to the lab.