



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

Regulatory perspectives: seed testing and certification in Canada's Seed Program

ISTA Annual Meeting 2026, Calgary, AB

Wendy Jahn, National Manager
Seed Section, Canadian Food Inspection Agency



Authority

Seeds Act

- An Act respecting the testing, inspection, registration, quality, sale and environmental release of seeds
- Gives the authority to make regulations on all of the above

Seeds Regulations

- Regulations respecting the quality of seeds and the testing, inspection, and sale thereof
- The basis for all elements of the Seed Program

Weed Seeds Order

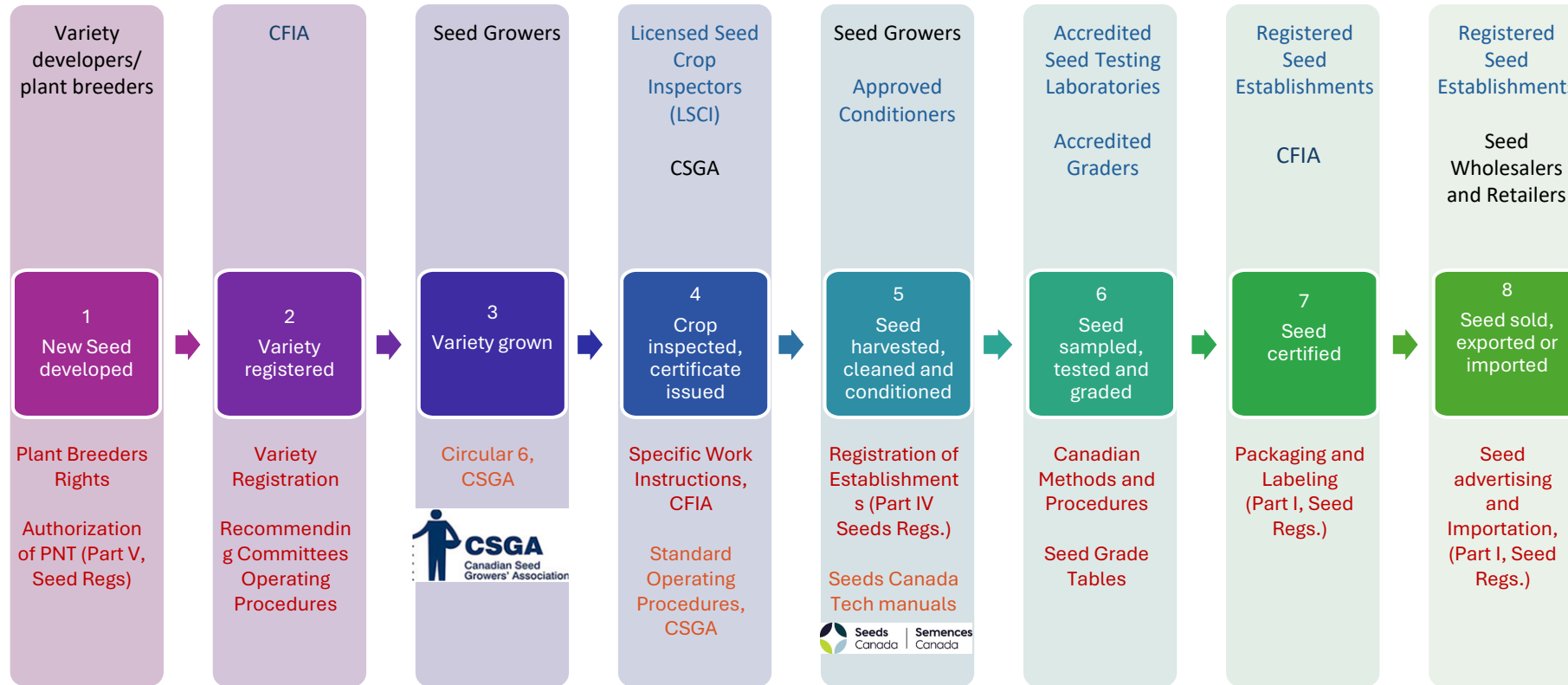
- A list of weed species for the purpose of establishing grades under the *Seeds Act*.
- The seeds of the kinds of plants set out in here are specified to be weed seeds for the purposes of the *Seeds Act*.

**Other authorities may also apply:

Plant Protection Act and Regulations (for phytosanitary requirements)

Safe Food for Canadians Act and Regulations (for labelling of organic seed)

Canada's Seed System



CFIA Seed Industry Accreditation Programs



*derives authority from the Act and Regulation

123 FTE

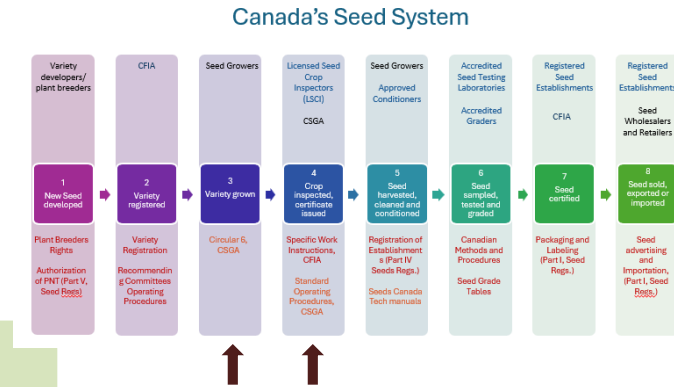
The CFIA works in close cooperation with:



Seeds
Canada

Semences
Canada

Canadian Seed Growers' Association (CSGA) (established 1904)



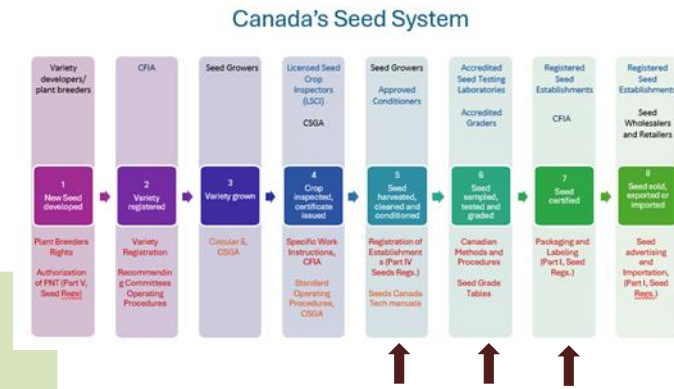
CSGA's mandate is derived from the *Seeds Act* but they operate independent from government

- Establish crop varietal purity standards
- Administer regulations for pedigreed seed field crop production (Circular 6)
- Maintain audit trails for verifying varietal identity
- Issue Crop Certificates for pedigreed seed and manages reporting



Seeds Canada

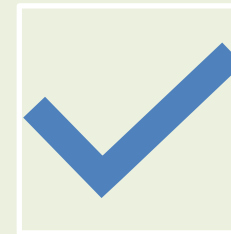
Seeds Canada is a 'conformity verification body' as defined in the *Seeds Regulations*



Assesses, recommends, and audits Registered Seed Establishments

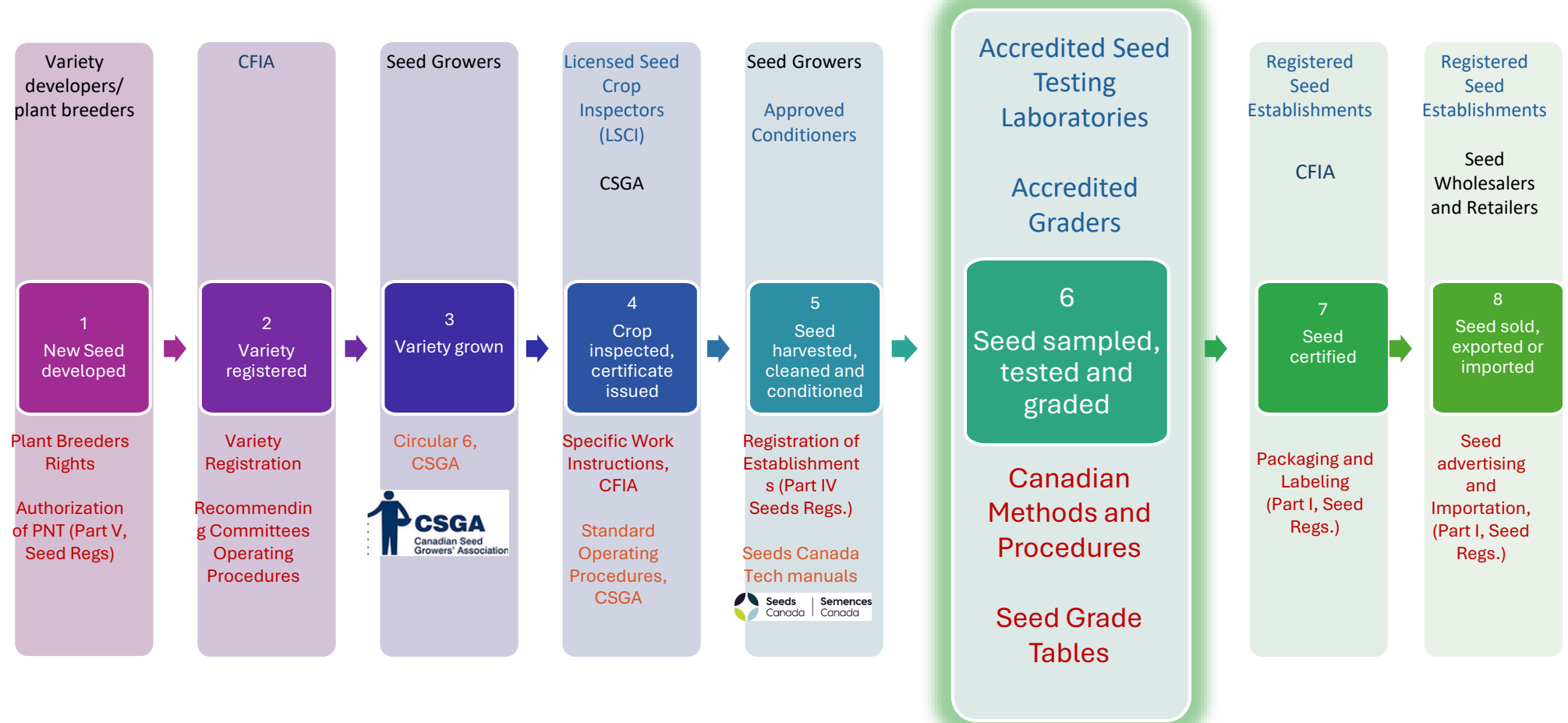


Recommends accreditation/licensing of personnel (graders and operators) in Registered Seed Establishments



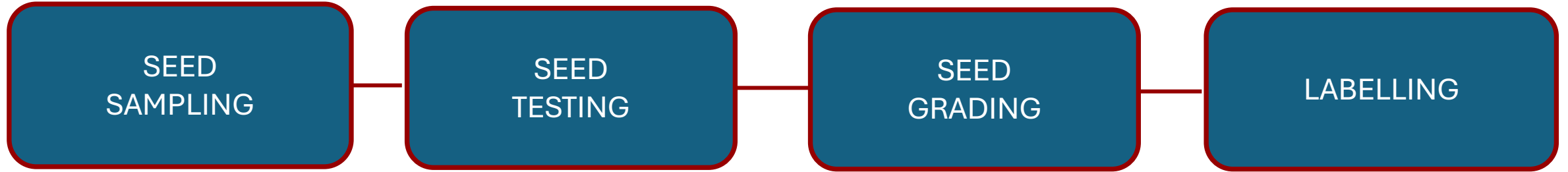
Audits seed testing laboratories and recommends their annual renewal

Canada's Seed Testing – a critical part of Seed Certification



Canada's Seed Testing System

DOMESTIC



Registered seed establishment

Accredited seed laboratory - seed testing (P&T) purity and germination

Canada pedigreed grade name assigned

Labelled with official labels - Canada Foundation Registered Certified

By licensed operator or accredited grader

By accredited analyst

By accredited seed grader
- using P&C test results and grade tables

EXPORT

ISTA sampler (CFIA or private authorized sampler)

ISTA lab (CFIA or private)

labelled with OECD labels for OECD certified seed

Seed laboratory accreditation



CFIA accredited seed testing laboratories (i.e., private/company laboratories) are authorized under the *Seeds Act*

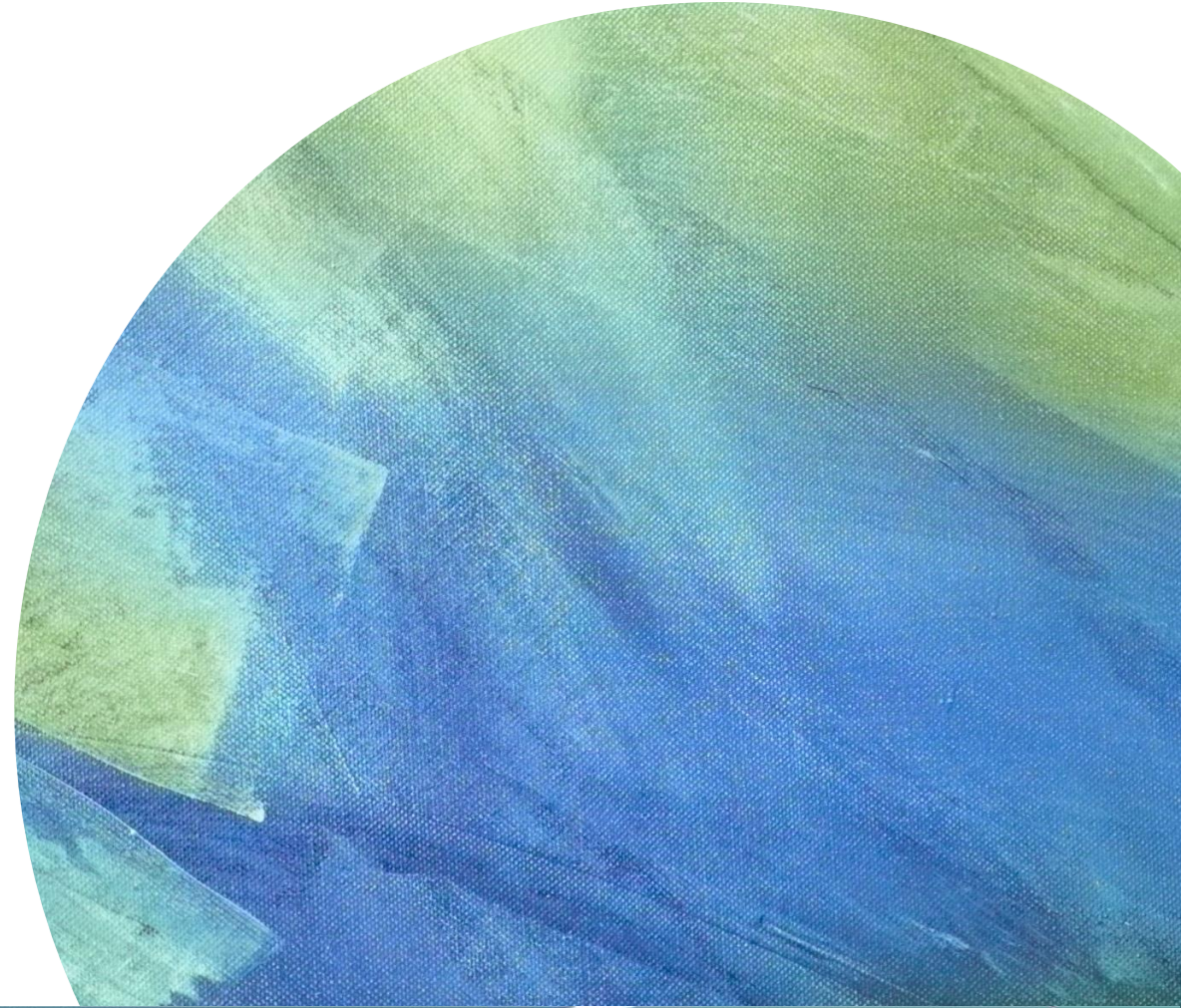


Accredited seed testing laboratories:

- are designated by the Minister of Agriculture, and
- test seed on behalf of the Government of Canada



CFIA also has a **seed analyst accreditation** program



Seed Testing

Canada maintains its own unique seed testing rules called the *Canadian Methods and Procedures for Testing Seed (M&P)*

- referred to in the Seeds Regulations as a ‘recognized standard method’ for seed testing
- M&P test methods have been developed specifically to produce test results used to assign Canada pedigreed grade names to seed sold in Canada

Seed Standards 'Grade Tables'

Purity and germination standards for seed sold in Canada and for import are set out in Schedule I to the Seeds Regulations also known as the 'Grade Tables'

Table I

Applicable to:

(a) Wheat, common – *Triticum aestivum* L.

(b) Wheat, durum – *Triticum turgidum* L. subsp. *durum* (Desf.) Husn. (= *T. durum* Desf.)

1	2	3	4	5	6	7	8	9	10
Maximum Number of Seeds per kg									
Noxious Weeds							Minimum Percentage of Germination		
Grade Name	Primary	Primary Plus Secondary	Total Weeds	Total Barley, Rye & Triticale	Other Crops Including Total Barley, Rye & Triticale	Additional Common Wheat in Durum Wheat & Durum Wheat in Common Wheat	Maximum Number of Ergot Bodies per kg	Common Wheat	Durum Wheat
1. Canada Foundation No. 1	0	0	2	0	0	0	1	85	80
2. Canada Foundation No. 2	0	0	4	1	2	0	8	75	70
3. Canada Registered No. 1	0	0	3	0	1	0	1	85	80
4. Canada Registered No. 2	0	0	6	1	2	0	8	75	70
5. Canada Certified No. 1	0	0	3	1	2	5	2	85	80
6. Canada Certified No. 2	0	0	6	2	5	10	8	75	70
7. Common No. 1	0	2	10	10	10	12	2	85	80
8. Common No. 2	2	4	20	20	20	24	8	70	70

Canadian grade names (1)

Canada has a seed grading system

A grade name reflects:

“Canada Certified No. 1”



-the pedigreed status of the seed (based on field inspection), and



-purity and germination standard that have been met

Canadian grade names (2)

The grade name indicates to the buyer which standards have been met

Therefore, when seed is labelled with the grade name, the seed test results are not required to be labelled on the bag or label

FOUNDATION SEED		SEMENCE FONDATION	
Kind / Espèce			
Variety / Variété			
C.S.G.A. A.C.P.S.	Grade / Catégorie	FOUNDATION	No. 2
	Crop Cert. No. / N° du cert. de récolte	Lot No. / N° du lot	
MEMBER OF THE ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES		MEMBRE DE "ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES"	
CFIA / ACIA 0032 (2002/06)			

REGISTERED SEED		SEMENCE ENREGISTRÉE	
Kind / Espèce			
Variety / Variété			
C.S.G.A. A.C.P.S.	Grade / Catégorie	REGISTERED ENREGISTRÉE	No. 1
	Crop Cert. No. / N° du cert. de récolte	Lot No. / N° du lot	
MEMBER OF THE ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES		MEMBRE DE "ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES"	
CFIA / ACIA 0033 (2002/06)			

CERTIFIED SEED		SEMENCE CERTIFIÉE	
Kind / Espèce			
Variety / Variété			
C.S.G.A. A.C.P.S.	Grade / Catégorie	CERTIFIED CERTIFIÉE	No. 1
	Crop Cert. No. / N° du cert. de récolte	Lot No. / N° du lot	
MEMBER OF THE ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES		MEMBRE DE "ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES"	
CFIA / ACIA 0031 (2002/06)			

Weed Seeds Order, 2016

Weed Seeds Order (WSO) is a ministerial order made pursuant to the *Seeds Act*

Plays a critical role in preventing the introduction of new weed species into Canada

WSO is the tool used to identify and categorize weed species for the purposes of the import, sale and grading of seed

Challenges for Weed Seeds Analysis

- Technical:
 - Limited taxonomy expertise
 - Labour intensive test and time-consuming training
 - Diversity of plant species (>360, 000 flowering plants)
 - Localized species distribution
- Operational:
 - Market place dynamics shift species needs
 - Prolonged in-house training (min. 3 years)
 - Years of testing experience needed (10 years)
 - No job ready hiring from the job market





National Seed Herbarium

Well-known Expertise and Resources nationally and internationally

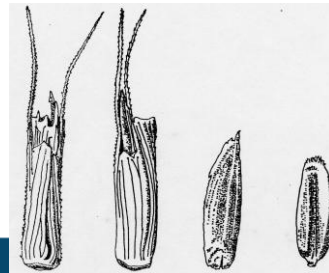
The National Seed Herbarium originated in the early 1920's as a part of the Federal Department of Agriculture

The earliest date is 1869 on a sample of Larkspur seed (*Delphinium bicolor*).

Specimens were steadily added over the years, with two large additions made in 1987-1990 from the large seed collection of Biosystematics at Agriculture and Agri-Food Canada (AAFC).



Rottboellia cochinchinensis



Aegilops cylindrica






Dactyloctenium aegyptium



2016 Seed ID Guide launched (idseed.org)

Seed ID Web Applications

CFIA Initiated a collaboration platform supported by stakeholders nationally and internationally

 <h3>Fact Sheets</h3> <p>The Fact Sheets provide the user with images and descriptive information to aid in seed identification.</p>	 <h3>ID Keys</h3> <p>The ID keys are interactive and assist the user, with an unknown seed in hand, to identify it.</p>	 <h3>Gallery</h3> <p>The searchable Gallery contains hundreds of seed images and illustrations to aid in seed identification.</p>
---	--	---



Seed ID Guide

Virtual publication of seed images, ID fact sheets, ID digital keys ...
ISBN: 978-1-7753419-0-1

[Launch The Tool](#)



Publication Guide

Author resource center for guide, data protocols, template and submission.

[How to publish?](#)



Training Resources

Training resources and interactive tools for seed botany, morphology and identification

[Secure Area](#)



Seed ID Forum

Peers to advise, consult, inquiry, discuss or post with the support of an invited Expert Panel

[Secure Area](#)

Nachet Testing innovation: Computer Vision (AI)



Artificial Intelligence (AI), especially deep learning, emerges as a promising solution for method innovation in seed testing. However, continued study for testing application is required.

RGB App – Nachet: AI assisted ID

Micro-imaging with a digital microscope



How to use Nachet (Video)

Interface developed by CFIA Ai-lab

Canadian Food Inspection Agency / Agence canadienne d'inspection des aliments

Seed Classification Interface

CAPTURE [LOAD] [SAVE] [CLASSIFY] [MODEL]

[1] - 98% [2] - 78% [1] - 93%

[3] - 74% [1] - 80% [1] - 96%

[1] - 99%

Capture 1

Developed by AI Lab Version 0.1.0

DIRECTORIES		
Ambrosia-arthemisiifolia	6	X
Ambrosia-pollinostachya	1	X
Ambrosia-trifida	6	X
Bromus-hordaceus	5	X
Bromus-japonicus	9	X
Bromus-secalinus	4	X

RESULTS		
1	Carthus nutans	5
2	Bromus secalinus	1
3	Ambrosia trifida	1



[CFIA Nachet Video Demo](#)

Seed Testing – oversight of the Seed Program

- Field grow outs through the Variety Verification Program monitor the varietal purity and varietal identity of seed in the marketplace and to provide confidence in the integrity of the Canadian seed certification system.
 - Monitor pedigreed seed
 - required for certification of seed moving in international trade under the OECD Seed Schemes.
 - Part of Variety Registration to verify breeder's Description of the Variety
 - Genotyping (DNA marker analysis and or fingerprinting when morphological characteristics are not sufficient



Seed Testing is essential to Seed Certification

- You turn samples into decisions – certification relies on your data, not assumptions
- You are the final quality gate – no seed is certified without analytical validation
- You protect the integrity of the class system – ensuring certified seed meets strict standards
- You detect hidden risks – contaminants and diseases that would otherwise go unnoticed
- You give confidence to the system – your results underpin trust for regulators, growers, and markets
- You connect the supply chain – linking production, regulation, and end use through objective data
- You make certification credible – without testing, certification has no proof

Seed certification is only as strong as the testing behind it

Canada