

What is a Germination Test?

The germination test determines the maximum plant-producing potential (viability) of the seed. Germination results are expressed as a percentage: a 90% germination result means 90 out of 100 seeds are likely to germinate under optimal growing conditions. This information is important for calculating seeding rates, determining whether a particular seed lot has the potential to establish a good crop stand and uniformity, or determining if the seed lot should be used.

Why do a germination test?

Germination testing provides the grower with the maximum performance potential for that seed lot.

How is a germination test done?

All accredited seed testing laboratories in Canada use a 200 seed germination test methods prescribed in the Methods and Procedures manual published by CFIA.

All external testing conditions used in our laboratory are controlled so that the tests can be repeated, either within the laboratory or between laboratories. Controlled elements such as oxygen, light, moisture, and temperature are standardized for every crop type to ensure that germination will take place within a specific period of time. We ensure that all substrates are free from phytotoxic properties. Sand, soilless mix, blotters, and water are tested for impurities and pH.

At the end of the test period, seedlings are evaluated and categorized as follows*:

- **Normal Seedlings:** Seedlings possess essential structures that are indicative of their ability to produce useful mature plants under favourable field conditions.
- **Abnormal Seedlings:** Seedlings initiate some form of growth, but have insufficient/missing plant structures rendering them unable to produce a healthy plant, such as missing roots or shoots.
- **Fresh Seeds:** Seeds that have imbibed water but failed to germinate when given the prescribed or recommended germination conditions. They appear firm, fresh, and capable of germination, but remain dormant.
- **Hard Seeds:** Seeds that remain hard at the end of the prescribed test period, because their seed coats are impermeable to water (for example: alfalfa).
- **Dead Seeds:** Seeds that cannot produce any part of a seedling.



Wheat seedlings (top left). The seedlings on the left are normal and the ones on the right are abnormal.
Pea seedlings (top right). The seedlings on the left are normal and the ones on the right are abnormal.

A diagnostic profile is also included with germination test results with further explanations of symptoms such as chemical injury, dormancy, frost, heating, mechanical damage, or the presence of pathogens.

How do I use germination test results?

Less than stellar germination test results do not necessarily mean a seed lot needs to be discarded.

An experienced and knowledgeable seed analyst is trained to recognize the symptoms noted in the germination test and notes it on the reports. They may also offer alternative methods and solutions to improve germination results for the seed lot in question, especially when there have been challenges with harvest conditions.

Significant improvements to the final germination can be achieved when dormancy or pathogens are mitigated.

More Information: A germination test provides one aspect of seed quality and is most useful when used in conjunction with other seed quality tests. 20/20 Seed Labs offers a number of testing packages to help you find out exactly what you need to know about your seed. For more information, view our Testing Recommendations and Packages Technical Bulletin.

* Definitions have been adopted from CFIA, Methods and Procedures for Testing Seed, Definitions section 4.3.