

20/20 Tech Bulletin

What is a Complete Disease Diagnostic™ for Pulses?

The Complete Disease Diagnostic™ is a test that identifies potentially devastating seed-borne pathogens that may be present on pulse seed. This is, perhaps, one of the most valuable diagnostic tools available to pulse growers. It was developed by and is exclusive to 20/20 Seed Labs Inc.

Why do a Complete Disease Diagnostic™?

Seed-borne pathogens can cause a host of problems with germination, vigour and seedling health, which can, in turn, impact stand establishment and, ultimately, yield potential.

If these pathogens are identified prior to seeding, growers can take action to minimize the risks, either by selecting a seed treatment that controls the identified pathogens, or deciding to not use the seed lot altogether.

If crops have performed poorly in the field, it may be beneficial to find out why. A pathogen could be a contributing factor to poor performance and a professional diagnosis is helpful, particularly as many diseases show very similar symptoms in the field.

Disease symptoms can be caused by a single pathogen or a combination of pathogens known as a disease complex. A disease complex can have a variety of symptoms that affect different plant parts and stages of plant development. A good example is the *ascochyta complex*, where as many as 3 different fungi occur simultaneously to produce *mycosphaerella/ascochyta* blight and foot rot.

Most pulse pathogens can be characterized as follows:

- **Seed rots and seedling blights.** These can cause the death of seeds or of seedlings before or shortly after emergence, and can significantly reduce density and yield.
- **Foot and root rots.** Seedlings infected with rots and that survive the seedling stage might die later or ripen prematurely, producing fewer heads, resulting in reduced seed set and/or shriveled seed.
- **Pod and stem rots.** Affected plants with stem rot will show poor lodging from softened stems, foliage above the lesions wilt and may consequently ripen seed prematurely.
- **Leaf blight and pod spot.** Produce symptoms of spotting on leaves and pods. Leaf blight symptoms can be severe enough to cause defoliation and plant death.



How is a Complete Disease Diagnostic™ Done?

- 200 seeds are surface sterilized, placed on a growth medium and allowed to germinate.
- A qualified analyst examines the colonies produced and identifies the pathogens as follows:

Pathogenic Fungi - Disease

Ascochyta spp. - Leaf blight, and root rot complex

Botrytis cinerea - Seedling blight

Colletotrichum spp. - Anthracnose

Fusarium spp. - Root rot

Sclerotinia spp. - Stem and pod rot

Stemphylium botryosum - Leaf blight

- This test gives the percentage of infected seeds to 0.5%
- This test takes 7 days to complete.

How do I Use the Complete Disease Diagnostic™ Results?

Seed that tests positive for the presence of pathogens is not necessarily unusable. The Complete Disease Diagnostic™ gives you a clear picture of what diseases may, or may not, be present on your seed so that you may manage properly for it.

Seed treatments not only mitigate the potential for damage from seed-borne disease, they alleviate damage from soil-borne pathogens, as well. Most also have systemic properties that work to protect the seed, roots, and young seedlings from disease, providing a significant economic advantage over untreated seed.

Growers should use high germinating, vigorous, disease free seed whenever possible, and the Complete Disease Diagnostic™ is another tool that allows you to make a more informed decision about seed use.

More Information: The Complete Disease Diagnostic™ test is designed to give a snapshot of diseases common to beans, peas, lentils and chickpeas in Western Canada.

If your crop type and/or area require more specific tests, 20/20 Seed Labs Inc. offers a number of testing packages to help you find out exactly what you need to know about your seed.

For more information, see our Agronomic Test Packages information sheet.

The responsibility for seed utilization under this report with respect to any result or specification rests entirely with the client.



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