

20/20 Tech Bulletin

Mechanical Damage in Pulse Crops

Mechanical Damage in pulse crops is caused during movement of fragile seed during harvest, seed treatment and any seed movement. Because of their larger size pulse crops can be damaged in augers, by incorrectly set combines and seeders.

Mechanical damage can take on symptoms such as gross damage ie. splits, seed coat cracks, microscopic breaks and more serious damage such as internal or cryptic damage which effects the seeds' ability to germinate and maintain vigour. Cryptic damage is the most concerning as it is physiological in nature, reduces germination vigour and can further reduce yield potential.

What does it look like?

As with all defects, there is a range of damage that extends from “slight” damage to “structurally deficient”. At 20/20 Seed Labs we assess mechanical damage visually during the germination and vigour testing, and can assess a percentage to the tested lot.

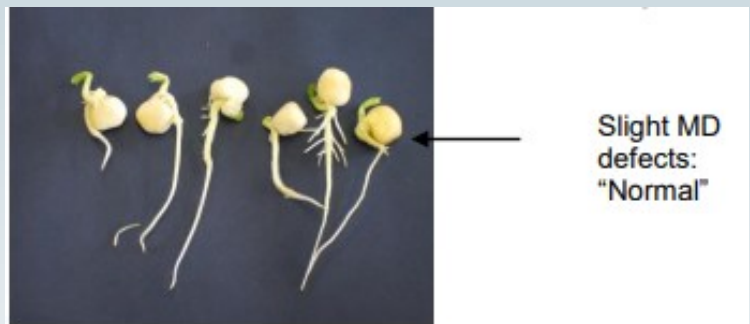


20/20 Seed Labs uses the following definition of mechanically damaged seeds, examples seen above.

“Abnormal seedlings are characterized by severely stunted growth, damaged or absent shoot structures and root systems.”

The abnormal seedlings shown above are severely lacking in any essential structure that could potentially help this plant to grow to maturity.

The seedlings in this photo are examples of what 20/20 Seed Labs considers as having “slight defects” and are still technically classified as “normal” seedlings. They may germinate and grow under normal conditions but could have lower vigour.



Why Does it Happen to Peas?

Seeds, such as peas, that form with their embryos positioned on the outside of the seed are the most susceptible to mechanical damage as they are the least protected. This, in combination with low moisture levels during physical stress will result in mechanical damage.

During the initial stages of germination, seeds with mechanical damage may imbibe water at uneven rates, causing swelling of the seeds. These seeds will appear to “burst” during the initial stages of germination and will only begin the initial phases of seed development.

Other seeds with cryptic or internal damage will produce weakened structures, missing primary roots, significantly shortened hypocotyls, fractures, etc, as shown above.

What can be done?

If the damage is internal, there is little that can be done to correct mechanical damage.

Further handling of the seed may worsen the level of damage. Seed treatment may assist in lowering the seeds susceptibility to invasion by bacteria or fungi, but may not improve the overall germination capability of the seed.

Prevention of Mechanical Damage

Using proper auger loading techniques, using correct combine and seeder settings are good ways to prevent mechanical damage in pulse crops.

More Informations

Contact us for information on testing your seeds for mechanical damage at: support@2020seedlabs.ca



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