

Seed vigour, keep it high!

Problems

Seeds are living organisms and sensitive to stress during storage or treatments, which can result in reduction of seed vigour. Vigour can be seen as the tolerance of seeds to emerge under non-optimal conditions. Low vigour seeds give upon sowing in the field no or weaker seedlings.

Solutions

What causes seed vigour loss?

When seeds are dry, they slowly oxidise, as every organic material. Oxidation can also be induced for instance by a hot water, steam or air treatment. Damage repair can only start once the seeds are getting wet, as enzyme activity is needed for this and enzymes need water. More oxidation results in more damage and weaker seeds and seedlings. These seedlings will emerge slower or not at all and are more sensitive to drought stress and pathogens (see picture).

How to reduce vigour loss

Harvest seeds with maximum stress tolerance, dry them well, keep them stored under optimal conditions and be cautious with physical seed sanitation treatments.

Practical recommendations

- Harvest the seeds, if possible, at full maturity, since less mature seeds are more sensitive to induction of damage.
- Dry the seeds soon after harvest, preferably to an equilibrium with 30 -40% relative humidity and keep them dry.
- Store the seeds under optimal conditions: 30-40% RH, cool and preferably without oxygen. Do this also with left-over seeds.
- Be careful with sanitation treatments. Perform test treatments with a small sample.
- Speed of germination is a good indicator of seed vigour. More damage needs more time for repair.

Further information

Read more on seed storage and vigour: <http://library.wur.nl/WebQuery/wurpubs/534005>

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*Carrot seedlings exposed to spores of *Alternaria radicina* (Black rot disease). Upper picture is from high vigour seeds. Bottom picture from seeds of the same seed lot but stored at higher humidity and temperature.*

