

Proper seed storage

Problems

Seed quality is very important for the start of a crop. Accumulation of damage during storage can result in abnormal seedlings or even failure of emergence (Fig 1). To avoid too much ageing, seeds need to be stored in the most optimal way.

Solutions

What causes seed ageing?

Seed ageing is caused by oxidation of the cell membranes, mitochondria, DNA, RNA and proteins in the seeds. This oxidation is stimulated by four factors: seed moisture level, temperature, oxygen and time. The main factors stimulating this ageing are moisture and oxygen.

How to reduce ageing

Keep sealed commercial seed packages closed until use, to avoid moisture uptake from the air. Never store an open package in a cold place like a refrigerator, where the humidity is high and the seeds will absorb moisture. If not all seeds are used, store the remainder in a dry environment. For this we developed an easy system with a 'seed drying and storage box' (Fig 2).

The principle is an airtight transparent box. In the box is a bag with silica gel and a relative humidity (RH) meter. The optimal RH is between 20 and 40%. Home produced seeds can also be dried in the box. If the RH surpasses the 40%, the silica gel needs to be regenerated in an oven at 100 °C. The dried silica gel can be cooled down in a closed clean jam jar or alike. It is possible to store the airtight box with seeds in a cooler place, to reduce ageing further. For larger amount of seeds the box could be replaced by a large vacuum bag, as available for storage of clothes.



Figure 1. Seed quality test with fresh and aged barley seeds



Figure 2. Box for seed drying and storage

Practical recommendations

- To reduce seed quality loss you need to store seeds under dry and cool conditions.
- The seed drying box is a tool to keep the seeds dry and can be home made from readily available material.

Further information

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

Authors: Steven P.C. Groot (Wageningen University & Research)

Contact: steven.groot@wur.nl

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