Seed storage in relation to germination

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SEED STORAGE

IN Relation to Germination

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We are often asked how long seed can be stored and remain suitable for sowing. There is no single answer as the period depends on a number of factors, including the type of seed, its condition at the time of storing and the nature of the storage.

Statements regarding the germination of wheat grains found in old Egyptian tombs are entertaining but have no foundation in fact. It is known with certainty, however, that some seeds having a thick coat impervious to water and air will remain viable for over 100 years. Seeds of a species of Cassia taken from Herbarium specimens, germinated after 158 years. Not quite so spectacular but nearer home, samples of subterranean clover seed stored in our own laboratory in 1935 are still producing seedlings 25 years later.

Under natural surroundings even longer periods have been recorded. Seeds of the Indian Lotus, a water plant, germinated quite readily after being taken from a peat bed in Manchuria. It was estimated that they had been buried for more than 200 years.

Most agricultural and vegetable seeds are not long-lived. In general, wheat does not decrease appreciably in germination for several years but under normal conditions of storage may lose its viability altogether in 10 years. Among the shorter-lived species are onions and parsnips. Both may show a reduction in germination within 12 months of harvesting.
STORAGE IMPROVES SOME SEEDS

In some cases the germination may increase rather than decrease during the first year or so of storage. Quite a number of seeds require a maturing period and give no real indication of their ultimate value if tested immediately after harvesting. Typical examples among species produced in this State are perennial veldt grass and buffel grass while Rhodes grass and Paspalum have similar characteristics. After being stored for a few months, seed which initially gave little germination can behave in a normal fashion.

As already mentioned, the conditions of storage play a very important part in deciding how long seed will remain viable. There is nothing subtle about the damage caused by mice, or for that matter, insects including the various grain weevils. Less obvious but no less decisive are the moisture content of the seed along with the humidity and temperature of storage.

Well-matured seeds carefully harvested in dry weather have the greatest potential for maintaining viability. The moisture content of the seed, particularly in countries where rain may occur when the crop is mature, is most important and often it is necessary to reduce this by natural or artificial drying. Various workers have established “critical moisture contents” for seeds above which, under normal storage conditions, they lose viability rapidly and below which it is maintained for a reasonable period.

The position is complicated, however, by the fact that the influence of moisture and temperature are inter-related. A moisture content and relative humidity quite safe at a low temperature can result in rapid deterioration as the temperature increases.

You could reasonably comment that this all sounds rather academic but what are the practical implications. Trouble with seed storage occurs mainly in tropical and sub-tropical countries, but some lines which pass through the tropics on their way to temperate countries may also be affected. Knowing the basic causes of rapid loss in germination it has been possible to overcome the problem in part. Besides the drying already mentioned, some of the more valuable and temperamental seeds, such as vegetables, are stored at low temperatures, approaching freezing point, along with a relatively low humidity.

CANNED SEED

In many cases, where the temperatures cannot be controlled, it is possible to dry the seeds and maintain them at a low moisture content. A fairly recent development in the United States has been the packing of seeds in moisture-proof or resistant containers following drying. While at Modesto, in California a few months ago, I had the opportunity of watching lines being canned in much the same way as jam or fruit, and laminated foil packages are also used quite extensively.

This scientific advance has now been introduced to Australia, a Sydney firm having announced that it is in a position to offer dry-conditioned seed packed in moisture-proof containers. As newly harvested seed comes to hand, it is proposed to make a full range of vegetable and flower varieties available to commercial growers. This will be of particular advantage to growers in northern New South Wales and Queensland.

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