

Chapter **49**

**Seed Conservation  
at the Centre for  
Genetic Resources,  
The Netherlands**



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## Introduction

The Centre for Genetic Resources, the Netherlands (CGN), maintains the Dutch genebank for plant genetic resources for food and agriculture, consisting of 23,000 accessions of 25 crops. In this way CGN contributes to the global effort to conserve plant genetic resources. CGN has traditionally adhered to a policy of unrestricted availability of germplasm held in its genebank. In the interest of keeping this material available for future research and utilisation, CGN has undertaken not to claim legal ownership over the germplasm held in its genebank, or to seek any intellectual property rights over that germplasm or related information. CGN strives to increase knowledge over its germplasm relevant to its users. All parties which use its germplasm for breeding, research or cultivation, and which have access to facilities needed for such work, qualify as *bona fide* users.

## Seed Storage Facilities and Procedures

CGN's storage and drying facilities consist of two deep freezer compartments of 30 m<sup>2</sup>, each at -20°C, a cooler compartment of 30 m<sup>2</sup> at 4°C, and a drier compartment with a relative humidity of 12% at 15°C.

After harvest, the purity of the sample is checked visually and, if necessary, the sample is cleaned. Samples are not supposed to contain any dust particles or broken and/or empty seeds. The seeds are put in the drying room for at least four weeks until a seed moisture content of 3–7% is reached. Sample viability is determined in germination tests using random samples of 200 seeds. In the case of wild species, smaller seed samples are sometimes tested. The germination tests are carried out by a specially equipped institute, namely The General Netherlands Inspection Service for Agricultural Seeds and Seed Potatoes (NAK-AGRO). For a seed sample to be included in the collection, the germination should be above 80% (60% for wild species). If the germination is below this threshold, the sample needs to be regenerated. The seeds are packed in laminated aluminium foil bags, which are sealed under light vacuum conditions, to check the air-tightness of the bags. The viability of the seeds in the long-term storage (-20°C) is checked every 10 to 20 years. An accession will be regenerated when the germinability drops 15% below the initial germination percentage.

## Problems and Concerns

The reliability of some of the germination tests has been found to be low. This can partly be explained by the relatively small sample sizes (200 seeds). A larger problem is dormancy, especially in the wild species. Furthermore, the International Seed Testing Association (ISTA) protocols for germination tests have been developed for commercial seed; exotic and wild material can have special requirements that are not covered by the protocols.

Some observations on lettuce stored at 4°C indicate that the longevity predicted by the viability equation (see Hong *et al.*, 1998) is not realized. The reasons for this have yet to be ascertained. Consequently, what genebanks require are:

- A) more efficient viability tests, which are unaffected by dormancy and preferably are non-destructive; and
- B) better predictions of the longevity of seeds, enabling a reduction in the amount of viability testing.

## Reference

Hong, T.D., Linington, S. and Ellis, R.H. (1998). *Compendium of information on seed storage behaviour*. Royal Botanic Gardens, Kew, UK.