**Target**

Including material obtained from acquisition or multiplication in the collection.



1. **Drying**

Cleaned seed samples, following procedure UIT-CGN-PG 6.2.20 "Acquisition" and procedure UIT-CGN-PG 6.2.21 "Multiplication", are dried in the special drying room of the genebank storage facility to an absolute moisture content between 3-7%. The seed samples are dried in open paper bags or other breathable material. Larger seed quantities are divided among several bags to achieve optimal drying. Depending on the initial moisture content, seed quantity and physical and chemical properties of the seed, it can take 2 months to reach the desired moisture content of 3-7%. The moisture content of the seed depends on the RH and temperature of the surrounding air (15%RH and 15°C).

In reference tables prepared by Justice and Bass (In: O. L. Justice and L. N. Bass 1978. Principles and Practices of seedstorage. Agricultural handbook no.506) and later elaborated for various Dutch crops by Witte (In: C. Witte 1982. Equilibrium moisture content of seeds at different humidities. Seed Interests 36-no.3:72-74), the absolute moisture content of crops can be found for each crop at a given temperature and different RHs. After drying for a period of two months, a batch is in principle sufficiently dried. For larger seed quantities, this is checked for certainty by weighing several times to see whether the moisture content has indeed stabilised after two months.

1. **Division**

If there is too much seed, the 'seed divider' is used to reduce the size of the seed lot. The seed divider consists of 14 gutters and serves to divide the seed lot into two equal parts. The maximum quantity is the quantity that goes into a large residual bag. If the seeds are relatively large, for example wild spinach or (garden) beans, several residual bags are created.

1. **Temporary storage of seed at -20˚C pending results of germination tests**

Seed samples that meet the criteria for quantity (see INS-CGN-PG-002), are cleaned and sufficiently dried are temporarily packed in aluminum foil bags and stored as batches in the CGN freezer room. Prior to freezing the seeds, samples for determination of initial germination are made. The curator indicates that a seed batch is ready for temporary storage as a batch, and transfers the seed to the Seed Manager. The latter takes care of freezing the seeds within a month of transfer.

1. **Registration in GENIS and generation of access number**

After completion of the initial germination trials, the Seed Manager, in consultation with the curator, creates a list of material that can be included.   
If the material does not yet have an accession number, this is generated in GENIS by a status change from 'R' (received) to 'A' (accessed), see INS-CGN-PG-009.

The new seed lot is registered in GENIS with the generation number, the year of multiplication and the type of multiplication: "user" or "base".

1. **Labelling and packaging**

If the seed samples meet criteria for quantity (INS-CGN-PG-002) and quality (INS-CGN-PG-005), they are packaged in aluminum foil bags for inclusion in the genebank.

Adjusted minimum seed quantities apply to wild species because this type of material is often less easy to propagate. In exceptional cases and by written consensus of all curators and the Collection Management Project Leader, this minimum intake quantity may be deviated from.

The aluminium foil bags are made up of the following three layers:

* inner layer of 80 µm or 75 μm polyethylene, necessary for sealing
* intermediate layer of 12 µm or 8 μm aluminium foil, which does not let moisture through
* outer layer of 12 µm polyester to give the pouch mechanical strength.

When an accession is included in the genebank, the seed is packaged in five different types of bags:

* User bags (U), 4 to 10, mostly small bags, containing 25 to 300 seeds (see INS-CGN-PG-002). These are the bags that are send to users.
* Germination bags (G) of basic seeds, four bags of 100 seeds to monitor germination rate
* Multiplication bags (M) of basic seed, two samples used for subsequent multiplications, the number of seeds is different for each crop (see INS-CGN-PG-002).
* Duplicate bags (M) of basic seed, two bags for safety storage ('safety duplicate') in a foreign genebank and Svalbard (see UIT-CGN-PG 6.2.43). The amount of seeds in this bag is equal to that of the M sample.
* Bags of residual seed (R) for compiling new user bags and germination bags. The size of this sample can range from several hundred to tens of thousands of seeds. Several residual bags can be made, depending on the size and shape of the seeds.

Four different sizes of bags are in use; the choice of size depends on the type of bag and the crop. For sharp-seeded samples, including spinach seed, a cardboard inner layer and an additional paper inner bag are also used.

The seed bags are sealed under vacuum. The degree of vacuum depends on the type of seed. If the vacuum is too strong, there is a risk of breakage in the middle layer of the seed sachet, the seeds may puncture through the sachet or the seeds may break.

The sealed bags are labelled. The label contains the following information: CGN number, species name in Latin, crop name in English, (variety) name, packing date, sample type: U, G, M and R, year of multiplication, generation number and packing date. All seed bags have a unique barcode. The labels have freezer-resistant printing and adhesive. The labels can be printed automatically from GENIS.

A seed sample should not be left open in the working room for more than half an hour, as the moisture content of the seed may rise too much. If this does happen, it must be dried again in the drying room for a week. The prescribed quantities of seed per type of bag are counted with the seed counting machine. During packing, the weight of the residual seed and the 1000-grain weight are noted.

After packaging, the seed bags are stored in the drying chamber for several days. The vacuum is then checked for intactness and then the sample is frozen.

1. **Placement material**

The seed bags are stored in a crate or drawers in the freezer or cooler. By scanning the barcode of the crate, the seed bags and then again the barcode of the crate, the locations of the bags (after reading the scanner) are automatically registered in GENIS. See the GENIS seed storage manual in the "KMS\_appendices" folder.

If material with a receipt status has been propagated, the curators reattach the original seed bag from which it was propagated to the source material.

Multiple CGN numbers go together in a crate that is labelled with a white label with an incremental number and a barcode sticker. The crates for Svalbard are barcoded only. In the cold room, the freezers have numbers rising from K1 to K26, the drawers have numbers rising from 1 to a maximum of 8. In both freezer rooms, numbers are given between 1 and 2000 and between 5001 and 6000. The crates are placed on numbered shelves in fixed racks. During the packing of a multiplication, the packed seeds in the crates with label and barcode can temporarily but no longer than four weeks stand in the drying room until the whole series of a multiplication is packed.

1. **Already stored material with the same accession number**

If material with status 'accessed' is propagated and it is a Base multiplication, all old seed material is replaced (see INS-CGN-PG-006). The old seed material is removed and scanned off in consultation with the curator. Before the seed samples are actually discarded, an additional check for correctness of access number of the bag to be removed takes place. In the case of a User multiplication (see INS-CGN-PG-004), only the user seed is replaced.

**8) Entering packaging data into the system**

Using the Recording List completed with weights, the weight per residual bag and the 1000 grain weight are entered into GENIS (see INS-CGN-PG-009).

**9) Control**

Using the Record List in the Multiplication Log (see FOR-CGN-PG-002) and the New Seed Bag Creation List (see FOR-CGN-PG-045), the Seed Manager checks whether the data has been properly entered into GENIS. Discrepancies found are recorded on the Record List. The Seed Manager initials the Record List for verification and places the date of the check on the Record List.