**Target**

Monitoring the quality and quantity of the CGN collection in seed storage.

**Control 'user pockets'**

Regularly, the Seed Manager (via a template in GENIS Reports) determines the number of accessions without user pockets. If these are more than 40, a list is made of these numbers and new user bags are created. Only the numbers that are not currently propagated are eligible for repackaging into user bags.

**Checking germination bags**

If necessary, new germination bags are made.

**Control total seed quantity**

Regularly, at the request of the Seed Manager or the curator, a Collection Management List is made by the Head of Documentation. On the basis of this list, which shows seed quantity and germination per number, a decision is made whether to plan a multiplication (see INS-CGN-PG-005) and replenish stocks. For seed and bag numbers, see INS-CGN-PG-002.

Storage facilities

**General**

The seed storage facility is located in a separate part of Unifarm greenhouse complex, building 109 at Droevendaalsesteeg 1 in Wageningen. The storage facility consists of the following rooms:

* two freezer rooms together 80 m² (no: 0.029 and 0.032).
* cold room of 33 m2 (no: 0.030)
* drying room of 12 m2  (No: 0.031)
* workspace 61 m2 (No: 0.033)
* storeroom 6 m² (no: 0.035)

**Freezer rooms**

From a security point of view, there are two freezing rooms. Here, all germination, multiplication and residual bags from the CGN collections as well as a limited part of user bags with 'accessed' status are kept in crates. Some of the divergent seed material, third-party material, duplicates from other genebanks, and material on hold for multiplication are also kept here. All crates/boxes are labelled and placed on fixed racks. The freezer rooms each have two chillers for safety reasons, the temperature setting is -20°C.

**Cold room**

This room contains freezers at -20°C, in which the user bags of almost all crops are stored. The exceptions are flax and spinach, the user bags of these crops are in the freezer rooms. The freezers and drawers in the freezers are numbered. This room also has two chillers, the temperature setting is +4°C.

**Drying room**

This is where all seed lots to be dried are kept (temporarily) such as:

* newly received seed samples
* abnormal seed samples
* seed samples from third parties
* seed samples in multiplication
* seed samples on hold for germination determination
* seed samples ready for inclusion
* seed already packaged bearing placement number

This room has a chiller and a dryer. The temperature setting is 15° C and the relative humidity (RH) setting is 15%.

**Work and storage space**

The work area, where seed packing takes place, is equipped with various devices: Sprouting cabinet, dust collector (for the purpose of extraction during packing of seed material treated with pesticides or containing fine dust and seed of hot peppers), sealing device, scales, seed divider and a seed counting machine. The room is used for all activities related to seed packing and delivery of CGN collections. Preparations for multiplication and uptake also take place here.

This room also houses the Logbook Retention Facility (FOR-CGN-PG-010).

Quality assurance

**Registration Planning and implementation of controls and maintenance of resources**

Annual tests and checks of equipment (resources) are carried out to ensure the quality of seed storage.

Much of the equipment (climate control seed storage, emergency generator and fire protection) is managed by Unifarm. More information in the sections below.  
For an overview of maintenance and management of assets, including those covered by Unifarm, see FOR-CGN-PG-013.

**Climate control seed storage**

Climate data is recorded in Carel. Temperature and humidity settings are also made in this programme. Daily, on working days, the responsible employee of Team Greenhouses at Unifarm checks for deviations in temperature or humidity.

The margin of temperature deviation in the cold room and freezer room may be 5°C upwards and downwards. The permitted margin of temperature deviation in the drying room may also be 5°C upwards and downwards, and the RH may deviate 3% upwards and downwards. These margins are not scientifically based, but appear to provide sufficient safety in practice.

In the event of a critical deviation (greater than the deviation margin) of temperature or RH, the climate control system Carel issues an alarm to Unifarm's fault service with a 15-minute delay. Unifarm is responsible for adequate handling of the deviation. Upon alarm and handling of the alarm, Unifarm's fault service will note the method of handling in Unifarm's digital Sharemap R.0411.01.

The various sensors connected to Carel are calibrated once every 2 years by Unifarm. A calibrated *Rotronic thermo-hygrometer model Retronic HP 32* is used for this calibration. The Rotronic thermo-hygrometer is calibrated annually by an independent organisation. This calibration is also carried out at low humidity.

Once a year, an alarm check of Carel takes place. The climate control system will then be put on test mode under the supervision of Unifarm's troubleshooting service. The date the check is carried out will be noted in the Logbook Storage Facility.

**Emergency generator**

The seed collections are stored at -20°C and +4°C. In the event of a prolonged power failure, deterioration of the quality of the collections may occur. In case of power failure, the emergency power generator (the NSA) at the energy building starts up automatically and the CGN's seed storage facilities will be immediately supplied with electricity.

Every two months, the emergency generator is load-tested. Unifarm is responsible for this. A specialised firm provides annual maintenance.

During prolonged power cuts, the NSA can provide electricity for 24 hours. After that, diesel supplies need to be replenished.

**Fire protection**

All areas of the seed storage are connected to an automatic argon-based fire suppression system. When one sensor is activated, the alarm goes off, but only when a second sensor is activated does the fire suppression system activate. The fire-fighting system is connected to PSG's alarm. This automatically switches to a private alarm centre outside office hours, which then contacts the PSG fault-clearing service. This will go to the scene or call in the fire brigade. A sign at the entrance door states that no water may be used in these rooms.

The alarm system is tested four times a year by a TIB employee in collaboration with a Unifarm employee. The results are recorded in the fire safety logbook located in the seed storage workroom.

The fire extinguishing system is inspected annually by an external company.

**Personal alarm 'X-Guard'**

Within the CGN, it is mandatory to use the person alarm when in a -20°C freezer. A brief instruction prior to initial use is mandatory.

The acceptance and handling of all alarms is contracted to X-Guard.

For more information, see the instruction ‘Working safely in the seed storage of CGN’ (INS-CGN-PG-018). For detailed instructions on how to use the X-Guard app, see the manual Alarm System X-Guard in the KMS\_annexes folder. The printed version is at the person alarm in the seed storage area.

**Intrusion protection**

A burglar alarm has been installed as part of Serre's intrusion protection system. The set-up/adjustment of the system means that on weekdays the system is activated at 22:00, on weekends at 20:00. On public holidays, the Campus is closed and the alarm is active.

In the event of a burglar alarm, the PSG handling procedure is followed. Feedback is given to the Unifarm administrator who then contacts CGN-PGR.

**Measurement point Process effectiveness**

8. Seed availability. Percentage of accessions for which samples are available for shipment apart from phytosanitary status. Standard: at least 99% of total accessions.

*Measurement point: annual analysis GENIS*

9. Seed availability. Percentage of accessions that cannot be sent within the EU without prior review due to phytosanitary measures. Standard: maximum 5% of total accessions.

*Measurement point: annual analysis GENIS*