

 <p><b>Plant Genetic Resources Bank "Mihai Cristea"</b></p>	<p><b>SEED CONSERVATION OF PLANT GENETIC RESOURCES</b></p>	<p><b>Edition: 2</b></p>
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## SOP.11. SEED CONSERVATION OF PLANT GENETIC RESOURCES

### 1. Purpose

The conservation of the seed collection in accordance with international standards for quantity and quality.

### 2. Field of Application

The "Mihai Cristea" Plant Genetic Resources Bank, Suceava (BRGV)

### 3. Definitions, Abbreviations, and Terms Used

- **BRGV:** Plant Genetic Resources Bank
- **PGR:** Plant Genetic Resources
- **BIOGEN:** BRGV Database
- **Conservation of PGR:** Methods to preserve the integrity, vitality, and viability of biological material for the medium term (25–30 years) or long term (50–100 years) by adhering to specific processing and storage conditions.
- **Germination:** The ability of a seed to transition from dormancy to active life and give rise to a new plant.

### 4. Procedure Description

#### a. Seed Drying:

Seed samples are transferred to two specially equipped chambers, where air humidity (RH) is reduced to 10–12% using dehumidifiers, and the temperature is maintained at 18–20°C. The seeds are arranged on trays in a thin layer, with identification data recorded on a label accompanying the biological material.

#### b. Monitoring Drying Conditions:

The operational parameters of the drying equipment are checked daily, and errors are corrected as quickly as possible.

#### c. Determining Seed Moisture Content:

This parameter, which is critical for the long-term viability of seed samples, is measured gravimetrically using a thermobalance. The material is weighed both before and after drying with infrared rays, and the seed moisture content is displayed as a percentage.

#### d. Sampling and Submission of Seeds for Germination Tests:

Depending on the type of material and test (initial or monitoring), a specific number of seeds are collected and submitted to the viability evaluation laboratory based on a list (details in the procedure "Testing/Monitoring Seed Viability").

#### e. Determining the Number of Seeds:

This is carried out either by direct counting using a specialized device or by using the mass of 1,000 seeds.

#### f. Coding and Registering Samples in the GeneDataBank Database:

Each sample managed by the conservation laboratory is assigned a registration number, a storage code, and a QR code for both active and base collections.

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The QR code provides information such as: entry number, deposit code, taxonomy data, sample name, country, county, locality of origin, biological status, year of multiplication, and storage date.

For samples in the active collection, in addition to the QR code, the following information is also recorded: storage date, year of last regeneration, number of regenerations, year of the last viability test, viability percentage, number of aluminum foil pouches, stock per pouch, total stock, seed moisture content, mass of 1,000 seeds, and comments.

For samples in the base collection, in addition to the QR code, the following information is also recorded: storage date, year of the last multiplication, number of multiplications, year of the last viability test, viability percentage, stock per pouch, seed moisture content, mass of 1,000 seeds, and type of sample (germination verification, multiplication, or residual sample).

**g. Label Printing:**

For each sample to be conserved, whether in the active collection at +4°C, or in the base collection at -20°C, two labels are printed: one is applied to the package, and the other is placed inside.

**h. Packaging:**

Seed samples designated for both types of collections are packed in aluminum foil pouches using the Minipack MVS31X equipment for vacuum sealing.

**i. Storage:**

- Storage for the base collection occurs in three thermally insulated functional cells, each 15.9 m<sup>2</sup>, specially designed with fixed and mobile shelves equipped with drawers, at a temperature of -20°C.
- Storage for the active collection occurs in four conservation chambers, each 23.5 m<sup>2</sup>, with fixed shelves holding aluminum pouches arranged in crates resistant to low temperatures, under thermal conditions of +4°C.

The maintenance of operational parameters is ensured by automatic freezing and refrigeration systems that lower temperatures to -20°C and +4°C, respectively, with fluctuations of ±1–2 degrees and alarm systems.

**j. Monitoring Storage Conditions:**

The operational parameters of the refrigeration systems are recorded through a computer-assisted DIXEL device, and their proper functioning is checked twice a day or more frequently when technical issues need to be resolved.