

	Plant Genetic Resources Bank "Mihai Cristea"	COLLECTION OF WILD FLORA SEEDS	Edition: 2 Page 1 of 3
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SOP 02. COLLECTION OF WILD FLORA SEEDS

1. Purpose

The collection of seeds from wild relatives of cultivated plants aims to introduce new genetic material sources into the BRGV collections. This contributes to increasing inter- and intra-specific diversity and integrating these resources into breeding systems to ensure food security and promote agroecosystem stability through sustainable and efficient conservation.

2. Selection of collection areas and priority species

Considering the purpose of this operational procedure, it is necessary to identify the areas for collecting plant germplasm and prioritize species based on a selection of the genetic pool of Romania's wild flora. Species are selected based on their potential for use (genetic, economic, agricultural importance, ethnobotanical value), relative threat level (IUCN criteria), national/regional/global distribution, representativeness in ex situ/in situ conservation, threats/vulnerabilities etc.

These criteria provide a solid foundation for planning ex situ conservation strategies for plant germplasm (SOP 02. ANNEX 1).

3. Development of the expedition's logistic plan

Logistical planning refers to practical activities carried out to efficiently implement the technical plan of the expedition.

Collection missions typically require funding from the institution's (BRGV) annual operational budget or external sources such as regional and international organizations (SOP 02. ANNEX 2). To secure this funding, a written notification of the logistical plan is prepared, including the following points:

- Agreements/permits for access to collection areas;
- Purpose of the collection and participating partners;
- Proposed transportation and itinerary;
- Duration and timeline of the expedition;
- Composition of the collection team and necessary equipment.

4. Establishing the collection strategy

To ensure that the collected germplasm can be preserved long-term under ex situ conservation conditions, it must meet the following criteria:

- Be taxonomically well-identified;
- Be genetically representative of the species/population/individual;
- Have high viability and belong to species categories that produce orthodox seeds;
- Contain a sufficient quantity of seeds (5,000 seeds);
- Include all approvals data in the request form (SOP 02. ANNEX 3).

	Plant Genetic Resources Bank "Mihai Cristea"	COLLECTION OF WILD FLORA SEEDS	Edition: 2
			Page 2 of 3

The best collection strategy involves capturing as much genetic diversity as possible from a population. This is achieved by collecting a small number of seeds from as many individuals as possible, rather than collecting more seeds from fewer individuals (SOP 02. ANNEX 4).

5. Collection techniques and methods

Seeds are collected manually, as wild flora species are often located in areas where the topography limits the use of mechanical equipment.

Seed samples are randomly collected from at least 50 individuals of the respective species, covering the entire collection area.

Collection begins in the southern-facing areas and at the lowest altitude, as seeds reach physiological maturity earlier in these locations, progressing to the highest altitude and northern-facing areas.

Sampling is based on the size of the inventoried area and the number of individuals of the target species. For large populations and areas, collection is conducted in strips arranged according to physical or climatic factors. For small populations and areas, the transect method is used.

If a plant exhibits phenotypic characteristics not represented in the randomly collected samples, three individuals of the respective species are collected and assigned a different collection number (SOP 02. ANNEX 5).

6. Study of phytopopulations for sample collection

After identifying the target species in the field, qualitative and quantitative indices of the existing populations are analysed to determine the collection strategy and method (SOP 02. ANNEX 6).

7. Recording field data

To introduce the collected seed samples into the BRGV collection, they must be taxonomically identified and accompanied by characteristic data recorded in the field using the collection form (SOP 02. ANNEX 7).

This form includes information on habitat (precipitation, altitude, slope, landform, aspect, geology), phytocoenosis structure, phytopopulation and phytocoenotic indices, species phenology, phenotypic description, and data relevant to plant breeding processes (e.g., precocity, resistance to diseases and pests, adaptability to various agroecological conditions such as frost, drought, lodging etc) (SOP 02. ANNEX 8).

8. Temporary conservation of samples during the expedition

Collected seeds are stored in cool, dry, and well-ventilated places. Before being transported to the gene bank, seed samples with high moisture content are spread on

	Plant Genetic Resources Bank "Mihai Cristea"	COLLECTION OF WILD FLORA SEEDS	Edition: 2 Page 3 of 3
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newspapers and naturally dried (outdoors in the shade or in a well-ventilated room) (SOP 02. ANNEX 9).

9. Annexes

- SOP 02. ANNEX 1. Selection of priority species
- SOP 02. ANNEX 2. Developing the logistic plan for the expedition
- SOP 02. ANNEX 3 - Request for approval to collect plant genetic resources
- SOP 02. ANNEX 4. Strategy for collecting plant genetic resources
- SOP 02. ANNEX 5. Techniques and methods for seed collection
- SOP 02. ANNEX 6. Study of phytopopulations
- SOP 02. ANNEX 7. Seed collection form for wild flora
- SOP 02. ANNEX 8. Documentation of collected samples
- SOP 02. ANNEX 9. Temporary preservation of samples