

BULGARIAN NATIONAL INVENTORY OF PLANT GENETIC RESOURCES

DEVELOPMENT AND STATUS

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Contents:

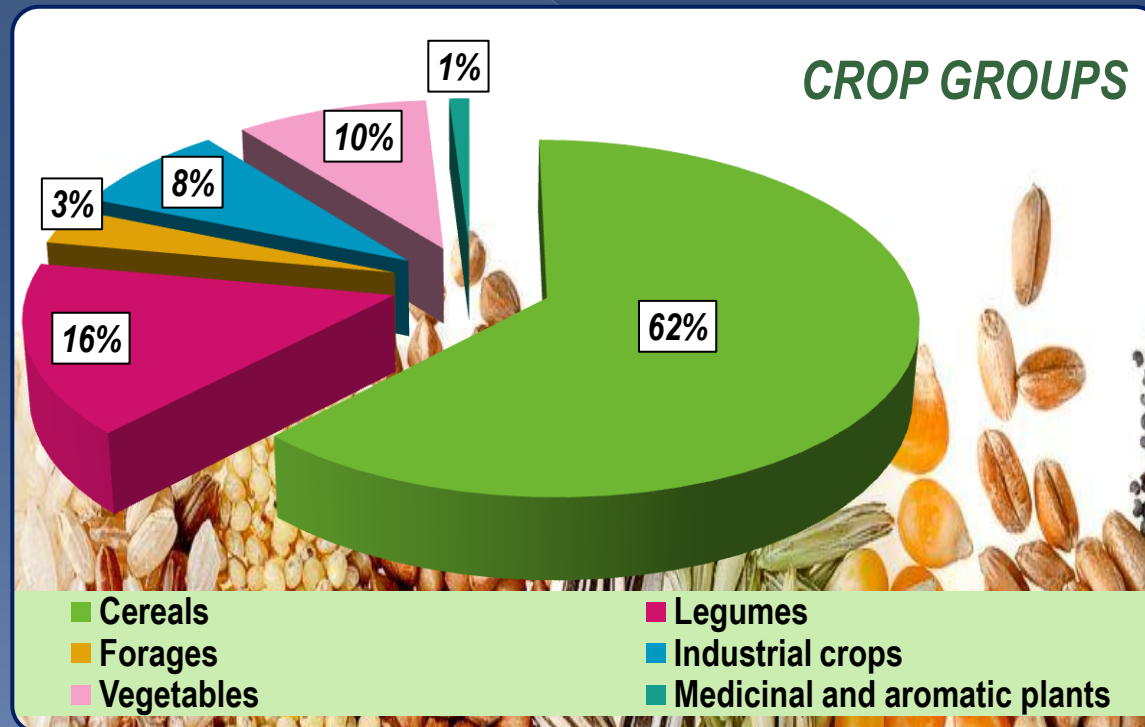
- ◉ National Program for PGR in Bulgaria
- ◉ Current status of the National Inventory
- ◉ Documentation system
- ◉ Conservation
- ◉ Distribution and exchange
- ◉ Evaluation of germplasm
- ◉ Sustainable use

National program for PGR in Bulgaria

- Preservation of plant biodiversity of cultural and wild flora is the main priority in the scientific activities of the research team of the Institute of Plant Genetic Resources (IPGR) – Sadovo.
- IPGR Sadovo is the National Coordinator and performs the National program of Plant Genetic Resources through the realization of the main task: “Conservation, management and use of PGR in Bulgaria”.
- The main research activities include:
 - Enrichment of collections with new local and introduced germplasm;
 - Maintain PGR;
 - Complex assessment of PGR;
 - Conservation of germplasm;
 - Documentation of PGR;
 - Use of plant diversity.
- IPGR Sadovo has a rich information database of plant resources throughout the country, which assists and supports breeding programs in the 23 research institutes in the system of the Agricultural Academy.

Current status of the National Inventory

- The National collection of cultivated species and their wild relatives are presented in 69,327 accessions, includes: advanced and obsolete cultivars, breeding lines, mutants, traditional and old cultivars, landraces, local population and wild species.
- National Inventory is divided into six basic crop groups: cereals, legumes, forage crops, oil and industrial crops, vegetables, medicinal and aromatic plants.



Current status of the National Inventory

- Plant genetic resources important for food and agriculture are stored ex situ in the National Genebank and/or in field collections in research institutes.
- Enrichment of germplasm collections is carried out through conducted expedition missions, scientific improvement programs and international exchange with other genebanks, botanical gardens and PGR centers.
- A data base of marked and studied habitats for in situ support of wild plants has been developed.
- A partial inventory of field and vegetable production areas is carried out. As a result information for on farm conservation of some old, primitive and forgotten varieties in traditional agriculture cultivation system in different geographical regions of the country has been collected.
- By conducted expeditions 9,541 local forms of wheat, corn, beans, tomatoes, pepper, onion, fodder, spices, medicinal and ornamental species have been collected. The local accessions are characterized by lower yield but they have valuable and necessary qualities for plant breeding like source for dry- and cold tolerance, greater adaptivity, resistance to diseases and pests, high nutritional and taste quality, etc.

National PGR Collection



Documentation system



Information Center

The Computer center of IPGR Sadovo was established in 1982. It is responsible for preservation and updating of information about the samples, stored in the National Genebank.

Databases management system – MS Access

All incoming seed materials are registered in the PHYTO 2000 electronic database in Microsoft ACCESS format by passport descriptors, including catalogue number, taxonomical description, biological status, donor, origin.

Enrichment of the electronic register – included entries:

- Taxonomic descriptions: 3,534
- Botanical families: 122
- Local and wild forms, collected from expeditions: 9,541 acc.
- Genotypes from scientific improvement programs: 5,821 acc.
- Accessions, received from international exchange: 36,095 acc.
- Partners in international free exchange: 190

Documentation system



- ◉ The Bulgarian National Inventory is published in the European Search Catalogue for Plant Genetic Resources EURISCO (<http://eurisco.ecpgr.org>).
- ◉ The published Bulgarian NI in EURISCO consists of 65,877 accessions, documented by 36 descriptors.
- ◉ The Bulgarian *ex situ* plant germplasm collection is the seventh-largest National Inventory in Europe, comprising 3,35 % of the whole European PGR collections.



- ◉ Based on cooperation in AEGIS (<http://aegis.cgiar.org>), 261 Bulgarian genotypes: *Triticum aestivum* L. – 135 accessions and *Triticum durum* L. – 126 accessions, identified as “unique germplasm” of local origin, are registered with AEGIS status.

Conservation

- The National genebank in IPGR Sadovo was established in 1984. The research activities are carried out according to the FAO standards for long term conservation of plant germplasm under controlled conditions – total number: 62,092 accessions.
- With Bulgarian origin are characterized 13,269 accessions.
- Three collections are maintained:
 - Base collection – long term conservation of accessions in hermetically closed packages at -18°C and at 3–7% moisture (depending upon species) – total number: 43,147 accessions.
 - Work collection – accessions with temporary registration in the National Inventory at $+6^{\circ}\text{C}$, 50%RH;
 - Exchange collection – 2,989 accessions from 84 plant species.



Conservation



SAFETY DUPLICATION OF BULGARIAN COLLECTION

Seeds samples from 930 Bulgarian local accessions from cereals, legumes, oil and industrial crops, vegetable, medicinal and aromatic species of National Inventory were sent for safety duplication in Global Seed Vault in Svalbard, Norway.



Distribution and exchange



According to the Convention on Biological Diversity, International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and Nagoya Protocol the National Genebank in IPGR Sadovo is a partner in the system of international free germplasm exchange based on

STANDARD MATERIAL TRANSFER AGREEMENT (SMTA).

The accessions from exchange collection are available in small quantities for research, breeding, and education purposes.



Evaluation of germplasm

- Screening of stored germplasm in respect of: morphological, economical, biochemical, physiological, pathological, entomological attributes according to the international descriptors of UPOV, on the basis of IPGRI and ECPGR lists.
- The evaluation includes three main stages:
 - Preliminary evaluation is obligatory and is conducted in a quarantine field, where accessions are checked for diseases.
 - Complex evaluation is the main source of information for C&E documentation and is conducted according to the Crop Descriptors.
 - Special evaluation for the additional traits are conducted only for selected accessions in breeding directions.
- Gene sources for resistance to biotic and abiotic stress, earliness, dwarfness, productivity and quality characters were determinate.
- Characterization and evaluation databases in Excel file format were built and perspective germplasm for improvement of the species and variety structure in the Bulgarian agriculture were selected.

Sustainable use

- ◉ As a result of complex evaluation core collections, which fully represent the genetic diversity in the context of the contemporary criteria for the future significance of the initial material in breeding programs, have been created.
- ◉ The main task of the breeding programs is utilization of PGR for crop improvement and creation of modern varieties, satisfying the requirements of the farm agriculture system in Bulgaria and technologies for their effective cultivation.
- ◉ IPGR Sadovo maintain and produce authentic pre-basic and basic seeds of wheat - 15 varieties, of barley - 1, rye - 1, oats - 2, triticale - 1, rice - 2, peas - 2, peanuts - 4, sesame - 3, which are included in the National Variety list, schedule "A".
- ◉ By using of PGR as an initial material in plant breeding 28 varieties from 13 crops are created (durum wheat - 1, barley - 1, oats - 4, rye - 1, peas - 6, chickpeas - 1, vigna - 1, garden bean - 3, pepper - 1, tomatoes - 5, eggplant - 2, kohlrabi - 1, salad - 1).





ANNIVERSARY

135 Years Agricultural Science in Sadovo

40 years Institute of Plant Genetic Resources "Konstantin Malkov"



- The Institute of Plant Genetic Resources is an inheritor of the rich history and traditions in Agricultural Science.
- In 1882 in Sadovo was organized the first agricultural experimental field with well-equipped laboratories and with that fact the Agricultural Science in Bulgaria was established.
- In 1902 the experimental field expanded in the First Agricultural Experimental Station with director - Bulgarian agronomists and scientist Konstantin Malkov.
- The Institute of Introduction and Plant Resources was established in Sadovo in 1977 and comprises the Experimental Station „K. Malkov“, The Station for Maintenance and Seed production in Sadovo and the Department of Genetic Resources of the Institute of Genetics, Sofia.
- Since 2001 it was renamed the Institute of Plant Genetic Resources with focus on conservation of Plant Biodiversity.

Anniversary Celebration and Jubilee International Scientific Conference were held in the period 29-31 May, 2017.



Preservation of plant genetic resources, part of the Bulgarian cultural heritage, is our duty, which gives the future generations a chance to create germ plasm under the requirements of the new age ...

Thank you for your kind attention!

<http://ipgrbg.com/>