



OVERVIEW OF AVAILABLE GRAIN LEGUMES MATERIALS IN BULGARIAN NATIONAL GENE BANK AND ONGOING RESEARCH

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ForEVA – Fostering the need of implementation of the ECPGR's European Evaluation Network (EVA) on Grain legumes

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AGRICULTURAL ACADEMY INSTITUTE OF PLANT GENETIC RESOURCES “KONSTANTIN MALKOV” – SADOVO



Location – South-eastern Europe, Central-Southern Bulgaria; Altitude – 158 m; North latitude – 41°90'; East longitude – 24°57'

- **IPGR is the National Coordinator on Plant Genetic Resources.**
- **IPGR is a part of the European Programme on Plant Genetic Resources (ECPGR)**
- **IPGR is a part of the European Genebank Integrated System (AEGIS)**
- **In IPGR is situated the largest National Genebank in the South-eastern Europe.**





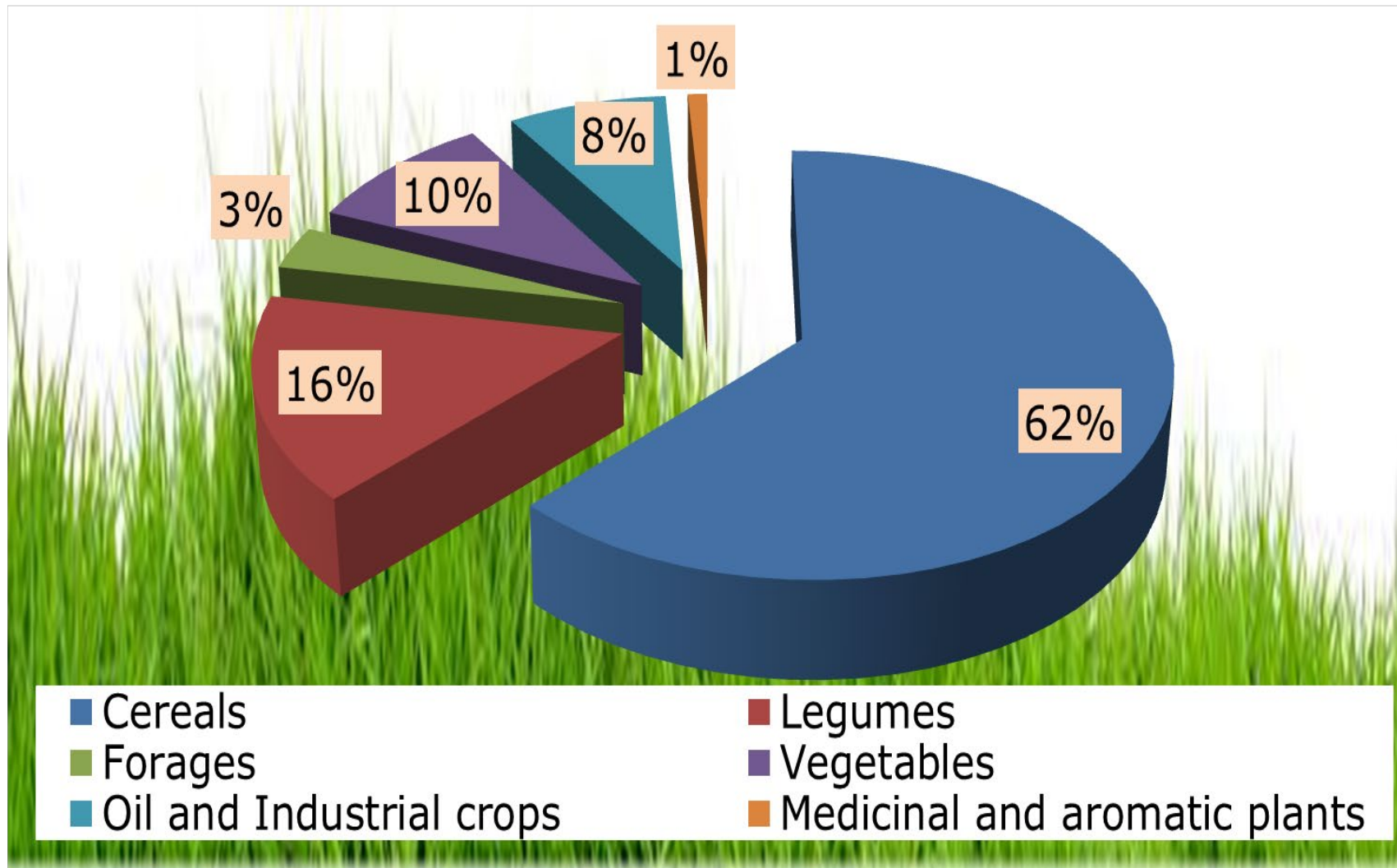
Main objectives of the National Seed Gene Bank at IPGR - Sadovo



The main mission of the National Seed Gene Bank is the conservation, maintenance and propagation of plant genetic resources important for food and agriculture, their availability and distribution to local and foreign users in accordance with the ITPGRFA and Standard Material Transfer Agreement (SMTA). Preservation of plant genetic resources gives the future generations a chance to create germ plasm under the requirements of the new age.



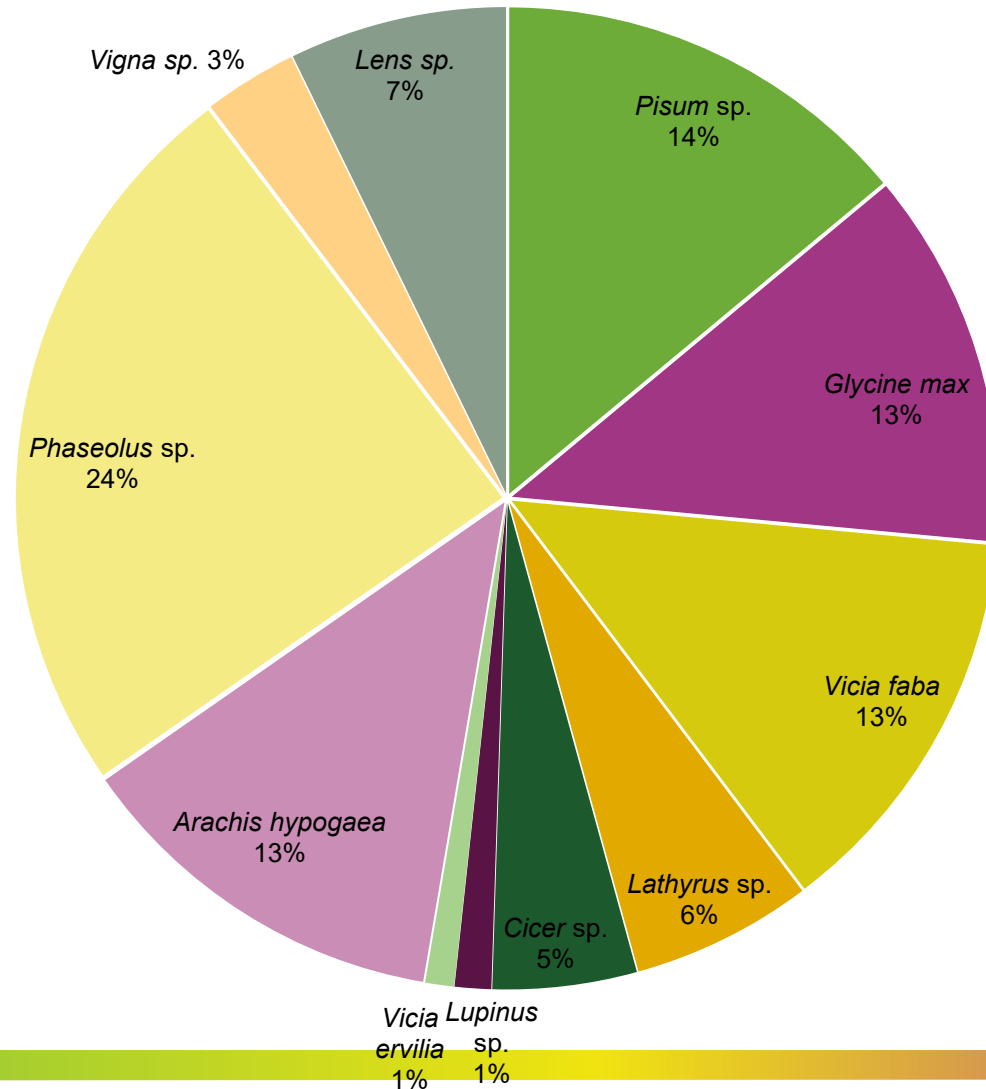
STATUS OF THE NATIONAL COLLECTION



The total number of registered accessions in the Genebank is above 60 000, where 44572 are preserved in the base collection. These accessions are representatives of 32 families, 150 genera, 600 plant species. Total 10 193 of the accessions originated from Bulgaria.



STATUS OF GRAIN LEGUMES COLLECTIONS, IN LONG TERM STORAGE IN IPGR GENE BANK





Completed and ongoing projects at IPGR-Sadovo

- NATIONAL SCIENCE PROGRAM „Healthy nutritional and biological and economic quality of life“ – completed; enrichment of collections with new local accessions and new data about their traits;
- EUGrainLeg - „Lathyrus diversity: available resources with relevance to crop improvement – progress reviews and relationship with AEGIS “– completed; enrichment of collections with seeds and data;
- „ Storage, research, maintenance and use of PGR in Bulgaria “ - ongoing; reproduction and maintenance of seeds from gene bank;





- BG PLANTNET „ Creation of a national genebank information network - plant genetic resources“ – **ongoing**; network will be created to share all data of accessions from different species performed by IPGR;
- „Leguminous plants in Bulgaria - a source of useful additional substances of a protein nature“ – **ongoing**; Enrichment of collections with local accessions and evaluation of valuable biochemical substances;
- ExploDiv „ Exploring of Grain Legumes diversity for sustainable European Agri-food Systems“ – **ongoing**; evaluation of valuable traits from different grain legume crops.





Maintenance and evaluation of grain legumes at IPGR - Sadovo

The assessment of bio-morphological and economic traits (structural elements of productivity) is performed according to the International Descriptor for each crop - *Cicer arietinum* L. of UPOV (International Union for the Protection of New Varieties of Plants) 2019, for *Lathyrus* spp. IPGRI, 1985, *Lupinus alba* UPOV 2004, *Pisum* sp. UPOV 2000, *Vicia ervilia* and *Vicia faba*, UPOV 2002.



All grain legume crops are evaluated by the following traits -

- ✓ Sowing date;
- ✓ Emerging Date;
- ✓ Number of plants (%);
- ✓ Beginning of flowering;
- ✓ End of flowering;
- ✓ Beginning of pod formation;
- ✓ Date of harvest / yield.
- ✓ Plant height (cm);
- ✓ Number of primary branches;
- ✓ Number of pods per plant;
- ✓ Number of seeds per pod;
- ✓ Mass of seeds per plant (g);
- ✓ Mass of 100 seeds (g).

Specific and important traits per legume species considered during the evaluation:



for CHICKPEA

- ✓ Seed size;
- ✓ Ascochyta blight resistance.

for GRASSPEA

- ✓ Growth habit;
- ✓ Harvest data;
- ✓ Pod shattering;
- ✓ Content of neurotoxic non-protein amino acid and β -oxalyl-L- α , β -diaminopropionic acid (ODAP or BOAA).

for PEA

- ✓ Lodging resistance;
- ✓ Growth habit;
- ✓ Form of the seeds;
- ✓ Number of productive nodes.

for BITTER VETCH

- ✓ Growth habit;
- ✓ chemical composition of the seed.

for SOYBEAN

- ✓ Pod shattering;
- ✓ Diseases Present;
- ✓ Number of productive nodes.

for FABABEAN

- ✓ Diseases Present;
- ✓ Seed size.





Expectations from EVA project -

- To share knowledge and seeds;
- To discuss the ways of traits evaluation;
- To consider the most important legume traits in different countries;
- To search ways for collaboration;
- To share the experience with PPP (public-private partnerships).

Constraints in EVA project -

No financial support for experimental activities.





**Thank you for your
kind attention**

