



**PRACTICE ABSTRACT NO. 1**

# How to Enrich the Supply of Varieties for Organic Agriculture: The Role of Genebanks

The search for suitable parental sources or starting populations, their identification and evaluation, is the first step in the process to create new varieties. Plant genetic resources for food and agriculture (PGRFA) are the best and most obvious starting point. Effective use of genetic resources requires knowledge of the existing genetic variability within a species and phenotypic characterization of available varieties and breeding materials. There is a lack of varieties bred and selected for organic and low-input farming conditions. Therefore, the organic sector is in urgent need of new varieties.

**Plant Genetic Resources for Food and Agriculture** are defined as any genetic material of plant origin with potential value for food and agriculture that farmers and plant breeders use to improve the quality and productivity of crops. This broad definition includes not only accessions conserved in gene banks and PGR conserved *in situ*, but also research material and protected modern varieties. PGR is the result of a thousand-year selection process by gardeners, farmers, landowners and breeders.

**Genebanks** are the purpose-built technical facilities for seed storage of crops, crop wild relatives (CWR) and other plant species. Conservation takes place under controlled conditions for long-term (-18°C) or medium-term (from 0 to +4°C) storage, which promotes seed longevity and provides easy access for plant breeders, farmers, extension agents, researchers, etc.

## ROLE OF GENE BANKS:

- Ensure collaboration with, breeders, organic seed companies, researchers, and organic farmers/producers.
- Streamline genebank collections and improve documentation, characterisation, and evaluation of genetic resources for better use in breeding programs.
- Provide a resource to strengthen breeding capacity and breeding programs in organic agriculture.
- Raise awareness on the importance of PGR diversity and its contribution to food security.

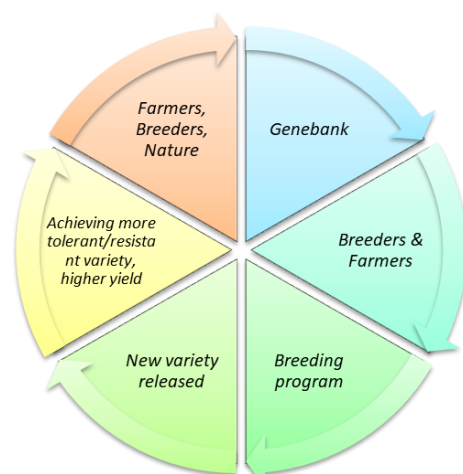


Figure 1: ECOBREED aims to increase the availability of seeds and varieties to improve the competitiveness of organic farming

National genebanks conserve and make available PGRs that have traits that may be useful and necessary for organic farmers (e.g. increased competitiveness, tolerance/resistance to pests and diseases, etc.) or have better adaptation to specific/local environmental conditions. Therefore, a comprehensive assessment and characterisation of genetic resources available to breeders, researchers and farmers will lead to greater efficiency and success in breeding new varieties. Increased access and availability to end users, as well as sufficient knowledge and information about these resources, are essential for their efficient future use.

Genebanks offer:

- a large selection of PGRs
- an information portal - with easily accessible search function for variety characteristics, etc.
- standards for PGRFA documentation and information exchange

Seed samples from PGR are made available to users free of charge (but only in small quantities) for breeding, research and training purposes, but not for direct commercial use.

Signing a Standard Material Transfer Agreement (SMTA) is a basic requirement for any exchange of PGR samples.

**The ECOBREED consortium has already identified working collections of more than 200 genotypes of wheat, potato, soybean and buckwheat that may be suitable for organic farming. The project is carrying out a comprehensive phenotypic characterisation of this genetic material under organic conditions in a range of environments, with the information being made widely available through an information portal. This will provide a valuable resource for breeders, organic farmers and researchers, with the potential to improve the competitiveness of organic farming in Europe.**

## FURTHER INFORMATION

European Search Catalogue for Plant Genetic Resources: <https://eurisco.ipk-gatersleben.de>

Genetic Resources Information System of Slovakia <https://griss.vurv.sk/>

GRIN Czech information <https://grinczech.vurv.cz/gringlobal/search.aspx>

List of Germplasm databases <https://www.ecpgr.cgiar.org/resources/germplasm-databases>

FAO – Genetic resources <http://www.fao.org/genetic-resources/en/>

Global system of ex situ conservation <https://www.genesys-pgr.org/>

Crop wild relatives' global portal <http://www.cropwildrelatives.org/>

World Information and Early Warning System on PGRFA <http://www.fao.org/wiews-archive/wiews.jsp>

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Plant breeding research of NPPC is focused on coordination, collecting, studying, conservation and utilisation of plant gene pool for food and agriculture, analyses of plant genotypes and phenotypes, and creation of new biological materials with improved properties using progressive methods. Contact: [pavol.hauptvogel@nppc.sk](mailto:pavol.hauptvogel@nppc.sk)

## ECOBREED CONSORTIUM




### ABOUT ECOBREED:

ECOBREED is a 5-year (2018-2023) project funded by European Union's Horizon 2020 research and innovation programme that will improve the availability of varieties and seed suitable for organic and low-input production. Activities will focus on four crop species i.e. wheat, potato, soybean and common buckwheat, selected for their potential contribution to increasing the competitiveness of the organic sector.

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