ECOBREED

Dr. Vladimir Meglič

vladimir.meglic@kis.si

www.ecobreed.eu

Agricultural Institute of Slovenia

ecobreed
IMPROVING CROPS

ECOBREED: Background

New REGULATION (EU) 2018/848 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007
The new organic regulation will apply from 1 January 2021

The EU organic regulation has a major impact on organic farmers, processors, traders, retailers, certifiers, researchers and consumers.

The organic farming sector in the Union has **developed rapidly** in the past years, in terms not only of the **area used for organic farming** but also of the **number of h**oldings and the overall **number of organic operators** registered in the Union.

Therefore, the **sustainable development of organic production in the Union** should be **based on sound production rules** which are harmonized at Union level and which meet operators' and consumers' expectations regarding the quality of organic products and compliance with the principles and rules laid down in this Regulation.

ECOBREED: Background

New REGULATION (EU) 2018/848 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

This Regulation should provide the **basis for the sustainable development of organic production and its positive effects on the environment**, while ensuring the effective functioning of the internal market in organic products and fair competition, thereby **helping farmers to achieve a fair income**, ensuring consumer confidence, **protecting consumer interest** and encouraging short distribution channels and local production.

Having regard to the particularities of the organic production systems, the **choice of plant varieties should focus on agronomic performance, genetic diversity, disease resistance, longevity, and adaptation to diverse local soil and climate conditions**, and should respect the natural crossing barriers.

Derogations that are currently permanent will be **transitional** in the new regulation.

ECOBREED: Increasing the efficiency and competitiveness of organic crop breeding

Project duration: **5** years (till May 2023)
25 partners from **15** countries: AT, CN, CZ, DE, ES, GR, HU, IT, PL, RO, RS, SI, SK, USA, UK
14 universities & institutes, **10** private companies,
1 association
Budget: **5,815,708.40** EUR

Consortium


Kmetijski inštitut Slovenije
Agricultural Institute of Slovenia


BOKU
University of Natural Resources and Applied Life Sciences, Vienna


Newcastle University
UK | Malaysia | Singapore


NPC
NATIONAL AGRICULTURAL AND FOOD CENTRE


IHAR

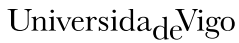

SAATGUT
AUSTRIA

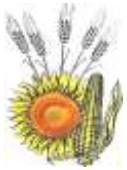

Geokomi


Naturland


BIOMILA


SECOBRA
Saatzucht


Universidad de Vigo




SMALES
ORGANIC
SEEDS


RGA


PROBIO


selgen


WASHINGTON STATE UNIVERSITY


WeDAFNE


Global
Seed


MTA ATK


SZG
SAATZUCHT GLEISDORF

Project description

The **main focus** of **ECOBREED** is to **improve the availability of varieties** and **seed suitable for organic** and **low-input production**. Activities will focus on **four** crop species i.e. **wheat** (both common *Triticum aestivum* L. and durum *Triticum aestivum* L., T. *durum* L.), **potato** (*Solanum tuberosum* L.), **soybean** (*Glycine max* (L). Merr), and **common buckwheat** (*Fagopyrum esculentum* Moench.).

The project will develop (a) **methods, strategies and infrastructures for organic breeding**, (b) **varieties with improved stress resistance**, **resource use efficiency and quality** and (c) **improved methods for the production of high quality organic seed.** ECOBREED species have been selected for their potential contribution to increasing the competitiveness of the organic sector.

ecobreed
IMPROVING CROPS

Concept and approach

ECOBREED will use an **integrated** and **multi-disciplinary approach** to increase the competitiveness of the organic and low-input breeding and farming sectors.

ECOBREED activities will be carried out by a **multi-disciplinary** consortium involving partners from (a) Universities (UNEW, BOKU, WSU, UNITUS, UViGO, UP) and gene banks (CRI-CZ, KIS-SI, NPPC-SK) who carry out fundamental and basic research (representing Technology Readiness Levels, TRL 1-3), (b) **research institutes and businesses** who are more **applied** in their research (IFVC, NARDI, MTA-ATK, CAAS, IHAR, BIOMILA, NPPC, RGA, GEO), (representing TRL 4-6) and (c) **end producers** (SMA, NATUR, SEC, SEL, SZG, PROBIO, GS) who are near market (i.e. TRL 7-9) in the application of new technologies and production of new products for the marketplace.

The **specific objectives** to be addressed in **ECOBREED** are:

Identify genetic and phenotypic variation in morphological, abiotic/biotic tolerance/resistance and nutritional quality traits that can be used in organic breeding. This will be achieved by: phenotypic characterisation of core collections across contrasting environments and establishing marker assisted selection (MAS) programmes to pyramidize resistance and quality related genes/QTL.

Evaluate the potential for genetic variation in enhanced nutrient acquisition via identification of enhanced: arbuscular mycorrhizal (AMF) associations, N_2 fixation efficiency and P mineralisation capacity.
Evaluation of the potential for increased weed competitiveness and control via: identification of varieties with increased early season vigour, enhanced allelopathic activity and the use of autumn cover crops.

Optimisation of seed production/multiplication via improved agronomic and seed treatment protocols.

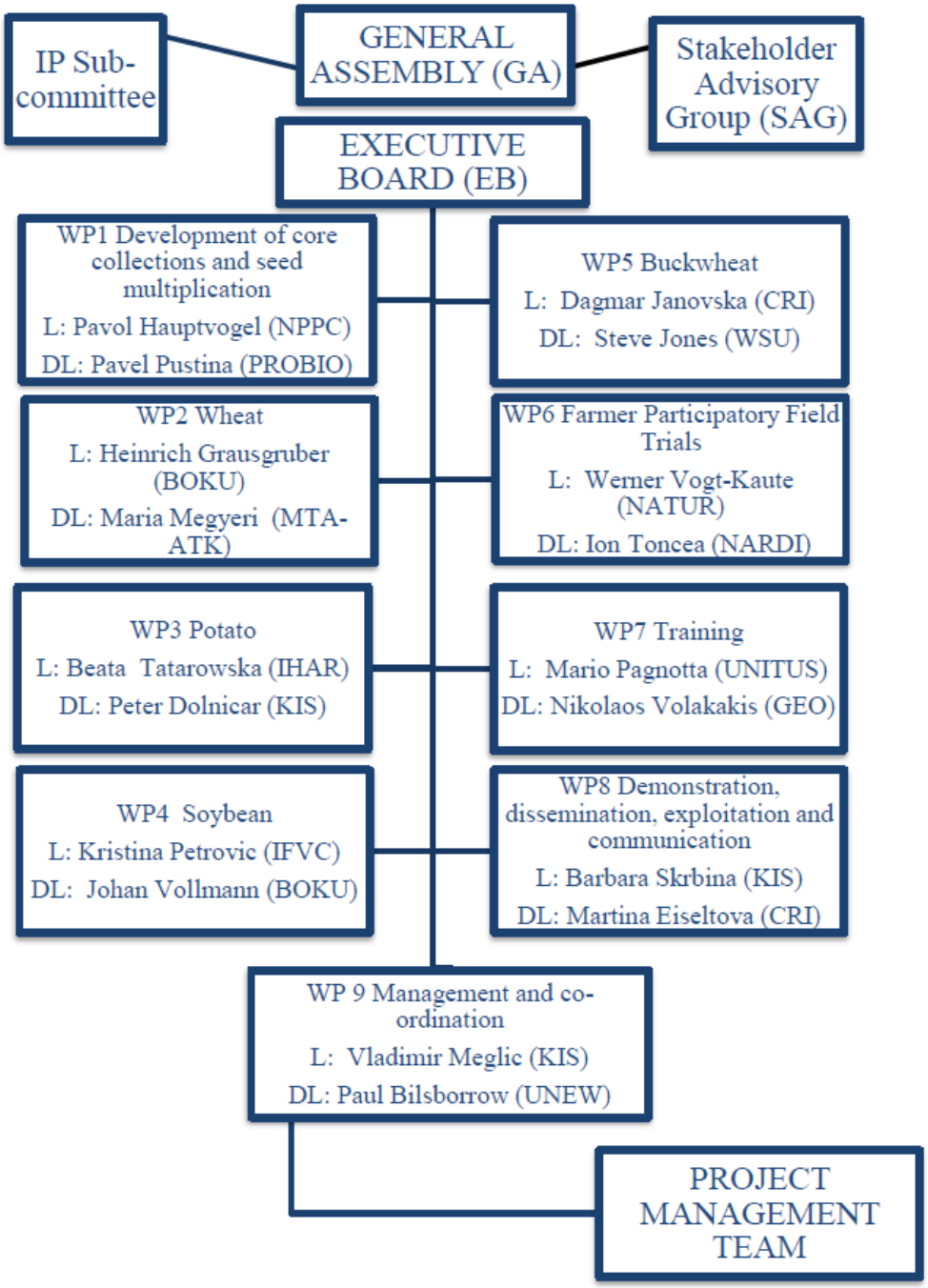
Providing farmers the opportunity to choose and develop varieties in their own environment that best suit their needs and conditions by establishment of: on-farm variety evaluation trials and exploitation of Participatory Plant Breeding (PPB) to enhance the on-farm availability of genetic resources, develop new conservation varieties and new populations (composite cross populations).

Production of elite varieties for improved agronomic performance, biotic/abiotic stress resistance/tolerance and nutritional quality.

ecobreed
IMPROVING CROPS

Development of training programmes (improved genotyping and phenotyping) to facilitate rapid technology transfer from the project into commercial practice.

Ensuring optimum and rapid utilisation and exploitation of project deliverables and innovations by relevant industry and other user/stakeholder groups via extensive farm based demonstration (phenotyping, breeding and PPB) and dissemination activities.



How the work will be carried out?

Current work

- Identify potential genetic diversity for each of the core species suited to organic production systems
- Multiply seed material and creation of wheat, potato, soybean and buckwheat core collections
- Facilitating further use of the genetic material studied in ECOBREED by making available genotypic and phenotypic data gathered in the project through a user-friendly information portal

ecobreed
IMPROVING CROPS

Creation of core collections and seed multiplication

- Identification of wheat, potato, soybean and buckwheat genetic material
- Multiplication of genetic resources for further evaluation
- Establish an information portal for genotypic and phenotypic characterisation data of the core collections

ecobreed
IMPROVING CROPS

Identification of wheat, potato, soybean and buckwheat genetic material

- Eco-geographical principles will be applied in order to identify materials from diverse environments across Europe i.e. from N to S and W to E (landraces, varieties presently popular in organic farming and commercial conv. varieties).
- Genetic material of non-European origin will be evaluated including material provided by WSU (wheat and buckwheat) to broaden the genetic base of each putative collection.
- The putative collections will include ~ 200 accessions for each species from which the core collections for each species will be identified.
- Core collection for each species will be proposed and formed (100-150 accessions).

ecobreed
IMPROVING CROPS

Multiplication of genetic resources for further evaluation

The core collections will be initially multiplied to have sufficient quantity of good quality seed for

- morpho-physiological, genetic and quality characterisation to be carried out in WPs 2-5,
- farmer participatory trials to be carried out in WP6,
- pre-breeding and participatory plant breeding activities (WPs 2-6).

Training

Design and delivery of **training workshops** in:

a) improved genotyping;
b) improved phenotyping;
c) participatory plant breeding;
d) organization/management of farmer participatory field trials.

Bursaries will be made available to participants from countries where the uptake of organic agriculture is low

Engage with **farmers and growers** and provide training that allows them to acquire the knowledge and understanding to actively engage in Participatory Plant Breeding (PPB) and manage Farmer Participatory Field Trials (FPT).

Links with Bresov and Liveseed

- **BRESOV:** provide climate-resilient organic vegetable cultivars. Exploitation the genetic variation of broccoli, kohlrabi, bean and tomato by exploiting up-to-date knowledge of genome structure and function. Involvement of farmers, advisory services, research institutes, breeding companies and food processors. The pre breeding/breeding lines/cultivars will be selected for efficiency when grown under water, temperature, and nitrogen stress, for resistance to pests and diseases, plant - soil and microbiome interaction. Desirable product quality traits such as taste, visual appearance, postharvest performance, will enhance resource use efficiency and productivity.
- **LIVESEED:** improve the sustainability, performance, and competitiveness of the organic sector by boosting organic seed production, developing novel breeding approaches and by harmonizing the implementation of the European organic seed regulations.

Synergies

- Accelerate the breeding process and adoption of new cultivars
- Foster seed and breeding related innovation in the organic sector
- Increase the volume and quality of organic seeds
- Improve the competitiveness of the organic seed sector

Benefits

- Different forms of trainings and education material/topics identified
- Mapping of the target groups/research & breeding/seed production & availability
- Variety testing/additional testing criteria for organic farming
- Use of organic seed across Europe/organisational or financing models/policies

Joint activities

- SAB's, meetings, conferences/specific satelite meetings
- Training and education
- Exchange of information in various forms and through various channels

ecobreed
IMPROVING CROPS

Follow us….

@EcobreedP

@ecobreed

Ecobreed project

www.ecobreed.eu

ecobreed
IMPROVING CROPS