Press release

ORGANIC POTATO PRODUCTION FIELD DAY

Wednesday, 22.7.2020, Agricultural Institute of Slovenia

H2020 project ECOBREED

The event, dedicated to organic production, seed production and potato breeding, was organized as part of the European H2020 ECOBREED project, coordinated by the Agricultural Institute of Slovenia, and involves 25 partners from 15 countries and three continents.

The main objective of ECOBREED is to improve the availability of varieties and seeds suitable for organic and low-yield production. Activities focus on four plant species: wheat (Triticum aestivum L. and Triticum aestivum L., T. durum L.), potatoes (Solanum tuberosum L.), soy (Glycine max (L), Merr) and buckwheat (Fagopyrum esculentum Moench.). ECOBREED crop species were selected according to their potential contribution to increasing the competitiveness of the organic sector.

The project will develop (a) methods, strategies and infrastructure useful for organic breeding, (b) new varieties with improved stress resistance, resource efficiency and quality, and (c) improved methods for producing high quality organic seed.

The organic sector has developed rapidly in the EU in recent years, not only in terms of the area used for organic farming, but also in terms of the number of holdings and the total number of entities registered in the Union engaged in organic production, processing and marketing. ECOBREED will use an integrated and multidisciplinary approach to increase the competitiveness of the organic breeding and agricultural sectors. ECOBREED's activities include a multidisciplinary consortium that includes partners from universities, gene banks, research institutes, companies and end producers / producers who are users of new technologies and produce new products for the market.

An important part of the project is the so called Participatory plant breeding (PPB) enables scientists and farmers to improve conventional breeding by offering farmers the opportunity to select, develop and create varieties that best suit their needs, agronomic requirements and pedoclimatic conditions. PPB is a suitable alternative to organic production as (a) it uses farmers' practical knowledge throughout the breeding process, (b) it allows selection in contrasting growing conditions, (c) it allows a better assessment of genotype-environment interactions and (d) it helps develop local / regionally adapted sort.

Often, the experience of organic farmers is rarely taken into account or used in conventional breeding programs. Ecobreed will make it possible to set up an effective system for involving farmers in the selection of new varieties through:

• definitions of the properties or combinations thereof required by organic production.

• development and use of a data recording system with the participation of farmers.

• participation of farmers in breeding in contrasting pedoclimatic conditions.

• participation of farmers in the selection of breeding lines that are particularly suitable for their environment.

At the event, which was attended by experts from the Public Agricultural Advisory Service, farmers, seed traders and participants in the project, the project coordinator dr. Vladimir Meglič briefly presented the ECOBREED project and its importance for Slovenian organic farmers, Werner Vogt-Kaute from the German organic association Naturland presented the association and the importance of the segment of participation of farmers in breeding processes, Mr. Matej Konc on the Kozina organic farm and the challenges facing the organic farmer in Slovenia. Head of the project work package for potatoes, dr. Peter Dolničar presented the program, work and goals set within the project in the field of potatoes.

A demonstration presentation of 14 selected potato varieties suitable for organic production took place in the field of the Kozina organic farm in Hrastje. The varieties were selected on the basis of last year's test results at the Agricultural Institute of Slovenia. It turned out that the tested varieties also yielded satisfactory yields of beautiful tubers with the technology implemented on the Kozina farm. Among the tested varieties, several varieties were resistant to potato mildew, which is the biggest challenge in the production of organic potatoes. Those present at the Organic Potato Day watched them with interest. This was followed by a presentation of organic seed production of the KIS Kokra variety, which is the only one in Slovenia grown on the farm for the Agricultural Institute of Slovenia. In the discussion, they touched on the challenges and problems of seed production and also listened to the wishes and questions of users.

At the ecological experimental field of the Agricultural Institute of Slovenia at IC Jablje in Mengeško polje, a presentation of the variety test for phenotyping followed, where we test in detail the suitability of 69 varieties of potatoes for organic production. The selection of varieties was made on the basis of selected criteria important for organic production, especially the early varieties and their resistance to potato mildew, the scope of organic production of individual varieties and breeders' proposals and represents the most suitable European varieties for which we managed to get suitable seeds. In the experiment, we closely monitor the growth and development of potatoes, tuber yields, crop quality, susceptibility to disease, using both classical methods using BBCH scale, as well as more modern methods of remote sensing using drones and mutispectral cameras. In the experiment, they managed to collect as many as 19 varieties of potatoes with high resistance to potato mildew, which was shown in a special experiment of susceptibility to potato mildew designed in the Jabelj area, where it was clearly shown that resistant varieties are still completely vital with preserved green meat , while most other varieties were almost completely dried due to potato mildew.

The program of potato breeding was presented at the Agricultural Institute of Slovenia, where with the acquisition of the Ecobreed project they made an important step from breeding to resistance to potato mildew to organic breeding. An important difference is that after crossing resistant varieties, the offspring in the field will be planted in parallel in both conventional and organic fields in order to make selections for the needs of organic farming in suitable conditions. Organic potato varieties grown in this way will be adapted to the needs of organic potato production. They started with an increased number of crosses of resistant varieties two years ago, and in 2021 they will also start with selection in organic fields. At the same time, they want to attract interested growers (participatory breeding) to the decision-making and selection process. In practice, these often differ from the professional criteria in force today. Due to the early participation of growers in the selection, the new cultivated varieties will be as adapted as possible to the needs of growers.

Dr. Jaka Razinger also presented the technological part of the tests within the Ecobreed project, ie testing various ecological preparations and modern more environmentally friendly approaches to control the Colorado potato beetle and strings, which have long been the most important pests of potatoes in Slovenia. The possibilities of using entmopathogenic fungi to control both pests, the use of RNA-i technology to control the Colorado potato beetle and the use of ATTRACAP capsules to control strings were presented. It is this latest innovation that is expanding considerably in Europe, at least at the research level, and is trying to replace conventional preparations, and is based on the slow release of carbon dioxide into the soil, which attracts strings, which are then infected by a fungus also present in the capsule. The technology is in the development phase, so it is necessary to optimize the application of the preparation as much as possible.

The organic potato day ended at 2 pm at the Jablje KIS IC. The participants got to know the innovations that are being introduced in potatoes at the Agricultural Institute of Slovenia within the Ecobreed project. The common finding was that science and the profession can effectively solve the challenges and problems of growers if the work is done hand in hand and in close cooperation with the Public Agricultural Advisory Service and farmers.