

National Institute of Research and Development for Potato and Sugar Beet Brasov

Introduction

General information

In Romania and EU the potato and sugar beet are considered strategic foods, being components of food security system. For potato, the energetically, protein and dry matter given in crop unit surface is the same as that produced by the main crops (wheat and maize).

National Institute of Research and Development for Potato and Sugar Beet (NIRDPSB), Braşov was founded on the 17th of February 2005 on the basis of the Law no. 209/29.05.2002 and the Government Decision (GD) no. 1882/2005.

The NIRDPSB Brasov is the continuer of a long tradition in the activity of research and development of two crops of a major importance in the economy of Romania: potato and sugar beet. All this complex activity began in 1949, when the Magurele-Brasov Experimental Agricultural Station, later on, the Research Agricultural Station of Brasov (1962) and the Research Institute for Potato and Sugar Beet (1967) took over the whole range of activities. Within the Romanian agricultural research, NIRDPSB Brasov holds a well-defined position, being considered a national interest institution. This position is the result of the vital importance the agricultural system development holds in the upper lands of Romania (potato, sugar beet, cereals, forage, as well as cattle and turkey hen selection)

The Law 72/2011 of agricultural research reconfirmed this status as National Institute. NIRDPSB is one of six national agricultural research institutes in Romania, and the only one focusing on potatoes and sugar beets.

1. Institute mandate (mission):

NIRDPSB Braşov's mission is to carry out research and development activities and innovation within the framework of the National Programme for research- development and innovation, sectoral programs and kernel international programs on potato, sugar beet, and medicinal plants domain, to solve the real problems of the agricultural community in Romania in the context of strategies developed by the MARD, MNE and AAFS.

NIRDPSB provides scientific support for integrate agricultural system for upland in Romania with a view to EU integration and necessary technology aid, advice, and know-how transfer to clients (end-user).

The mission of the institute is to improve the competitiveness of the Romanian farmers and agro-processors of up-land region in EU and worldwide and to integrate the farmers in the up-land agriculture system mainly with potato, sugar beet, medicinal plants and animals (cattle and turkeys).

The results of Institute mission could be measured in:

- improved yield (quality and quantity) of potato, sugar beet, medicinal plants (t/ha);
- increase Romanian competitiveness for free market;
- increasing up-land agriculture system sustainability.

2. Main research directions:

In order to give appropriate technical and economic recommendations to clients in the agricultural and food sectors to reach RO & EU regulatory and market environment a dynamic approach of area of research activities has been developed

The Institute as a part of EUROCCROP Project (EU funds) participated in 2007 (Edinburgh) to the definition of EU agricultural research strategy in which potato and sugar beet are 2 of the most important crops (8 crops have been identified)

According the National Strategic Plans of MARD, MNE and demands of National Federation of Potato-Romania and National Federation of Sugar Beet Growers the Institute starting with 2008, develops new 3 research domains:

- 1) Development of potato breeding and genetic researches through new genomic and technological approaches, to obtain genotypes, which correspond to present and future requirements regarding the production of healthier foods, with high qualities, suitable for ecological agriculture and which permit utilization of new

protective technological methods more friendly for environment, with conservation potential to regenerate natural resources.

The ways to solve this problem are the following:

- improvement of the theoretical basis and justification of the breeding processes of plant and animal species that are the subject of activity of the Institute.
- improving yield qualities, increasing diversity and breeding realizing new genotypes with special characteristics (antioxidants, vitamins, essentials);
- obtaining stress resisting genotypes to reduce the effects of adverse conditions (climatic changes, CO₂ concentration, pollution);
- breeding the genotypes suitable for processing;
- breeding the genotypes suitable for organic crop.

2) Development of clean technologies types “from farm to fork” in accordance with sustainable agricultural principles, increasing food and safety security, respecting general and specific requirements of the market.

Directions to solve these problems are:

- optimization of technologies and development of guidelines for Good Agricultural Practices (GAP).
- elaboration of support systems for decisions (DSS) for all involved processes (production, pest and diseases management, farm management).
- promoting the principles of Precision Farming through organizing an Excellency Centre (based on the newest scientific realizations: intelligent and cognitive systems for monitoring, modeling and management of the processes from potato agro-ecosystems).

3) Promoting alternative technologies for potato crop to obtain ecological products:

- elaboration and promoting specific technologies for ecological crops with high environmental protection.

3. Objectives:

- fundamental research for improving the breeding genetic base and development of innovative technologies;
- germ plasm collection development and obtaining of new varieties to meet the demands of farmers working in free market conditions;
- genetic amelioration and selection for turkeys and cattle.
- production of seeds of superior biological categories (pre-basic and Basic) and collaboration with private companies (commercial seed production).
- obtaining new potato varieties, sugar beet and medicinal plants adapted to Romanian pedo-climatic conditions in order to achieve a high degree of use for technological resources and environment under the sustainable agricultural systems and environmentally friendly.
- maintaining the turkeys genetic heritage and producing valuable cattle hybrids from Bălțata românească for populating the Romanian farms.
- training activities for farmers and associations (conferences, meetings, open days, fields).
- identification of potato producers specific problems, whatever of holding size (including associative forms).
- contributions to rural development through the transfer of know-how to end-users of the Institute in the context of EU directives concerning the application of the Common Agricultural Policy (CAP).

The results obtained in the CDI activity of the Institute is represented by:

- new potato varieties and medicinal plants.
- seed from biological superior categories (breeder seed, clones, PB, SE) to potato and medicinal plants.
- various documents relating to the development of the market, feasibility studies, normative, user manuals and technical instructions.
- patent of invention
- performing technologies for agricultural crop species and their implementation guides to the beneficiaries.
- valuable genetic material from the two animal species
- tissue culture protocols, experimental designs, breeding lines.
- testing and consulting technical services for Romanian and foreign society of public and private type.

Results valorisation mode:

- implementation of public private partnerships.
- the transfer of technical knowledge to the participants in the production chains of potato, sugar beet and medicinal plants.
- realization of scientific works and transfer of know-how.
- organizing and participating to conferences, symposiums, internal and international meetings.
- organization of demonstration fields, days in the field.
- participation/organizing of exhibitions and fairs.
- dissemination of knowledge by media means.
- offer valuable biological material for agricultural producers.
- providing scientific and technical support for establishing strategies MARD.
- scientific and technical support for pupils, students, master and PhD students.

4. Representatives projects:

4.1.

Title: Development and promotion of an ecological production module (potato, cereals, medicinal plants, fodder plants) at farm level:

Period: 2008 – 2012

Partners: NIRDPSB; Agricultural University Cluj Napoca; National Federation of Potato-Romania; SC AUGER PETRUS SRL Calarasi.

Project funds: 280.000 Euros

Funds provider: World Bank by MAKIS project

Project objectives:

- Accomplishment of a experimental model at farm level to get vegetal products eco certified and in which it will be applied innovative agricultural technologies specified for each species;
- Improvement of scientific and technical information dissemination (obtained through applied research) through authorized operators transfer, professional associations students, pupils on modern ideas and technologies concerning eco cultures;

Main results:

- Obtaining eco farm products with high biological value (certified seed) on species: potato, phacelia, triticale, corresponding to farmers requirements, certified operators for ecological agriculture and market operators;
- Ecological and innovative technologies to control Colorado potato beetle;
- Technological packets implementation on NIRDPSB Brasov module level, on partners and potential partners;
- Development of a educational program for farmers on ecological agriculture;
- Improvement of Romanian researchers abilities to access through internal and external competition funds to support research development on potato, medicinal plants and cereal domains.

4.2.

Title : Evaluation et exploitation des ressources génétiques en pommes de terre pour la création de variétés résistantes au mildiou de la pomme de terre

Period: 2008 – 2010

Partners: NIRDPSB Brasov; CRA-Wallonie, Belgique;

Project funds: 84,000 Euros;

Funds provider: Wallonie – Bruxelles and NIRDPSB Brasov, Romania, Bilateral project;

Project objectives: breeding of new potato varieties with resistance for late blight (*Phytophthora infestans*) in order to decrease the quantities of pesticide used in farms from both countries

Main results: obtaining of 15 hybrid combinations, 600 seed / combinations, 9,000 analyzed clones from which 350 selected for late blight resistance, multiplication in vitro conditions of new genotypes.

4.3.

Title: The efficiency of the national system for seed potato production by reducing the period for obtaining a clonal material using the rapid multiplication and generalization of "insect-proof" system.

Period: 2009 – 2012

Partners: NIRDPSB Brasov;

Project funds: 1.389.000 lei

Funds provider: MEN, ANCS, Romania, NUCLEU Program;

Project objectives: Obtaining breeding lines and seed potato production from biological enhancement categories, adapted to the new climate conditions of Romania, suitable for innovative technologies in order to exploit the upper inputs of potato culture.

Main results: - improvement of the present system for seed potato production by producing *in vitro* micro-tubers and mini-tubers through the generalization of spaces insect-proof type, it reduces the production length of pre-basic from six years to three years;

-starting from the initial material free of pathogens (micro-tubers and mini-tubers) and planting them on spaces insect-proof type are obtained in the first year Clones A, on the second year Clones B and on the third year Clones C. According to EU legislation, Clones A, B, C constitute PRE-BASIC biological category.

Patentable results: technology for clonal material production.

4.4.

Title: The reorganization of the certified seed potato production into microzones

Period: 2006 – 2010

Partners: NIRDPSB Brasov; SCDA Suceava, SCDC Tg. Secuiesc, ICDPP București;

Project funds: 2.500.000 lei

Funds provider: MADR, Sectorial program;

Project objectives:

- optimization of cultivation technology for seed potatoes and developing guidelines for good agricultural practice;

- micro-zones delineation, training and accreditation of farms and producers;

Main results: -organization of 10 micro-zones in the counties of Brasov, Covasna, Harghita, Bacău, Botoșani, Neamț, Suceava, with an area of 6,000 ha for certified seed potato production.

- elaboration of 10 favourable maps for seed potato and 10 risk maps for aphid flight (virus vectors).

- editing a user manual.

4.5.

Title: Marketing studies and promoting plan for NIRDPSB Brasov products and services.

Period: 2009 – 2010

Partners: NIRDPSB Brasov;

Project funds: 454.586 lei

Funds provider: Structural Program, POSCCE 224;

Project objectives:

- realization of a marketing study for each product (seed potato varieties, sugar beet and medicinal plants) and services (consulting and cultivation technologies) research activities carried out in NIRDPSB Braşov;
- increase the visibility of NIRDPSB Brasov in the economic sphere through promoting plans of products and services;
- -increasing the chances of earning and realization of new research projects in the country and abroad;
- -increased competition capacity of the unit through market studies;
- -identification of products on the market niche and expanding activity in sectors where there are still untapped territory.

Main results:

- -management strategy (strategic plan);
- -marketing strategy for the Institute results;
- -strategy for short and long term to improve access to financial resources;
- -promotion strategy of results;
- website NIRDPSB -modernised (www.potato.ro);
- new domain in order to promote the project's website www.potato.ro;
- editing of brochures, leaflets, billboards, labels, etc.