



ACADEMY OF AGRICULTURAL AND FORESTRY SCIENCES

„ Gheorghe Ionescu Sisesti”

RESEARCH-DEVELOPMENT INSTITUTE FOR GRASSLANDS

BRASOV, ROMANIA

5, Cucului Str., 500128, ☎ 0268 472781, 0268 472704; fax 0268 475295

e-mail: office@pajisti-grassland.ro; www.pajisti-grassland.ro

**THE DEVELOPMENT STRATEGY OF THE OF
RESEARCH-DEVELOPMENT INSTITUTE FOR GRASSLANDS
BRASOV**

1. INTRODUCTION

The Research-Development Institute for Grasslands Brasov coordinates at national level the Research Program Grassland Cultivation, a complex, multidisciplinary program, taking into account the diversity of species, stationary area conditions and the multifunctional role of these areas.

The grasslands of our country consist of 4.9 million, representing 33% of the agricultural area, they are part of the national heritage, of major importance due to the size of the animal feeding resources and their quality, as well as through the other functions with beneficial effect on the protection and the environment beauty.

The Romanian grassland area is found on all forms of relief, respectively from the altitude of the Danube Delta and plain, up to the altitude of 2500 m, from the alpine plateaus of the Carpathian Mountains. This makes the land resources for grasslands in Romania extremely varied in all aspects: physical-geographical; climate; hydrographical; soil depth; soil types and their physical-chemical properties.

In general, grasslands are an essential element of sustainable agriculture systems represented by: animal welfare, feed providing, soil quality and optimal use of less productive land, especially for biomass production, an important renewable energy source.

In addition to the decisive role of providing animal feed, grasslands have an important role in rural and environmental development reflected by: sequestration of carbon in soils, symbiotic nitrogen fixation, landscape quality,

biodiversity conservation, soil fertility improvement and flood prevention and landslides, important cultural heritage and water reserves management. By re-grassing, the slopes of roads, mining, industrial and household dumps, ski slopes and other land without vegetation are biologically consolidated to be protected by external destructive factors, stimulate pedogenesis and landscape beautify.

2. STRATEGIC OBJECTIVES

After the 1990s, in our agriculture, deep structural transformations have occurred and at the same time in pastoral patrimony management.

Decrease in number of cattle and sheep by almost 50%, in this period, which used the nearly 5 million hectares of permanent grassland (2/3 pastures and 1/3 hay), as well as the suitability of new fodder resources on uncultivated arable land, reached at different stages of the degradation, has determined to reduce the animal stocking rate until abandonment of large areas of pastures and meadows, with great losses for the national economy.

According to the Code of Good Agricultural and Environmental Conditions (GAEC), established in the Regulation of the Council of the European Union (EC) number 1782/2003, our country must pay special attention to this pastoral patrimony by maintaining the surface existing on January 1st, 2007, providing a minimal level of maintenance and avoiding the installation on agricultural land of unwanted vegetation.

The integration in the productive circuit of abandoned grasslands, the increase of the grass yield and its rational use, in the conditions of the conservation of the biodiversity and landscapes, are the main problems to which our institute, at national level, is called upon to answer, on the side of research-development and dissemination of the results.

To meet these challenges, our institute has developed a unitary thematic plan in the field of GRASSLAND CULTIVATION, which includes basic research and applied research with high impact on the processes of production and use of forage from the grasslands, allowing to find scientific and technical solutions for a good agricultural practice, characterized by the harmonization between economic and social development and environmental protection.

The fundamental objective of our activity is *enhancement of the pastoral patrimony of Romania by increasing the quality and total feed production, with optimal conversion into livestock products, in accordance with a good agricultural practice, characterized by harmonization of social and economic development, biodiversity conservation and environment protection.*

Specific objectives:

- scientific and technological management of Romanian pastoral patrimony, in order to ensure a sustainable agriculture (nutrient utilization, conservation of biodiversity, maintaining unaltered landscape, economic exploitation, environmental protection, animal welfare);
- increasing the nutritional value of the grass carpet, which will provide a balanced and efficient feeding of the different categories of animals, especially of the bovine and sheep species, in order to obtain healthy zootechnical products and animal welfare;
- suitability of technologies of permanent and temporary grasslands and livestock, specific to each stationary conditions for achieving the sustainable agricultural systems, with minimal effects caused by climate change;
- improvement of the management of agro-ecosystem resources in order to conserve biodiversity and the degree of economic sustainability of the agricultural and zootechnical exploitation systems; scientific substantiation and development of new technologies for the production of organic feed and their conversion into animal products (meat - milk) with a high biological value, maintaining biodiversity and environmental protection;
- production of the annual necessary quantity of grass and perennial forage legume seeds of indigenous varieties;
- to use the less productive areas for biomass production, a renewable resource, promoting the enhancement of these areas by reconversion and redirecting their production potential.

3. PRIORITY DIRECTIONS AND EXPECTED RESULTS

Priority directions:

Very different ecological conditions in which the grasslands are located, as well as the socio-economic changes in our country which led to a certain stage of degradation, require to the scientific research in the field of GRASSLAND SCIENCES an integrated and interdisciplinary approach in order to develop new solutions for a rational management of pastoral patrimony.

The achievement of the general and specific objectives, conditioned by the restrictive factors that limit the utilization of these area productive potential, requires the development of scientific research activities in the following directions:

- conservation of plant genetic germplasm, of biodiversity and genetic variability in the perennial grassland species;
- creation of cultivars (varieties and hybrids) for fodder, protection and landscape amenity with high production potential and adaptation to different ecological, technological and utilization conditions;

- the seed production of higher biological category to the perennial grass and forage legume species;

- the inventory of the pastoral area in order to establish the state of degradation of the soil and the grass carpet, which will be the basis of the improvement projects regarding to reintroduce them in a high-performance agricultural circuit;

- technologies for improvement and use in an extensive, semi-intensive and intensive system of grasslands located in different stationary area conditions, following the development of their multifunctionality in the context of a sustainable agriculture;

- the study, implementation and extension of the agrosilvopastoral system as a preventive solution against the aridization and desertification of permanent grasslands;

- elaboration of mechanization technologies and promotion of a system of specific machines for grassland farming, under the conditions of minimum inputs characterized by a reduced ecological impact (ecotillage system);

- research and promotion of new methods of conservation, which will provide a higher quality of pasture fodders;

- economic optimization of technological sequences for obtaining and utilizing the grassland forages;

- dissemination of the research results in the field of grasslands and improving the information flow from scientific level to the farmer and providing the feedback in order the researches meet the farmer demands and their awareness as main vectors of maintaining the balance of the environment.

At the same time, it aims to increase the capacity and capability of the research - development and innovation system in the field of Grassland Cultivation to accumulate knowledge, results and experiences of the highest scientific and technological level, in order to disseminate and transfer to the internal and community economic environment, in order to support competitiveness at national and European level.

Expected results:

- conservation of plant genetic germplasm, biodiversity and genetic variability in perennial grass and forage legume species *in situ* and *ex situ*;

- creation of cultivars (varieties and hybrids) for fodder, protection and landscape beauty, with high production potential and suitability to different ecological, technological and utilization conditions;
- realizing an ecological zoning of the seed production in the forage species and the genotypes created in our country, hierarchized on higher categories;
- the elaboration of new technological sequences specific to the new varieties, which exploit the biological potential of fruiting in order to increase the yield and the economic efficiency in the seed production farms;
- updating the spread and degradation status of the soil and sward of the permanent grasslands, as a starting point for the projects for their improvement and rational use;
- quantifying at national level the abandonment of permanent grasslands, as the main cause of the invasion with unvalued vegetation until their afforestation and overgrowth, as the main factor of degradation of the environment and biodiversity;
- the extension of the best performing agrosilvopastoral systems depending on the pedoclimatic area predicted to be affected by the aridization, before it settles and produces damage to the permanent grasslands and national economy;
- the assessment of the fertilizing element route on the pastures used by grazing with different species of animals and the reduction of losses;
- consolidating the presence of temporary grasslands in the ecological agriculture crop rotation , important animal feeding for producing organic fertilizers and a good precursor crop for coming plants;
- the evaluation of the multifunctional grassland potential by quantifying the ecological factors, the natural resources of this land patrimony, the zootechnical value, the energetic value, the carbon storage, the meliferous and phytopharmaceutical value, the germplasm resource, the landscape value etc.
- conservation of grassland biodiversity as a premise for obtaining organic products;

- establishing the sustainable systems for forage production on farms, in correlation with realization of high food value products;
- reviewing the mixtures of perennial herbs, using the new varieties of perennial grasses and forage legumes, especially of native origin, supplemented with those of the EU and other countries;
- improving the productive and qualitative performances of the grassland mixtures that correspond to the demands of a performing agriculture;
- increasing the animal product efficiency with minimum inputs;
- improvement of animal health status and reproduction indices;
- animal products presenting food safety;
- implementation of new technologies, new varieties, mixtures of perennial grasses and forage legumes, which are more efficient and have a lower impact on the environment, by reducing the fertilization with synthetic nitrogen and increasing the feed value.

4. IMPLEMENTATION OF THE STRATEGY

The research-development and innovation priorities necessary to reach the objectives and development targets of the GRASSLAND SCIENCES, using an integrative model, are in full agreement with the general and specific objectives of the NATIONAL STRATEGY FOR RESEARCH, DEVELOPMENT AND INNOVATION 2014-2020 (SNCDI 2014-2020) namely:

General objectives (GO):

GO1. Increasing the competitiveness of the Romanian economy through innovation;

GO 2. Increasing the Romanian contribution to the progress of border knowledge;

GO 3. Increasing the role of science in society.

Specific objectives (SO):

SO 2. Supporting intelligent specialization, by concentrating resources in research and innovation fields with economic relevance and potential RD demonstrated.

Also, the objectives of the scientific research in the field of GRASSLAND CULTIVATION are correlated with the strategic objectives specific to the zootechnical and pratological scientific research in Romania, included in

STRATEGY FOR RESEARCH - DEVELOPMENT - INNOVATION IN THE AGRO-FOOD AREA FOR THE MEDIUM AND LONG TERM 2014-2020/2020 – 2030. It aims to find solutions for a better alignment with the Europe strategy. These are:

- increasing the role of zootechnical and pratological research in the development and transfer of results in the field of animal husbandry and forage production on grassland, of advanced technologies, as well as in increasing the zootechnics participation in total agricultural production;
- orienting the zootechnical and pratological research directions towards the national and European priorities: sustainable agriculture with the protection of natural resources; food safety; conservation and use of plant and animal biodiversity; landscape conservation;
- multidisciplinary and multinational approach to the topics of zootechnical and pratological research, in the context of globalization;
- strengthening the link between the research-development-innovation sector and the farmer associations / federations, by:
 - development of the mechanisms that provide the technological transfer in the sector of animal breeding (embryo transfer, hybridization between specialized breeds and local breeds, etc.) and the production of fodder on pastures (technologies for grassland improvement, new varieties, grass and forage legumes seeds etc.);
 - encouraging the participation of the private sector in R&D activities;
 - focusing the topics on niche areas, where Romania has the critical mass and leader performances;
 - developing and increasing the competitiveness of animal breeds and perennial grasses and forage legume varieties of grasslands in Romania by research - development - innovation, as the main factor of genetic progress and scientific development.

To achieve the specific objectives SO 5. *Achieving by 2020 the critical mass of researchers needed ...* and SO6. *Developing high performing research organizations, capable of becoming regional and global operators.....* from SNCDI 2014-2020 and knowing that a balanced development of the activities and of the R&D infrastructure, to create the premises as the studied thematic, to be unitary, systemic, convergent and integrative, so that the users are offered specific information efficiently, in full accordance with the necessity and the real possibility of their use, it is necessary to pay special attention to solving the following aspects:

- providing the budgetary funds and other attracted sources necessary to finance the research and development activity, able to offer solutions for managing the national pastoral patrimony and original performances in this field;

- the stability of the research contracts in order to maintain the continuity of the specific research activity and of the research staff;
- creation of special funds at national level for equipping research units with equipment and high performance machines in order to reduce the technical gap to the research units in the EU;
- providing funds for testing new varieties of perennial grasses and forage legumes for inclusion in EU catalogues;
- promoting and supporting, at national level, a network of seed multiplication in the native varieties of perennial grasses of grassland;
- existence of a research network in the field of GRASSLAND CULTIVATION, coordinated by the institute, which includes the profile research stations, higher agricultural education units and other research units and which can be connected to the European Research Area (ERA);
- establishing a group within the ICDP Brasov that will have the main task of the technological transfer, paying special attention to the impact of the pastoral agricultural exploitation on a wider area of the environment;
- participation with Ministry of Agriculture and Rural Development in coordinating the technological measures and activities for achieving the objectives included in the long and medium term framework strategy on the activities of improvement and grasslands utilization, THE STRATEGY FOR RESEARCH - DEVELOPMENT - INNOVATION IN THE AGRICULTURAL FIELD IN THE NEXT TERM - 2020 / 2020 - 2030 and in the Grassland Law 86/2014;
- continuous professional training of human resources, a fundamental requirement of the work quality.

5. CONCLUSIONS

Based on the above, taking into account the role, its tasks in the management of the national pastoral patrimony and the original performances in this field, we consider that ICDP Brasov, under the conditions of allocating funds at the necessary level, can respond to the challenges in the field that are in accordance with the reforms included in the Community Agricultural Policy (CAP), the objectives and expected results being focused in the field of intelligent

specialization Bioeconomy for the strategic cycle 2014-2020 from National Strategy for Research, Development and Innovation (SNCDI) 2014-2020.