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STRENGTHENING NATIONAL PLANT GENETIC RESOURCES (PGR) PROGRAMME IN BELARUS FOR CONSERVATION AND USE OF PLANT GENETIC RESOURCES

June 2019

SDGs:



Countries:

Republic of Belarus

Project Codes:

TCP/BYE/3601

FAO Contribution:

USD 390 000

Duration:

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Contact Info:

FAO National Correspondent in Belarus

FAO-BY@fao.org

Implementing Partner

National Academy of Sciences of Belarus (NASB).

Beneficiaries

NASB experts responsible for implementing international agreements, institutes responsible for maintaining, conserving and managing PGR, researchers and technicians.

Country Programming Framework

Priority Area 1. Conservation, management of natural resources and climate change adaptation. Outcome 4: Agricultural production to be made less volatile and strengthened, and stakeholders to be prepared to mitigate challenges relating to the effects of climate change that highlight the need for increasing national capacities in climate change adaptation and mitigation in the agricultural sector of Belarus. Output 1: Strengthen practices that support improved and increased sustainable production.



BACKGROUND

Belarus has prioritized agriculture, water and forestry as key sectors for adaptation to climate change, with special attention being given to the conservation and sustainable use of plant genetic resources for food and agriculture (PGRFA) through the State Programme, "Mobilization and Sustainable Use of Plant Genetic Resources of the National Bank for Breeding, Enriching of Cultivated and Natural Flora of Belarus". However, implementation of the programme has been slow. In addition, Belarus is not a contracting party to the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Breeding centres and institutes in the country depend on material from abroad; membership of ITPGRFA would facilitate the exchange of such material and the establishment of good relations with foreign institutes and companies. A further significant obstacle to effective conservation is the absence of PGR inventories.

The project aimed to improve the efficiency of conservation programmes and ensure that activities related to the conservation and use of PGR in Belarus were more efficient and competitive. This would be achieved by upgrading operations and building the capacity of professionals involved in plant breeding. The project also expected to assist the National Gene Bank in Belarus to set up a gene bank relational database system.

IMPACT

Researchers and technicians have improved their ability to conserve and use plant genetic resources for food and agriculture thanks to the training provided, while administrators and policy-makers have benefited from the discussions held on international agreements and information-sharing mechanisms. The improved institutional and technical capacity will enhance the management of PGRFA, contribute to genetic base enlargement activities and promote crop breeding in the country to meet climate change challenges.

ACHIEVEMENT OF RESULTS

The project assisted Belarus to rationalize procedures for the conservation and use of PGRFA in the country by developing a national PGRFA conservation strategy, elaborated and agreed on by a wide range of stakeholders at roundtable discussions. Institutional and technical capacity in PGRFA conservation and sustainability were strengthened through training workshops and a study tour to advanced European gene banks. The project also upgraded infrastructure for the plant breeding collections of the National Bank of Plant Genetic Resources by purchasing the necessary equipment and establishing a basis for a cryoconservation laboratory. The conservation and use of PGRFA in the country were rationalized by the preparation of a national PGR inventory and a list of national mandate cultivars for fruits and berries, by the establishment of a national information-sharing (NIS) mechanism to provide facilitated access to information on national PGRFA, and by an analysis of national gaps and priorities.

IMPLEMENTATION OF WORK PLAN

All the activities envisaged by the Project Document were carried out on time and within the planned budget. Dates for training workshops were adjusted in line with the availability of the experts and lecturers to be invited and the seasonal workload of local staff.

FOLLOW-UP FOR GOVERNMENT ATTENTION

It is recommended that the relevant specialists be invited to assist in the installation and launching of the new national PGRFA documentation system, and that the computers purchased for the system be installed. Every effort should also be made to carry out the follow-up actions listed in the draft National PGRFA strategy, as well as in the manual on gene bank management and the guidelines for developing a country report on the state of biodiversity and PGRFA in the country.

SUSTAINABILITY

1. Capacity development

A basis for the implementation of the national PGRFA strategy has been established. Its approval by the Government will ensure the financing of the measures envisaged and lead to the economic sustainability of the institutions involved.

2. Gender equality

Although gender issues are not a priority for the country, the majority of the trained personnel was represented by women, and women and men benefited equally from the results achieved. An equitable participation in training, workshops and roundtable discussions was achieved.

3. Environmental sustainability

The conservation of plant diversity is a basis for the sustainability of ecosystems and the mitigation of climate change challenges. The establishment of the NIS mechanism to monitor PGRFA, as well as the inclusion of environment protection-related actions in the national PGRFA strategy, will contribute to environmental sustainability.



4. Technological sustainability

Upgraded infrastructure for the national collections and the provision of new equipment will contribute to the reliable storage of genetic material. Facilitated access for users to germplasm of modern and traditional crop varieties will lead to the development of new productive and adaptive crop varieties, ensuring technological sustainability. The enhanced capacity of professional staff will also allow stakeholders to pursue activities aimed at *ex situ* conservation of germplasm without further technical assistance.

5. Economic sustainability

Government approval of the draft national PGRFA strategy will ensure the financing of measures envisaged by the action plan annexed to the strategy and lead to the economic sustainability of institutions involved in performing PGRFA conservation and sustainable use-related activities.



DOCUMENTS AND OUTREACH PRODUCTS

- ❑ List of mandate crop varieties. Institute of Fruit-Growing. 2017. 24 pp.
- ❑ Brief Guidance on preparation of country report on the state of PGRFA (in Russian). International consultant. 2018. 7 pp.
- ❑ Guidelines on forming, conservation and study of PGR collections in seed gene bank (revised manual on gene bank management, in Russian). F. Privalov, I. Matys, A. Avagyan, S. Grib, I. Markevich, P. Savenkov, Research and Practical Centre for Arable Farming, Minsk. 2018. 51 pp.
- ❑ Draft national strategy for conservation and sustainable use of plant genetic resources for food and agriculture in the Republic of Belarus for 2020-2035 (in Russian and English). 2019. Russian version, 39 pp; English version, 36 pp.

ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	Strengthened National PGR Programme in Belarus to conserve and use plant genetic resources for food and agriculture, as well as a beneficial impact on national development, food security, sustainable agriculture and the preservation of agricultural biodiversity, by improving the effective use of national plant genetic resources in plant breeding and the seed sector		
Outcome	Improved capacity of the National Bank of Plant Genetic Resources to enhance sustainable conservation and utilization of plant genetic resources through cooperation and exchange of material, knowledge and experience among stakeholders, as well as for capacity-building at national level		
	Indicators	<ul style="list-style-type: none"> – Trained national staff in database management and data harmonization. – Well-organized communication with all institutes concerning PGR conservation strategy and supply of plant genetic information for use in their work. – Well-established NIS mechanism. – Procedures adequately documented for follow-up project. 	
	Baseline	<ul style="list-style-type: none"> – One database specialist in gene bank with limited knowledge. – Microsoft Excel used for the database. – Limited awareness of possible benefits of gene banks exists, passed around through personal contacts. – No NIS mechanism currently available in the country. – Field procedures and guidelines from FAO. 	
	End Target	<ul style="list-style-type: none"> – Five or six staff members from NASB and gene bank, and possibly from other line institutes, trained, with qualified women given priority. – Ninety percent of concerned institutes participate in discussion of a draft strategy. – NIS is tested and activated by the end of the project. – Manuals on procedures documenting each step of database and information-sharing mechanism construction as well as development of conservation strategy. 	
	Comments and follow-up action to be taken	<ul style="list-style-type: none"> – Nine specialists from NASB and five collection curators from other institutions were trained. The documentation system for PGRFA was introduced as a separate module in the course of two training workshops. Women represented majority of trained personnel. – Cooperation among key stakeholders (research institutes of NASB, agricultural universities, related ministries, etc.) at all levels of project implementation was established. Working group (WG) established for elaboration of national strategy composed of 21 specialists from 17 key institutions. Over 90% of institutes concerned participated in discussions of draft strategy. – NIS was tested and activated. Collected data are recorded in the system. Relevant stakeholders were identified and involved in data-gathering process for assessment of PGRFA status. – Revised manual on gene bank management was prepared. Templates of bilateral agreements and Material Transfer Agreement acts on material transfer (in Russian and English) were annexed to the manual. Brief guidance on preparation of a country report was elaborated. 	
Output 1	The procedures for conservation and use of PGRFA in the country are rationalized		
	Indicators	Target	Achieved
	National inventory with complete accessions passport data.	National inventory with complete accessions passport data is prepared.	Yes
Baseline	Non-existent		
Comments	National inventory with complete accessions passport data was prepared. Mandate cultivars list for fruit and berries, comprising 689 cultivars, was developed. NIS mechanism was established. Collection holders were trained in documentation systems and tools for managing collections.		
Activity 1.1	Prepare and hold first national seminar (inception workshop) launching process of cooperation among all stakeholders and allowing for discussion and approval of project objectives, terms of reference and work plan		
	Achieved	Yes	
	Comments	Project objectives, outcome and expected outputs were presented; detailed work plan was approved. Cooperation ways among key stakeholders at all levels of project implementation and alignment with relevant national programme were discussed and agreed. A wide representation of stakeholders in elaboration of a strategy was supported by participants.	

Activity 1.2	Preparation of a national inventory		
	Achieved	Yes	
	Comments	The best national inventory structure based on FAO/Bioversity Multi-Crop Passport Descriptors was discussed and agreed with ex situ collections holders. National inventory with complete accessions passport data was prepared based on pre-agreed structure.	
Activity 1.3	Preparation of a national mandate cultivar list		
	Achieved	Yes	
	Comments	Mandate cultivars list for fruit and berries comprising 689 cultivars was developed in line with pre-defined criteria.	
Activity 1.4	Establishment of NIS mechanism		
	Achieved	Yes	
	Comments	NIS mechanism was established to monitor implementation of FAO Global Plan of Action (GPA) and improve country's capacity to analyse national gaps and priorities for future planning. A national consultant (PGRFA policy expert) hired to establish NIS mechanism was trained in data recording. Relevant stakeholders were identified to collect robust set of data. Information gathered was analysed, evaluated on basis of a set of defined indicators and recorded in the system.	
Activity 1.5	Establishment of a national PGRFA documentation system		
	Achieved	Partially	
	Comments	Various documentation systems and tools for collection management were presented at two training workshops. A decision was made by collection holders to install GRIN-Global open source software. For the installation and launching of a new system, relevant specialists need to be invited. This will be done later (after installing purchased computers) by gene bank of Belarus using its own resources.	
Activity 1.6	End-of-project workshop (WS3) to disseminate project outputs and demonstrate potential use and benefits		
	Achieved	Yes	
	Comments	Final event, "Joint Effort for Conservation and Use of Plant Genetic Resources in Belarus," was held on 19 March 2019 to raise awareness of project achievements and inform on ongoing capacity and policy development activities within FAO and different International Treaties. Introduction of benefits for Belarus to become a Contracting Party of ITPGRFA promoted a better understanding of ITPGRFA principles, which in turn contributed to preliminary agreed decision to become a contracting party to this international agreement.	
Output 2	National PGRFA conservation strategy is elaborated and agreed to by stakeholders		
	Indicators	Target	Achieved
	Preparation of draft national PGRFA conservation strategy.	National PGRFA conservation strategy, including objectives and scope for conservation and use of PGRFA, is elaborated and discussed with all stakeholders.	Yes
Baseline	Non-existent		
Comments	Draft national PGRFA conservation strategy was elaborated by established WG under guidance of Lead Technical Officer and international experts. Draft document was discussed and agreed by stakeholders during two roundtable discussions. The strategy will be presented to Government of Belarus for approval and will serve as an "umbrella" document for State Programme "Mobilization and Sustainable Use of PGR of the National Bank for Breeding, Enriching Cultivated and Natural Flora of Belarus".		
Activity 2.1	Establish an interim national PGRFA conservation committee		
	Achieved	Yes	
	Comments	The interim national PGRFA conservation committee/WG, composed of 21 specialists from 17 key institutions, was established. The composition of the WG was approved by the Chair of Presidium of NASB. A wide representation of stakeholders was ensured to identify the country's challenges and priority needs in PGRFA conservation and use.	

Activity 2.2	Preparation of a draft national PGRFA conservation strategy		
	Achieved	Yes	
	Comments	The draft national PGRFA conservation strategy was elaborated. The final draft consists of four chapters covering four priority areas of the GPA and describes strategy implementation mechanism, monitoring and reporting terms. The Action Plan annexed to the Strategy includes 47 actions to be implemented in 2020-2035.	
Activity 2.3	Organization of roundtable discussion of a draft for national PGRFA conservation strategy		
	Achieved	Yes	
	Comments	Roundtable discussion of draft of national PGRFA conservation strategy was held on 28-30 November 2017 to present first draft of strategy. By the request of stakeholders, a second roundtable discussion was held on 30-31 May 2018 to discuss comments made, clarify activities to be included in Action Plan and ensure a better understanding of strategic directions of fixing problems faced.	
Activity 2.4	Revision of existing gene bank operation manual and its translation into English		
	Achieved	Yes	
	Comments	Revision of the existing gene bank operation manual was conducted in line with FAO gene bank standards, taking into account quality management, information flow and germplasm exchange. Revised manual, "Guidelines on forming, conservation and study of PGR collections in seed gene bank," contains 12 chapters describing structure and types of existing gene bank collections and gene bank standard operations.	
Output 3	Institutional and technical capacity on conservation and sustainable use of PGRFA is strengthened		
	Indicators	Target	Achieved
	Successfully implemented training to improve PGRFA utilization to promote modern plant breeding and germplasm conservation practices.	Improved capacity of National Bank of Plant Genetic Resources to enhance sustainable conservation and utilization of PGR through cooperation and exchange of material, knowledge and experience among stakeholders, and capacity-building at national level.	Yes
Baseline	Lack of trained scientists and technicians		
Comments	Institutional and technical capacity is strengthened by training workshops to enhance capacities of national professional staff and technicians in germplasm conservation, PGRFA documentation, new plant-breeding methods and technologies, and new conservation methodologies for vegetatively propagated material. Additional training workshops on genetic passportization using DNA-marking methods, gene bank management and plant cryopreservation were held at request of national stakeholders considering local specialists' knowledge gaps in specific fields.		
Activity 3.1	Organization of training workshop to enhance capacities of national professional staff and technicians in germplasm conservation		
	Achieved	Yes	
	Comments	Training workshop on "Conservation and Sustainable Use of PGRFA" for 36 local specialists from 13 institutions was held on 15-17 May 2018. Training proceeded in parallel with revision of gene bank operational manual. Proposed changes and addendums were discussed and agreed with collection curators.	
Activity 3.2	Organize study tour to a Swedish gene bank for two scientists of National Bank of Plant Genetic Resources		
	Achieved	Yes	
	Comments	Considering logistical arrangements, including translation needs, the study tour was organized to gene banks of Estonia and Latvia. The tour for two scientists (as was planned) of the National Gene Bank was conducted on 27 February-7 March 2019. The following institutes were visited: Latvian Genetic Resource Centre, Salaspils, and Priekuli Plant Breeding Institute (in Latvia); and Estonian Crop Research Institute (ECRI), Jõgeva, breeding department of ECRI demonstration of regeneration of gene bank accessions, gene bank of Estonia, Jõgeva, Polli Horticultural Research Institute, Estonian University of Life Sciences, Department of Plant Biology of ECRI in Saku and in vitro potato collection (in Estonia).	
Activity 3.3	Organization of training workshop to enhance capacities of national professional staff and technicians in PGRFA documentation		
	Achieved	Yes	
	Comments	PGRFA documentation was introduced as a separate module during two training workshops on "Conservation and sustainable use of PGRFA" and "Gene bank management": it was not necessary to hold separate training in documentation.	

Activity 3.4	Organization of a training workshop to enhance capacities of national professional staff in new plant-breeding methods and technologies		
	Achieved	Yes	
	Comments	21 researchers took part in a training workshop, "New Methods and Technologies in Plant Breeding", held on 11-12 March 2019	
Activity 3.5	Organization of a training workshop to enhance capacities of national professional staff in new conservation methodologies for vegetatively propagated material		
	Achieved	Yes	
	Comments	<p>Training workshop, "New conservation methodologies for vegetatively propagated material", for 22 local specialists was held on 7-9 August 2018 and guided by two resource persons. Additional training workshops were organized at request of national stakeholders, considering local specialists' knowledge gaps in specific fields:</p> <ul style="list-style-type: none"> – training in "Genetic passportization using the DNA-marking methods" for 26 local specialists was held on 27-29 November 2018 and guided by three invited resource persons. – training in "Gene bank management" for 55 local specialists was organized on 20-21 February 2019. – training in "Plant cryopreservation" for 62 local specialists was conducted on 4-6 March 2019. Knowledge of cryoconservation technologies was needed to make the equipment purchased effectively usable. 	
Activity 3.6	Provide guidance on preparation of a country report on the state of biodiversity		
	Achieved	Yes	
	Comments	Brief guidance on the preparation of a country report was elaborated in line with FAO Guidance for the preparation of country reports on the state of biodiversity. The guidance will serve as a tool in defining national priorities and identification of needs to be addressed to implement GPA.	
Output 4	Capacity of national professional staff is enhanced for upgrading the national plant-breeding collection infrastructure		
	Indicators	Target	Achieved
	Pool of national professionals specialised in creating secondary collections of clonally-propagated materials is established.	Pool of national professionals is established.	Yes
Baseline	0		
Comments	The necessary complementary equipment was procured to carry out training to upgrade collection infrastructure and make national gene bank operations cost-effective. The cryopreservation laboratory for PGRFA is being established for clonally-propagated plants.		
Activity 4.1	Preparation of list and procurement of necessary complementary equipment for National Bank of Plant Genetic Resources		
	Achieved	Yes	
	Comments	The list of necessary complementary equipment was prepared with relevant technical specifications. Procurement was carried out. According to national legislation, there are specific procedures for registration of equipment; this will thus be shipped at the end of the registration process.	
Activity 4.2	Establishment of cryopreservation laboratory for PGRFA		
	Achieved	Yes	
	Comments	Cryopreservation is valuable as a secondary backup for primary collections of clonally-propagated plants. For this reason, a cryopreservation laboratory for PGRFA in Belarus is being established at the Institute for Fruit-growing. A basis of establishing a cryopreservation laboratory was created by the procuring of cryopreservation equipment and the training of specialists.	

Outreach, Marketing and Reporting Unit (PSRR)
Business Development and Resource Mobilization Division (PSR)

For more information please contact: Reporting@fao.org