

CURRENT STATUS AND CHALLENGES IN MANAGING PGRFA IN SERBIA



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Outline

- Objectives
- Introduction – PGR status
- Vision of PGRFA Management
- Legal PGRFA framework (national and international)
- National Committee&National Programme
- Gene Bank, Status and Vision
- National Collection and other collections – institutes and faculties/National network
- National Inventory and EURISCO
- Collecting PGR
- Registered Varieties
- Subsidies
- Safety duplication
- AEGIS implementation



Objectives

Objectives of this presentation are:

- To show actual status and challenges in managing plant genetic resources in Serbia as well as running Plant Gene Bank of Serbia,
- To share experience and constraints in AEGIS implementation.

Introduction

- Genetic erosion of PGRFA in Serbia is evident, due to:
 - Monocropping (maize, wheat)
 - Domination of foreign varieties and hybrids
 - Globalization of agriculture and market
- National collection is temporary stored at +4C for more than 15 years
- Regeneration and multiplication of accessions from National collection started in 2017, in cooperation with institutes
- Facilities for Gene bank provided: mid term +4C and long term -20C
- Gene Bank equipment purchased with a help of two international projects SEEDNet and FAO
- Incomplete Inventory, documentation, characterization and evaluation data
- National Gene bank is a part of National Complex of Reference Laboratories – under the Ministry of Agriculture, Forestry and Water Management

Vision of PGRFA Management and Use in Serbia

- Political, legal and institutional support to the PGR conservation are in place and functional (National programme, National Committee, National Plant Gene Bank)
- PGRFA are identified and collected
- PGRFA conserved *in situ*, on farm and *ex situ* in a most appropriate way, with efficient regeneration and
- PGRFA used in many fields
- PGRFA are available to the users
- Continuous cooperation and knowledge improved in PGRFA area
- ECPGR continuation in X Phase 2019-2023
- AEGIS signed and implementation started, Agreements with AMs signed, PA raised in different stakeholders/institutions, MoA flagged

National Legal Framework

- Strategy for Agriculture and Rural Development adopted 2014-2021
- National Biodiversity Strategy 2017-2022
- National PGRFA Committee established in 2015
- Law on PGRFA Management prepared, final draft to be adopted by the Parliament
- National Programme for PGRFA Conservation and Sustainable Use, prepared with the support of FAO TCP Project, final draft to be adopted by the Government

International Legal Framework

- A number of international conventions related to PGR signed and ratified
- CBD signed (1992), ratified (2001)
- ITPGRFA signed (2001), ratified (2013)
- Nagoya Protocol signed (2011)
- GPA Global Plan of Action (1996 and 2011)
- Serbia follows the EU PGR legislation, as a candidate for EU member state
- Harmonization with EU PGR directives

International networks

- SEEDNET
- FAO
- NISM FAO
- GPA
- ECPGR



National PGRFA Committee/ Expert's Working Group

- In July 2012 National PGRFA Committee/Expert's Working Group was established with the task to prepare the National PGRFA Programme with a help of FAO TCP project.
- NP final draft prepared, not yet adopted



National Plant Gene Bank



Насловно » О нама »

Банка биљних гена

- > О нама
- > Организациона структура
- > Одсек за финансијско-

Банка биљних гена оснива се чланом 41. Закона о безбедности хране. Банка биљних гена обавља послове који се односе на припрему протокола за рад Банке биљних гена, чување колекције семена и садног материјала; регистрацију узорака семена, њихово чишћење, сушење, паковање, складиштење и одржавање; умножавање и регенерација узорака; складиштење дупликата узорака семена; организовање одржавања или одржавање

National Collection

- Transferred to the National Plant Gene Bank - April 2015
- Mid-term conservation on +4C
- Facilities for long-term on -20C
- 4238 accessions from 249 species:

- Cereals 2985 acc. (7 species)
- Industrial Crops 367 acc. (6 species)
- Vegetables 214 acc. (11 species)
- Fodder Crops 285 acc. (9 species)
- Medicinal and Aromatic Plants 389 acc. (216 species)



National Collection (NC) - There are 4,238 samples in the Plant Gene Bank (cereals and maize 2,985 samples, 367 industrial plants, 284 fodder plants, 215 vegetables, medicinal and aromatic herbs 387). This collection is named National PGRFA Collection (NC). Since the NPGB facilities were not completed, in order to avoid the destruction of NK, the Serbian Government entrusted the Maize Research Institute "Zemun Polje" (MRIZP) to keep NC. From 1st April 2015, since all the necessary technical conditions have been established, samples of NC are kept in the cold rooms of the Plant Gene Bank in Batajnica. NPGB of Serbia was activated after more than 20 years since the complex of the PGB Yugoslavia was built for this purpose.

Gene Bank Manual

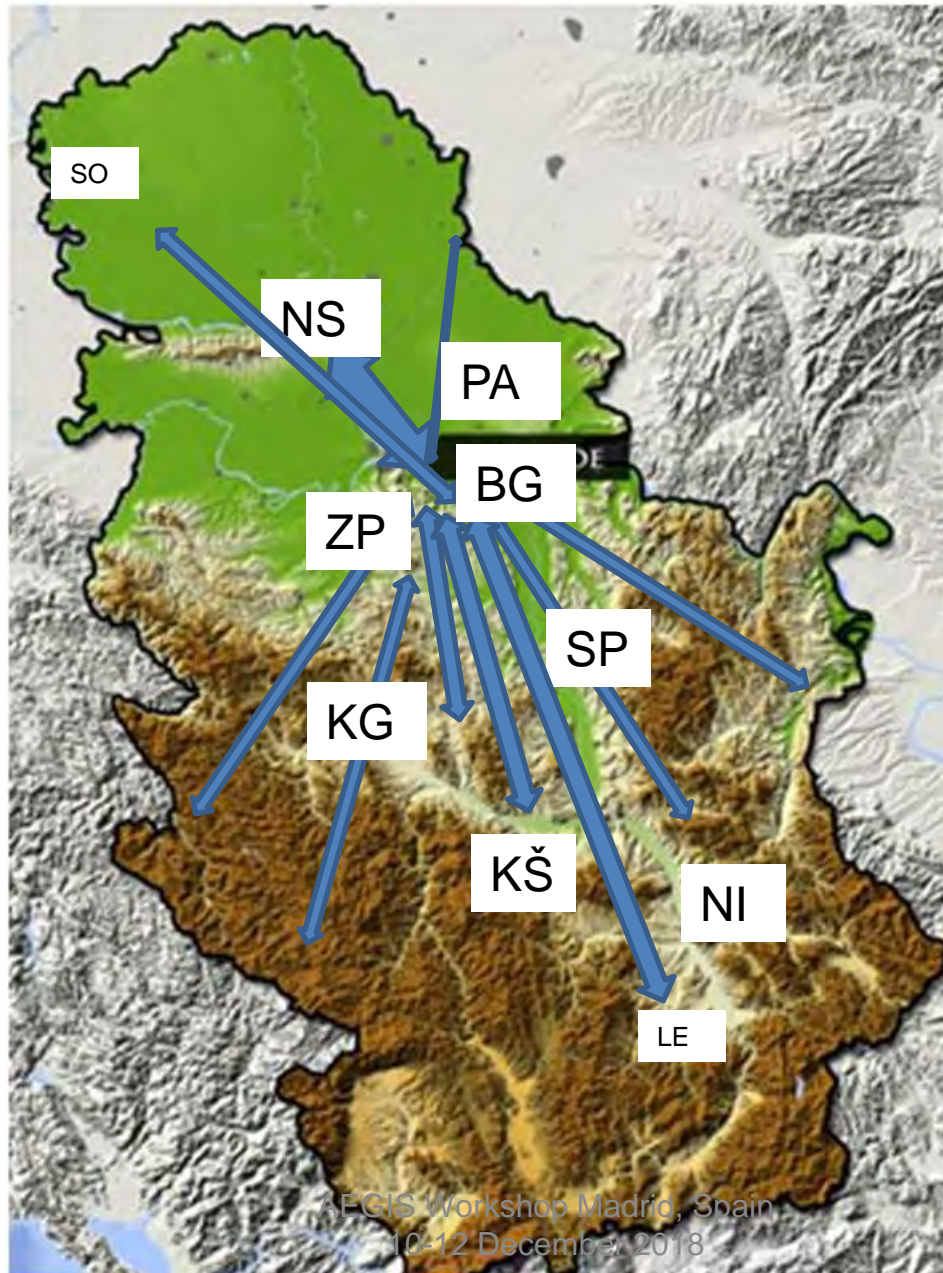
- Manual for seed handling in Plant Gene Bank with standards and procedures - finalized in 2017



National Plant Gene Bank - Vision

Decentralized in terms of conservation of PGR on farm, regeneration and multiplication of accessions, cross-linked, important factor of linking the stakeholders

Enforced with human resources



Ready to accept new accessions

Distributes PGRFA accessions to the users and researchers, and exchanges accessions with other gene banks

Institutions collection-holders

- Responsible for: ex-situ and in-situ conservation, regeneration, multiplication, Inventory, documentation
- Institute for field crops and vegetables, Novi Sad (cereals, maize, vegetables, industrial plants, fodder crops, MAP)
- Maize research institute Zemun Polje (maize, sorghum)
- Institute for vine production and viticulture Niš
- Institute for fruits production Čačak
- Institut for fodder crops Kruševac
- Institute for vegetable crops, Smederevska Palanka
- Faculty of Agriculture, Belgrade (fruits and vitis, cereals, vegetables, MAP's)
- Faculty of Agriculture, Novi Sad (fruit and vitis, cereals)
- Faculty of Agriculture, Kragujevac, Čačak
- Institute for medicinal plants research, Beograd
- Institute for small grain cereals, Kragujevac
- Institute for biological research, Belgrade (in vitro collections)
- Center for agriculture and technological research Zaječar (cereals, maize, fodder crops, industrial crops)
- Center for potato research, Guča (duplicates from National collection)
- Center for Sugar Beet, Aleksinac
- Center for Tobacco, Niš
- Ministry for Agriculture, Forestry and Water Management-Plant Gene Bank

National Inventory

- The National Inventory Focal Point - responsible for the compilation of data and management of the National PGRFA Inventory
- Other data sources are known and data have to be obtained from PGRFA holding institutions (mostly held in books, excel sheets, access) - subject to the future Law on PGRFA management
- Agreements between National Inventory Focal Point and holding institutions are to be made officially
- Contact persons for PGR documentation from each institution to be appointed
- IPGRI/FAO MCPDL are the basis for the data structure
- Mode and period of sending data is to be agreed accordingly
- New data have to be compiled and transferred in relevant structure, step by step
- The National Inventory is supposed to cover important national *ex situ* collections as well as working collections from institutes
- Information and documentation unit in the Gene Bank – needs:
 - Server
 - Data base management software
 - IT person

EURISCO

- Data for Maize accessions from National Gene Bank Collection sent to EURISCO (about 5500 entries)
- EURISCO National Focal Point from 2009
- EURISCO Data Sharing Agreement signed on 01 October 2018
- Last data entry to EURISCO: September 2018

Collecting PGRFA – Status and challenges

For now, there is no specific legal regulation regarding collecting PGRFA in Serbia. The only restriction is in protected zones.

- Who can collect in Serbia? Domestic or foreign researchers or together?
 - International projects? National projects from 1st October 2015 - theme No 1 are Genetic Resources - Ministry of Education and Science
 - Relationship: Inventory – Collecting
 - Can we just do the inventory or export it?
 - There are no customs regulations on the delivery/export of PGR
 - Shipments
 - New PGR samples - When they are received in domestic collections, do they go to the NI list?
 - If they have reached NI ... EURISCO
 - Serbia is signatory of Nagoya Protocol
 - Public availability of genetic resources
-
- The National Committee will decide on all these issues, and the PGRFA Management Law will regulate collection and access to PGR, as well as NPGB status.

ECDB Maize

- Serbia is the holder of European Crop Data Base for Maize
- Responsible person: Data Base Manager:
Dr Violeta Andjelkovic,
Head of Maize Gene Bank
Institute for Maize
“Zemun Polje” - Belgrade



Ex situ

Cereals and Maize



Wild Sunflower collection IFVC Novi Sad > 5000 acc.

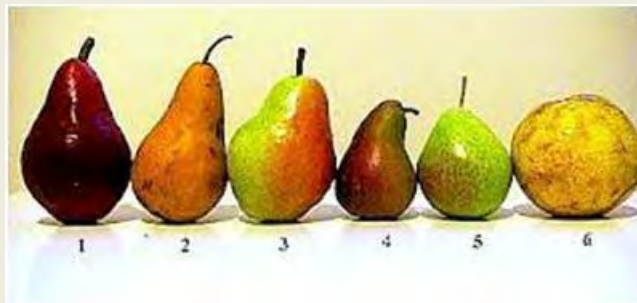


Vegetables



Fruit and Vitis

Total 3.500 accessions



Total No of PGR acc. in Serbia

- It is estimated that around 15,000 seeds samples and about 3,500 samples of fruit trees and vines, originating mainly from Serbia and the Western Balkans, are kept in all national agricultural institutions.

Examples of well known Serbian varieties –
„brands“



Vinova loza "Smederevka"



Šljiva „Čačanska rodna“



Višnja „Oblačinska“



Pasulj "Tetovac"



Paradajz "Volovsko srce"
10-12 December 2018



Kupus "Futoški"
27

Varieties - Status

Number of varieties and local populations on the National list of registered varieties (2000-2013) List of registered varieties + List of withdrawn varieties

Group of PGRFA	No of species	Registered			Total
		Varieties		Local populations	
		National	Foreign		
Cereals and Maze	12	839	403	7	1.249
Industrial crops	19	286	366	36	688
Fodder crops	43	100	34	39	173
Vegetables	71	280	961	352	1.593
Fruits and Vitis	48	117	383	767	1.267
Total	193	1.622	2.147	1.201	4.970

There is no cumulative record of all varieties that have ever been recognized in Serbia since the 1960s, when the recognition of varieties officially began.

In Serbia there are more than 10 national institutions in which varieties have been created over the past 50 years. Some institutions have disappeared. Seeds of many varieties are lost.

Varieties - Challenges

- Are new domestic varieties PGR?
- If so, why are they not part of the National Collection/NI?
- Why is there no obligation to keep them in the Ministry after being removed from the Register (10-15 years) that existed earlier in the Seed Law?
- Do we also have to protect foreign varieties which are grown for a very long time in our country, as a domestic assortment?
- No more varieties of medicinal plants are registered?

Negative examples - Privatized or closed institutions:

- Aleksinac (varieties of sugar beet, lines)
- Guca (potatoes)
- Zajecar



Breeding



“The Second Global Plan of Action gives greater emphasis and visibility to plant breeding, as reflected in Priority Activity 9 (of 18) **Supporting plant breeding**, genetic enhancement and base-broadening efforts.”



Subsidies for PGR Conservation

↑ О НАМА АКТУЕЛНИ ПОДСТИЦАЈИ ВЕСТИ АРХИВА ЧЕСТА ПИТАЊА ДОКУМЕН

Почетна > Правилник о подстицајима за очување биљних генетичких ресурса



ПРАВИЛНИК О ПОДСТИЦАЈИМА ЗА ОЧУВАЊЕ БИЉНИХ ГЕНЕТИЧКИХ РЕСУРСА

Објављено 8. октобар 2013. | Ознаке 2014, ex situ, in situ, генетички материјал, генетички ресурси, контрола клијавости

На основу члана 34. став 6. Закона о подстицајима у пољопривреди и руралном развоју („Службени гласник РС”, број 10/13),

Министар пољопривреде, шумарства и водопривреде доноси

ПРАВИЛНИК О ПОДСТИЦАЈИМА ЗА ОЧУВАЊЕ БИЉНИХ ГЕНЕТИЧКИХ РЕСУРСА

- Објављен у „Службеном гласнику РС”, број 85/13 од 27. септембра 2013. године -

Члан 1.

Овим правилником ближе се прописују врсте подстицаја за очување биљних генетичких ресурса (у даљем тексту: подстицаји), услови, начин остваривања права на подстицаје, образац захтева за остваривање права на подстицаје, као и максимални износи подстицаја по кориснику и врсти подстицаја.

Члан 2.

Поједини изрази употребљени у овом правилнику имају следеће значење:

1) биљни генетички ресурси су оне старе сорте и локалне популације, укључујући и одомаћене сорте уписане, односно брисане из Регистра сорти пољопривредног биља које води министарство надлежно за пољопривреду, пољопривредног биља (житарице, крмно биље, индустријско биље) и хортикултурног биља (повртарско биље, воћке, винова лоза, хмељ, медицинско и ароматично биље) које се користе за храну и пољопривреду;

2) генетички материјал је било који део биљке, укључујући репродуктивне или вегетативне делове за размножавање, којим се преносе наследна

PGRFA Conservation – Duplicate accessions/Safety base collection Regional/Global

Serbia offered to the region its own gene bank facilities for safety base collection.

Capacity 100.000 acc in 3 cold chambers



Svalbard – (*Global Seed Vault*)
Capacity 4.500.000 acc.



Safety duplication - Challenges

Will Serbia send duplicates of its samples?

When?

Is there a capacity to respect the procedure?

Which institution will take the responsibility/organization to send the accessions?

Serbia will send its samples as soon as it has a sufficient number of accessions (multiplication and regeneration - costs)?



AEGIS

Problems and constraints

- The Gene Bank of Serbia started its work officially in 2015, with transferring about 4200 accessions from the Institute for Maize, where they were stored for more than 15 years. Gene Bank is settled under the Ministry of Agriculture, which is practical from one side – we as public servants can influence the policy of PGRFA, but from the other side, we are lack of researchers needed for the essential Gene Bank running. Since many years ago, our Gene Bank is struggling with lack of people, lack of financial means, lack of awareness on governmental level, frequent political changes etc.
- The first problem is lack of understanding of AEGIS system on all levels, in the ministry, in the institutions and faculties (associate members).
- The second problem is that accessions in Gene Bank are old, there are no new collection missions, and regeneration and multiplication are going very slowly without regular financing.
- All of these things affect both: the proper Gene Bank work and the process of becoming an AEGIS member.

AEGIS

Expectations

- During the Workshop, our team hopes to resolve any doubts and find many answers to our questions about AEGIS functioning and implementation. The representatives of future Associate members (people from the institutes) expect to understand the whole system of AEGIS and how to see their own benefits from the participation in AEGIS.
- In DNRL we have a new decision maker who is keen to support the preparation process of becoming an AEGIS member and also to consider the special budget line for Gene Bank and National PGRFA Programme.
- We are also sure that the conclusions of this Workshop will be properly and clearly transferred to the top management i.e. signatory person, and facilitate the process of signing the AEGIS MoU. We all believe this Workshop will greatly improve our understanding and knowledge about AEGIS and build our capacity for the preparation process to become an AEGIS member.

AEGIS

Additional expertise needed

- It would be important to our team, to see the practical examples how the AEGIS is settled and implemented in other countries, what were the problems and constraints during the process of signing and how the relations and signing of agreements with associate members are going.
- Additionally, to understand the process of selecting and flagging AEGIS accessions, developing and implementing AQUAS elements, safety duplication of accessions, germplasm health aspects, distribution of germplasm, capacity building etc.
- Some successful stories are very welcomed as a kind of help in understanding and progression in settlement of AEGIS in our country.

AEGIS

Specific details

- Country is keen to sign AEGIS/Gene Bank department responsible/NC ECPGR and AEGIS
- All necessary documents prepared:
- Informal translation of MoU
- Justification/explanation for decision makers
- Associate members advised about importance of AEGIS
- Gene Bank is a part of Directorate for National Laboratories for Food Safety - the laboratories have priority in financial and organizational meaning
- Gene Bank – it is more practical when associated to the institutes and faculties (human capacities/researchers) and the PGR policy under the Ministry
- The budget is more and more restrictive every year
- In 2019 for Gene Bank running only spendable costs
- No budget for regeneration and multiplication, duplication etc.
- Subsidies for PGR: in 2018 - 2.000.000 RSD about 16.600 EUR (previous: in 2017 5.000.000 RSD about 40.000 EUR), 10 years before 200.000 EUR
- In 2019 - ?

AEGIS

Challenges

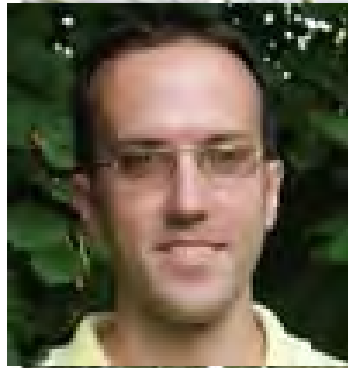
The major challenges that may hinder the efficient implementation of the AEGIS are mostly inherent to:

- limited understanding of the overall importance,
- limited funds - financial resources,
- limited human resources,
- other capacities available.

Mobilizing funds and resources for AEGIS implementation

- The National PGRFA Committee is committed to advise the decision makers on the necessity of providing a core national budget for the implementation of the PGRFA Law, National Programme, Action plan and AEGIS. The National Committee with the lead agency and universities will work to secure the internal funds for well defined activities that are parts of the internal working plan.
- However, for the other activities that are not benefiting from the running cost, the same actors are engaged to search and mobilize fund raising from other sources including assistance from external partners and donors such as the Global Crop Diversity Trust and the Benefit Sharing Funds of ITPGRFA
- Serbia recently obtained the financing for the project – IFVCNS with Bulgarian partner IPGR Sadovo.
- Thematic PGR groups should systematically work on drafting projects and establishing external partnerships.
- The NPGB and the National PGRFA Committee will consider supporting the establishment of an Associated Research Unit consisting of people from agricultural institutes and faculties, serving as specific platform for PGR characterization, *in situ* conservation and on farm management and liaising partners from other various relevant institutions.

**AEGIS
Participants -
Associate
members:
Institutes/
faculties**



**Thank you very much
for your attention!**

