Agricultural Policy Forum

Agri-Environment Policies for enhanced regional rural development in SEE

GENETIC RESOURCES IN AGRICULTURE
conservation, valorisation and potentials for economic development of rural areas in SEE countries

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GENETIC RESOURCES IN AGRICULTURE

What are they?

All plants and animals that can be used in agriculture (food, feed, processing, industry)

What is their potential?

3 cereals provide 60% of energy (rice, wheat, maize)

30 crops feed the world

7 000 species are cultivated/collected

30 000 terrestrial plants are edible

Why are they important?

- Origin of all species
- Diverse genetic resources possess diverse genes for:
  - Tolerance to stresses (draught, diseases)
    preferred by farmers
  - Quality, taste, shape, color
    preferred by market

Current and future market trend

Healthy, diverse food with good quality

What is their status?

Worldwide - catastrophic loss of genetic resources

Species, even crops and breeds are being lost forever

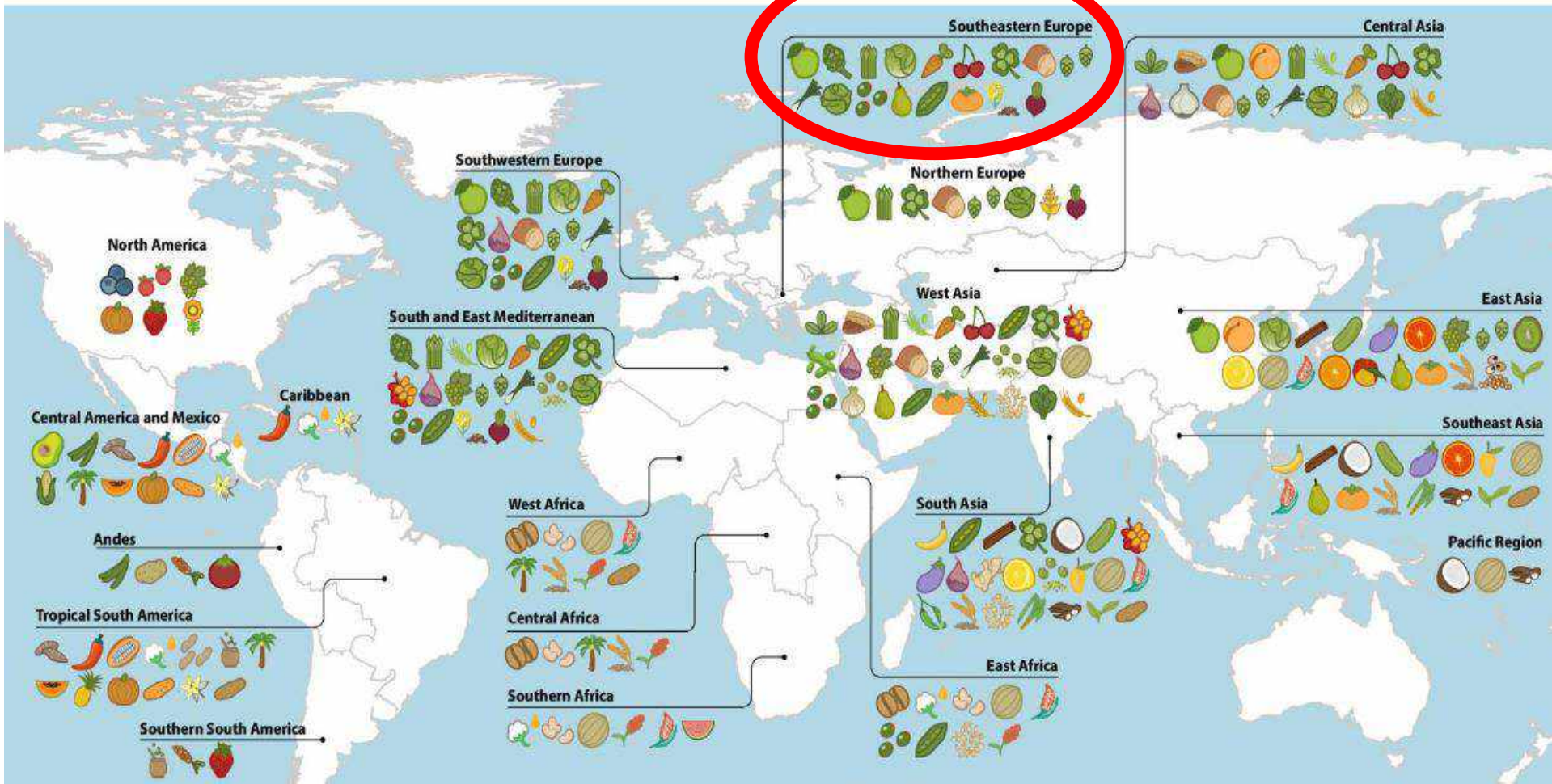
Globally, ~ 940 species of crops are threatened

Reasons:

- modern, commercial agriculture
- replacement of farmer´s breeds/varieties with commercial ones
- changes in land use (urbanization, deforestation)
- climate change

SEE countries - biodiversity hot spot of international importance

- different climatic and geographic characteristics
- strategic position (crossroad between Europe and Asia)



SEE countries - Primary region of diversity of major crops

Positive

Local breeds/varieties are still maintained by the farmers

- economic stagnation
- high unemployment
- status of poverty
- poor infrastructure
- isolation of rural areas

Negative

Many GR have been lost
Current GR are disappearing
Highly threated due to depopulation of rural areas

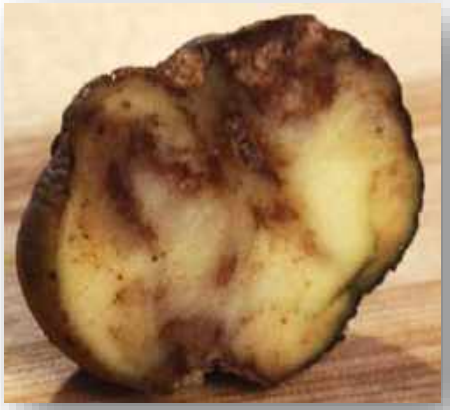
What happens when one resource is used?

CASE: Monoculture and the Irish Potato Famine

In 1800s, Irish feed the population
by planting "lumper" potato variety
Propagated vegetatively,
all potatoes were genetically identical
All susceptible to a rot

Potatoes were devastated,
1/8 of Irish people died of starvation in 3 years

Later,
resistance genes were identified
in a potato from South America



Worldwide responses:

Strong governmental policies and support for

- **Ex situ conservation (seed banks, field banks)**
- **In situ conservation (on farm, home gardens)**

Result: Collecting agricultural plant genetic resources

Over 240 000 new accessions collected placed in genebanks during 1996-2007

Total 7.4 million accessions

SEE countries responses

Governmental policies (strategy, plans, laws)

- absent or weak, if there are, they are not realized
- not directed to preservation and use of GR

Moreover,

There are **intensive measures to modernize the agriculture**

Are we competitive in modern agriculture?

Small farmers (often not educated and technologically skilled)

Small-sized gardens and fields, fragmented in many parcels

Unable to provide large product quantities

SEE countries responses

Support for conservation (facilities, budget)
Insignificant, discontinuous, not coordinated

Collecting/conservation

- performed by scientific institutions (often by individuals)
- supported by foreign donations
- not transparent (no information)
- not available (neither information, neither seeds/semen)

- created collections are not sustainable (no regular funds)
- no registers of autochtonous varieties
- no registers of farmers maintaining local varieties/breeds

Importance of collections – Saving seed banks

During the Nazi 900-day siege of Leningrad, scientists at Vavilov Research Institute voluntarily starved to death rather than eat the seeds

How GR are used?

1. **Indirectly**
   as breeding material for creating new varieties

Worldwide

Strong breeding programs (private/public)
Large number of new varieties/breeds (use of local/wild GR)

SEE countries

Public breeding programs - almost all terminated
Very few examples of private breeding programs

Do we need to develop (support) new breeding programs?

- **not sufficient resources (human / equipment / budget)**
- **not sufficient market (small number of farmers/seed competition)**

How GR are used?

2. Directly

GR are integrated in direct commercial production with or without improving their value
GR are optimal for organic production

Worldwide

Successful support of local communities, farmers, products, promotion, marketing

SEE countries

Lately, similar measures integrated in rural development programs
Are they used?

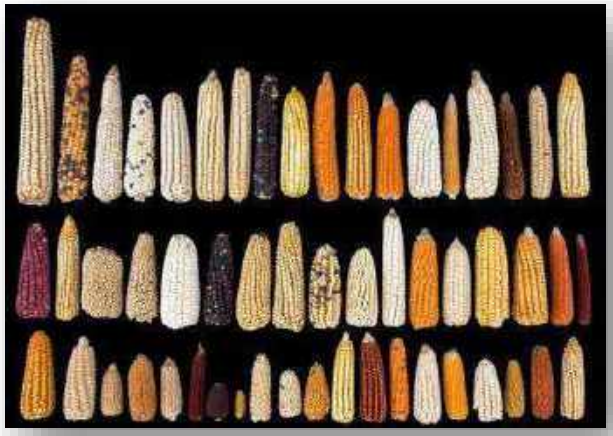
SEE Countries potentials

Fragmented parcels

- **Motivation for traditional agriculture**
  maintenance of local varieties /breeds
- **Niche markets**
  rural population and small farmers often sell their extra products
- **Landscape**
  maintenance of wild nature, tourism

Why are agricultural genetic resources specific?

Habitat – farm, garden



Conservationist - farmer
Breeder - farmer
Technologist - farmer

Farmers have traditional knowledge and skills

Imperative for successful conservation and valorization of GR

- Active participation of farmers
- Promotion of traditional agriculture

What is the direction of global policy?

For millennia, access to GR was not restricted
GR were widely dispersed around the world

Situation changed in 1960s (UPOV Convention)

1983, FAO adopted a document proclaiming:

'... plant genetic resources are a heritage of mankind
and
... should be available without restriction'

What is the direction of global policy?

Mid-1980s - to present
rapid global icreasing of national and regional intellectual property

Access and benefit-sharing laws

allow owners, countries, communities, individuals to restrict the access to various GR for various purposes

Patent laws (various jurisdictions):

- **GR cannot be used without the patent's owner consent**
- **GR can be used in research and breeding, but not to be included in the final commercialized product without consent of rights-holder**
- **Some laws require permission of the communities or legal persons involved in supplying the resources**

What is the direction of global policy?

1991, FAO recognized that

nations have sovereign rights over their genetic resources

Amplified in the Convention on Biological Diversity (1993)

Nagoya Protocol (2014 in force) - obligations for:

- Tracking
- Reporting
- Enforcing access and benefit sharing agreements

Guiding principles to promote agricultural GR

Government policies

- Access to credits, insurance, subsidies
- Adaptation of laws/regulations for:
  - registration / releasing varieties/breeds
  - production/trading seeds/semen
- Establishing of information system on agrobiodiversity
- Apointing centres of agrobiodiversity (national)
- Register of farmers/crops/breeds

Guiding principles to promote agricultural GR

Research priorities

Participatory projects – farmers/scientists
Evaluation of traditional varieties/breeds

Seed networks

Collection, saving, reproduction and distribution of seeds/semen

Community conservation

Community seed banks, orchards, flocks

Guiding principles to promote agricultural GR

Market development

Expanding markets for traditional crops and products

Promoting **model farms**, gardens, fields

Creating agricultural **fairs, exhibitions**

Adding value to crops/breeds/products

Adding value to traditional products

- Production technology
- Packaging
- Marketing
- Protection (labeling)

Protected Designation of Origin (PDO)
Protected Geographical Indication (PGI)
Traditional Specialty Guaranteed (TSG)

Protection provides:

Increased brand recognition

Opportunity for local producers to market a niche product to European and global markets

Worldwide

approximately 10 000 registered Gis (annual trade value - 50 billion US$)

Examples

List of Italian protected products

Designation of origin	– 138
Geographical indication	– 83
Traditional Specialty Guaranteed	– 2

(mozzarella and pizza napoletana)

Serbian products with PDO

- Čvarci
- Serbian cheeses
- Slivovitz

Croatian products protected in EU (PDO or PGI)

Prosciutto – Krk
Extra virgin olive – Cres
Mandarins – Neretva
Sour cabbage /sauerkraut – Ogulin
Kulen – Baranja
Potatoes – Lika
Prosciutto – Drnish
Dalmatian prosciutto
Soparnik (zeljanik or uljenak) – Poljica
Turkey – Zagora
Olive oil – Korchula
Lamb - Pag

Another products prepared for registration

(Ministry grants 75000 kuna/user)

Designation of origin

Acacia honey – Zagora
Mussels – Novigradska
Olive oil – Brach
Chese – Krk
Sheep chees – Istra
Beef/Boshaktin – Istra
Cheese - Pag

Geographical indication

Kvargl (cheese) - Bjelovar
Shtrukli – Zagora
Kipich – Varazdin
Shkripavac – Lika
Potatoes / Kalamper – Megjumurje
Rudarska greblica - Rude

Guaranteed Traditional Specialty

Vrbovechka pera

SEE countries

Laws for protection – in place.
How much are they used? Why not?

Our farmers/companies need support for:

- **Recognizing the value of their products**
- **Establishing association of growers/producers**
- **Improving their production with standards and safety**
- **Improving packaging and marketing**
- **Adding value (protection)**

Collective branding can support rural development, turism, preserve cultural heritage and add value to local products

Preparatory actions on EU plant and animal genetic resources in agriculture

The breed "Bretonne Pie Noir" is a native breed of Brittany whose origin area is located in South Finistère and Morbihan. It is a small breed (1.17 m at withers) which is kept in outdoor grasslands and mainly produced by organic and local producers in small farms.

HAVE YOU EVER TASTED GWELL? A SWEET AND MILKY TASTE OF BRITTANY

FILDERKRAUT/ FIDLERSPITZKRAUT THE RENAISSANCE OF AN ANCIENT AND TRADITIONAL LANDRACE

The **Gwell Project in France** aims to the development of a traditional product called Gwell from the milk of local cows "Bretonne Pie noir" in Brittany in France.

The **Filderkaut Project in Germany** deals with the safeguard and valorisation of the particular cabbage lanraces named Filderkaut used f or making sauerkraut.

The **Turopolje pig project in Croatia** has the objective to establish a comprehensive plan for the economically sustainable preservation of the Turopoje pig, by developing a range of marketable processed products.

The **Solina Project in Italy** has the objective to safeguard and valorise a particular soft wheat landrace named Solina, cultivated in the mountains of the Abruzzo Region.

The Solina is a very rustic variety of wheat and can resist for months under snow cover. It grows on soils that are not particularly fertile. Furthermore, the Solina is particularly well suited for organic and low-input farming systems and for cultivation in marginal areas.

CONCLUSIONS

SEE countries have very rich agribiodiversity

It is not collected, described, conserved, utilized

Public awareness is on relatively low level

National governmental support need to be directed to:

- **Adaptation of laws/regulations**
- **Appointing centers of agrobiodiversity**
- **Information system on agrobiodiversity (registers/e-catalogue, map)**
- **Research, collecting, conservation**
- **Promotion of traditional crops/breeds/products**
- **Economic valorization of agrobiodiversity (adding value)**

CONCLUSIONS

SEE contries have many similarities

(conditions, crops, breeds, products)

Regional support/connecting

- **Establishment of common policy**
- **Regional network of agrobiodiversity centers**
- **Common IS and e-Catalogue of agrobiodiversity**
- **Common products with added value**