



**National Institute of Research and
Development for Potato and Sugar Beet
Brasov, Romania**

New challenges in improving Romanian seed potato production

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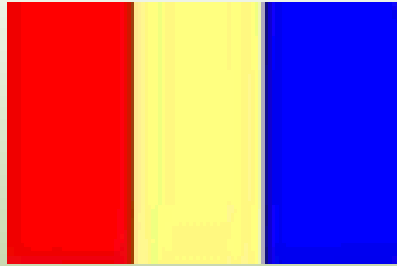


Content

- 1. General considerations**
- 2. Current situation on potato seed in Romania until 1989**
- 3. Analysis of seed potato organization**
- 4. Proposed strategic plan for seed potato**



1. General considerations



- Romania has joined the EU in 2007
- Accession to EU / important factor for a rapid reform
- Money implications for rural economy and agriculture

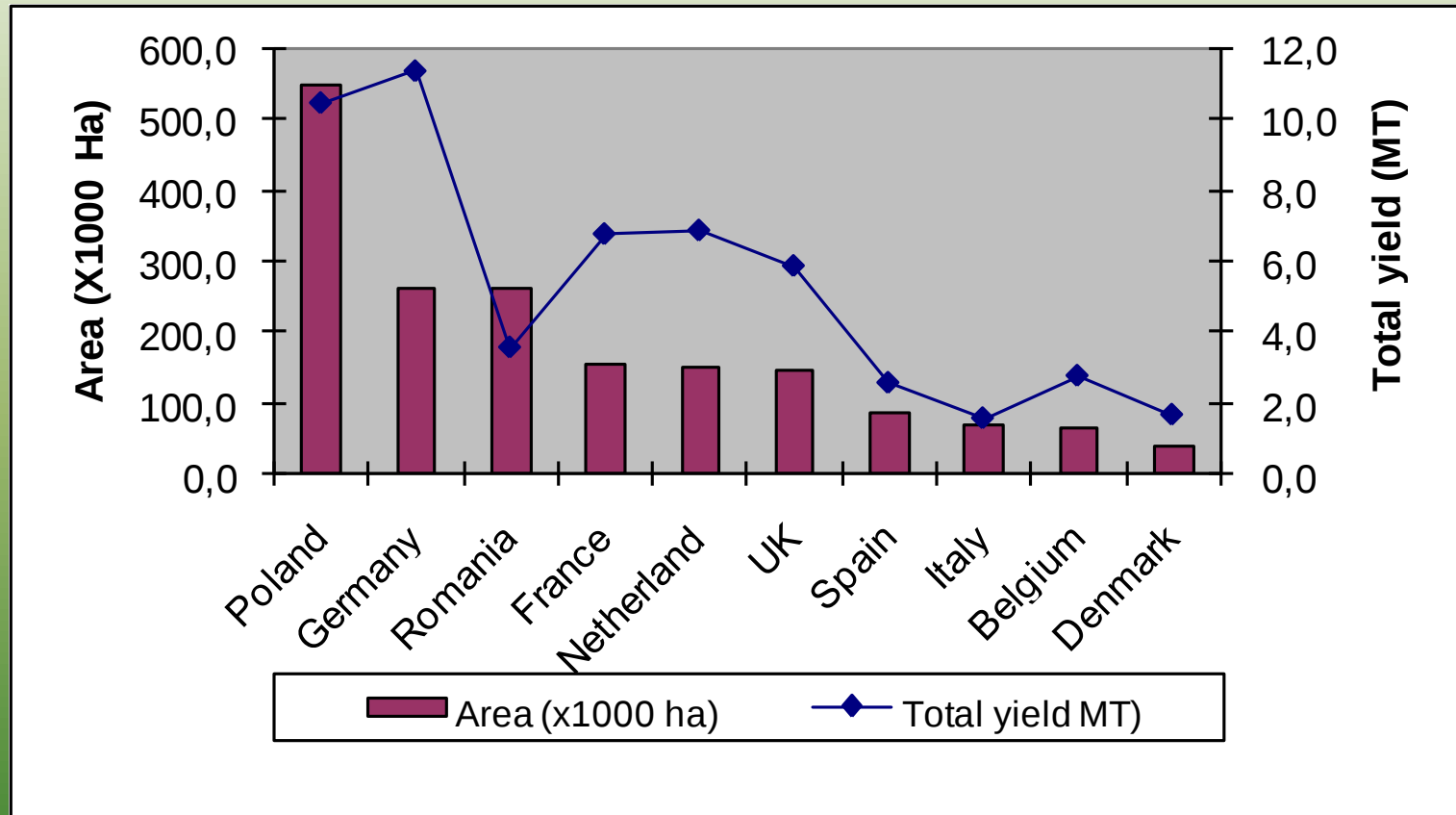
Agriculture still an important sector

GDP	2002	2003	2004	2005	2006	2007	2008
Total	152017.0	197427.6	247368.0	288954,6	344650,6	412761.5	335176.3
Agriculture, forestry and hunting	17280.6	22833.5	31041.2	24278.0	26845.8	23454.8	23966.1
% GDP	11.4	11.5	12.5	8.4	7.8	5.7	7.2

Cultivated surface: 8 million hectares

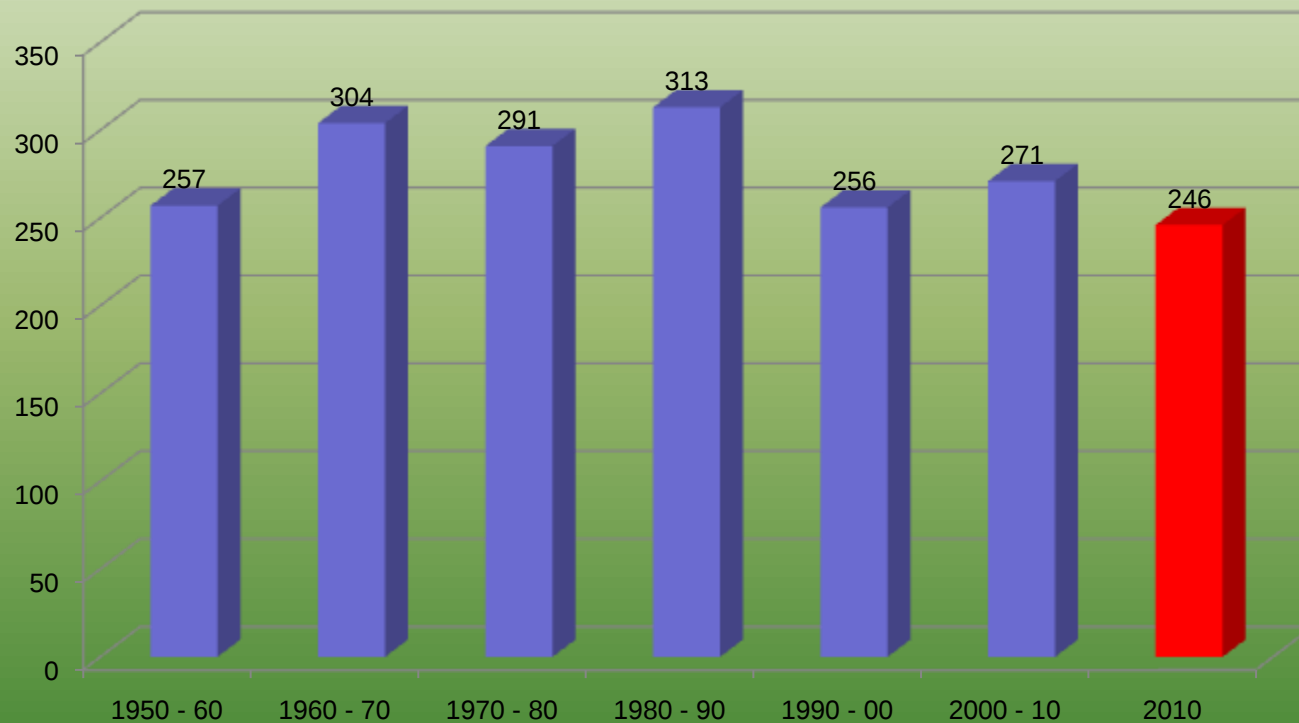
- Cereals: 62%
- Oleaginous plants: 15%
- Potato: 3,2%
- Potato – strategic food – component of food security system

The rank of Romania in Europe



The rank of Romania in Europe by the potato area and total yield
(Statistical Yearbook of Romania and FAO Database, 2008)

Potato area in Romania between 1950-2010



Source: (FAO Database 2008, MADR 2010)

Evolution of potato area, average and total yield In Romania in the last 10 years (2000-2010, MADR, INS)

Year	Area (Ha X 1000)	Average Yield (T/Ha)	Total Yield (MT)
2000	282.7	12.3	3469.8
2001	276.7	14.4	3997.1
2002	283.2	14.3	4077.6
2003	281.8	14.0	3947.1
2004	254.0	16.6	4230.2
2005	285.3	13.1	3738.5
2006	283.1	14.2	4015.9
2007	272.5	13.6	3712.4
2008	268.0	13.7	3671.6
2009	254.5	15.8	4010.9
2010	246.2	-	-



2. Current situation on potato seed in Romania until 1989

Main varieties (native and foreign) in period 1978-2010

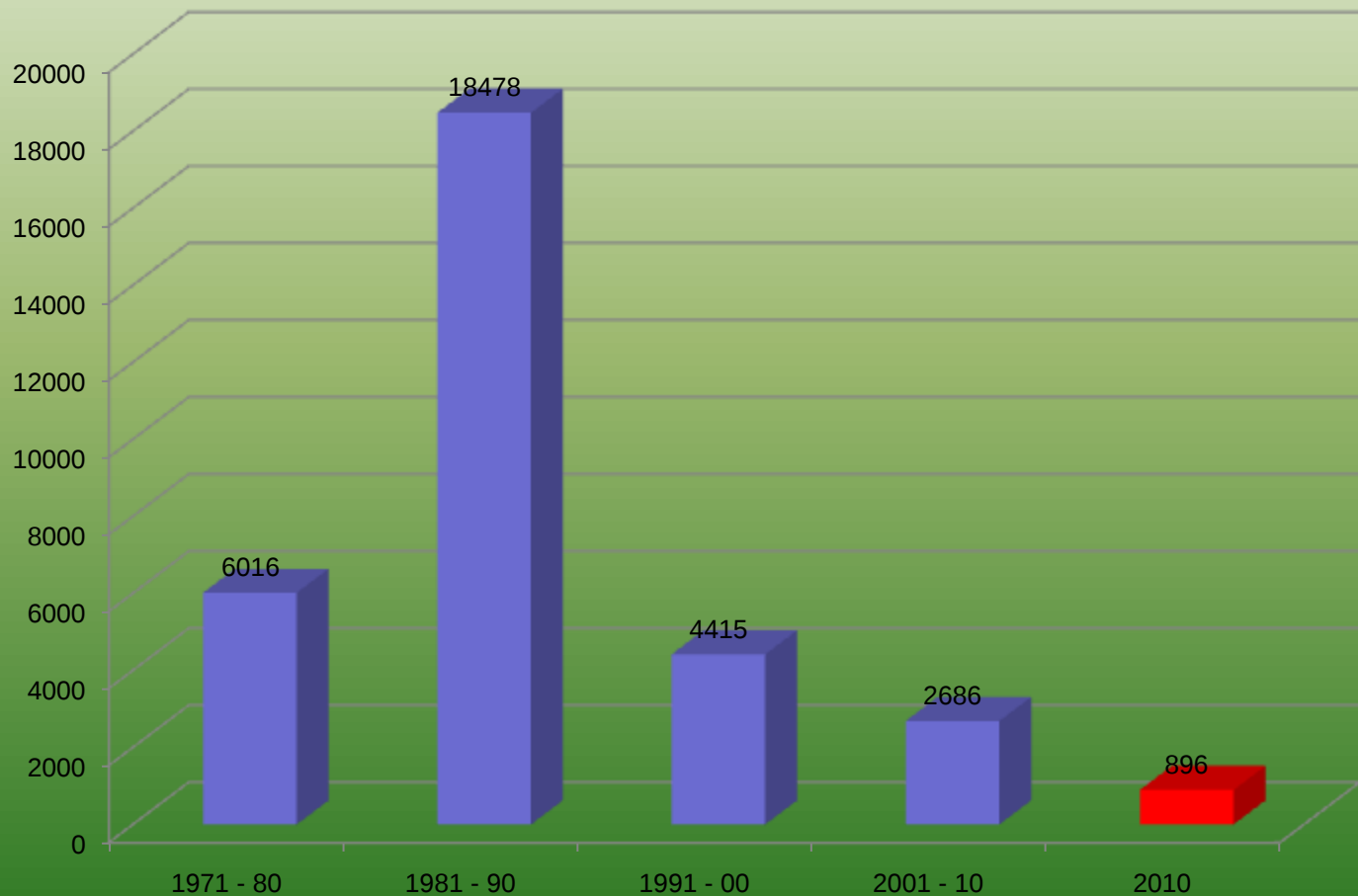
- 1978-1985 Romanian (40% of total potato area):
 - Semenik
 - Super
 - Colina
 - Sucevița
- 1985-2004 Duch (78%):
 - Ostara
 - Desiree
 - Sante
- Most important varieties (from National System)
 - 2004-2010
 - Romanian: Redsec, Roclas, Christian, Magic, Tentant
 - Duch: Kondor, Riviera, Impala, Tresor, Arrow, Carrera, Sante, Romano
 - German: Bellarosa, Laura, Red Fantasy, Jelly

Varieties of national system for seed potato production (NFP, 2010)

Origins	No.	Surface % (878 ha)
Romanian	8	7.5
EU	57	92
Canada	2	0.5

Total varieties: 67

Evolution of seed potato area in Romania (1971-2010)



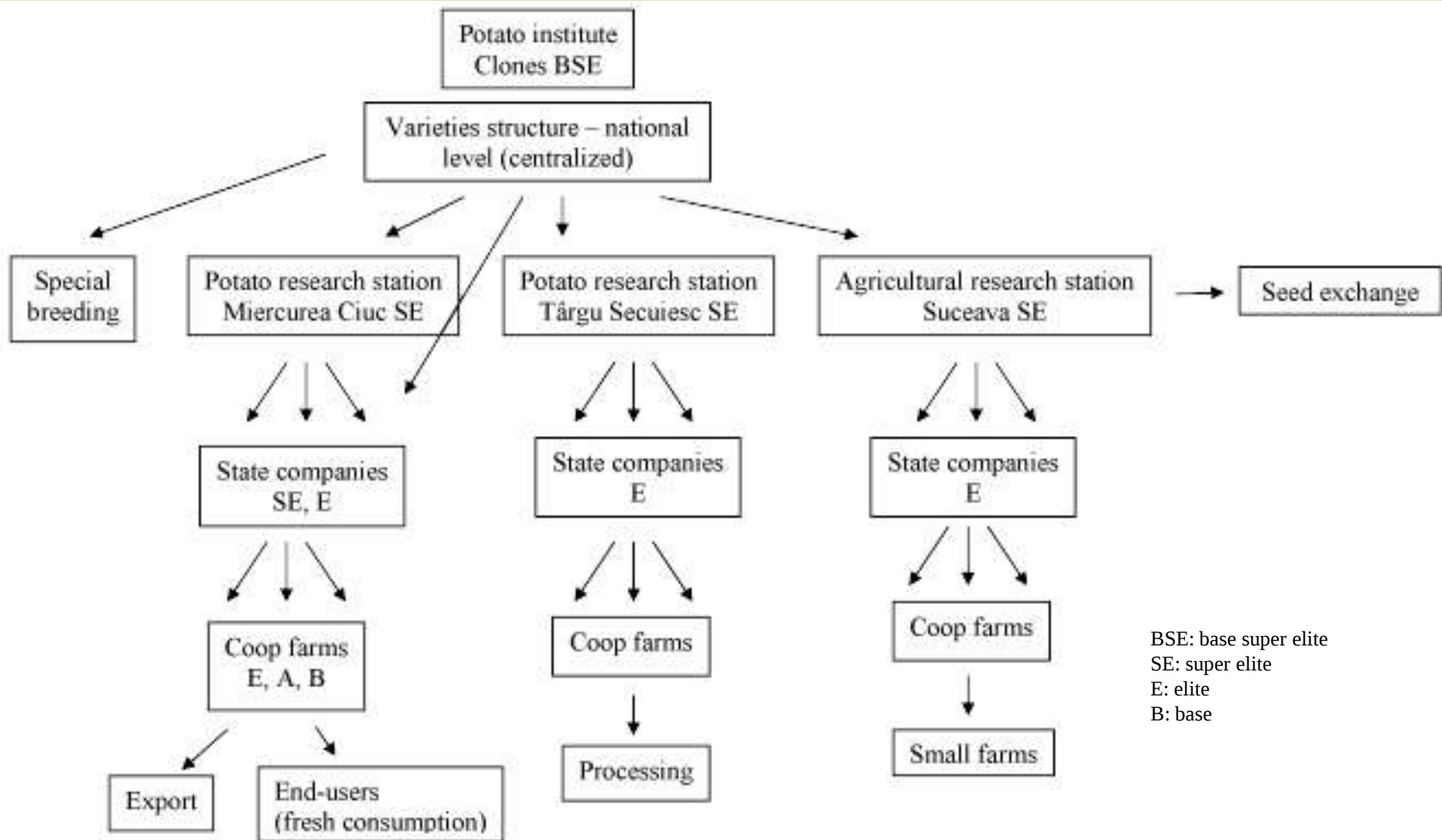
Breeding and seed potato production

- Biological resources (variety, seed) contribute > 60% to potato yield
- Objectives of Romanian potato breeding
 - Variety for fresh consumption
 - Variety for processing
 - High yield capacity
 - Resistance/tolerance:
 - late blight
 - viruses
 - wart disease
 - nematodes
 - More tolerant to abiotic conditions

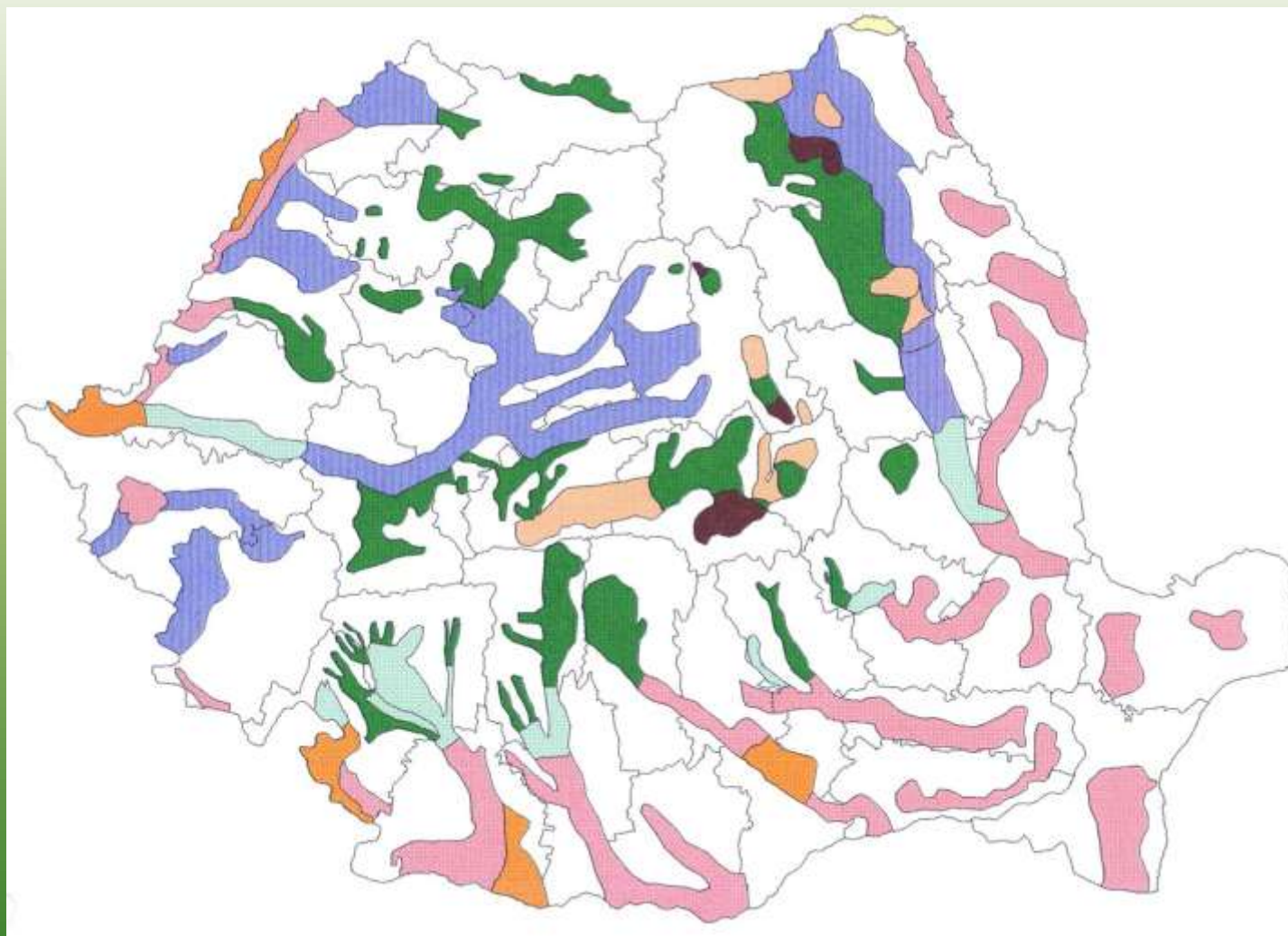


3. Analysis of seed potato organization

System of seed potato production in Romania (until 1990)



Specialized areas for potato crop in Romania



- Autumn-winter consumption
- Autumn-winter consumption & processing
- Summer & autumn-winter consumption
- Autumn-winter consumption, only in irrigation cond.
- Very early and early consumption & autumn-winter consum. in irrigation cond.
- Very early and early consumption
- Seed potato production

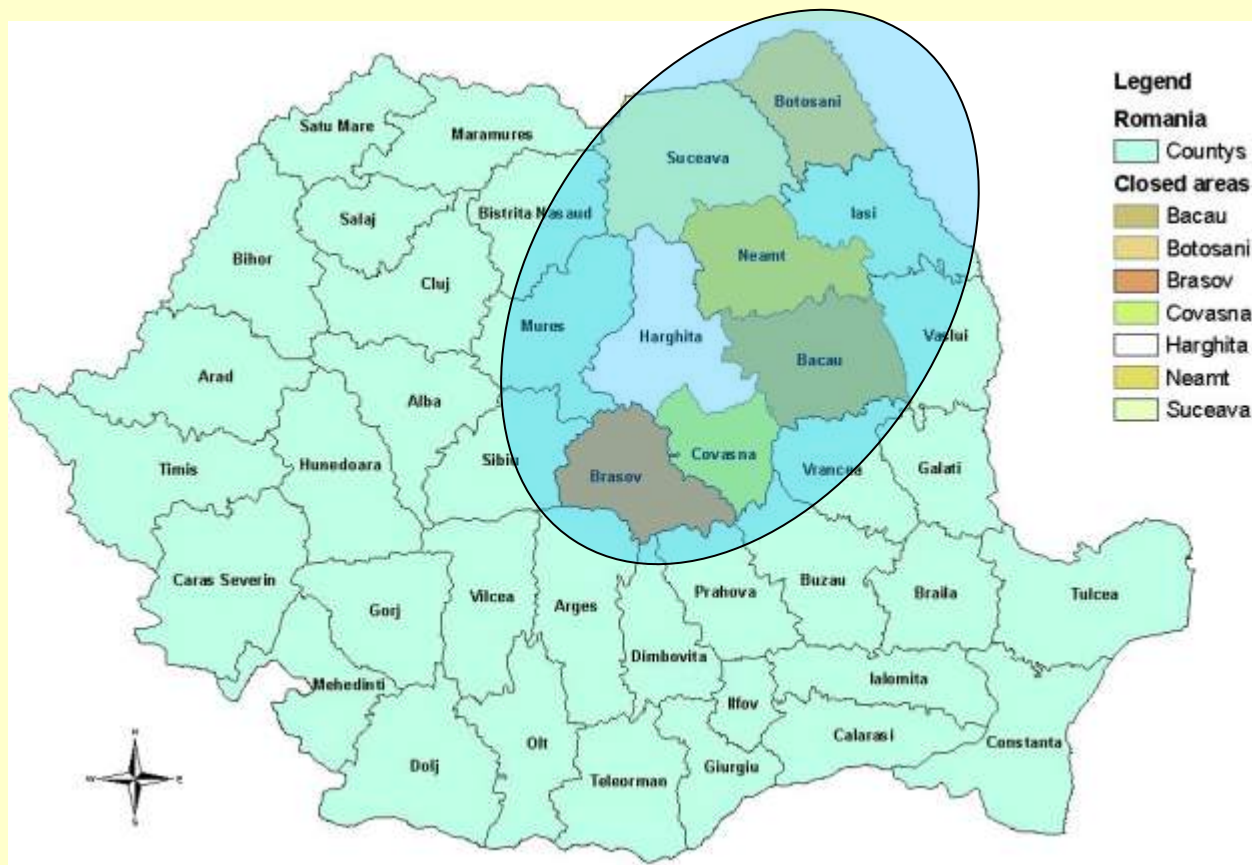


General considerations

- The objectives of the modern agriculture is the continuously improvement of the production process**
- The quality of seed potato is one of the main ways to achieve a high and qualitative production**

Current situation of potato seed zoning in Romania until 1989

Starting from centralized zoning system for seed potatoes, in Romania, until 1989 operated a system of seed potato production and multiplication based on organization of closed areas, mainly in seven counties: **Bacau, Botosani, Brasov, Covasna, Harghita, Neamt and Suceava**

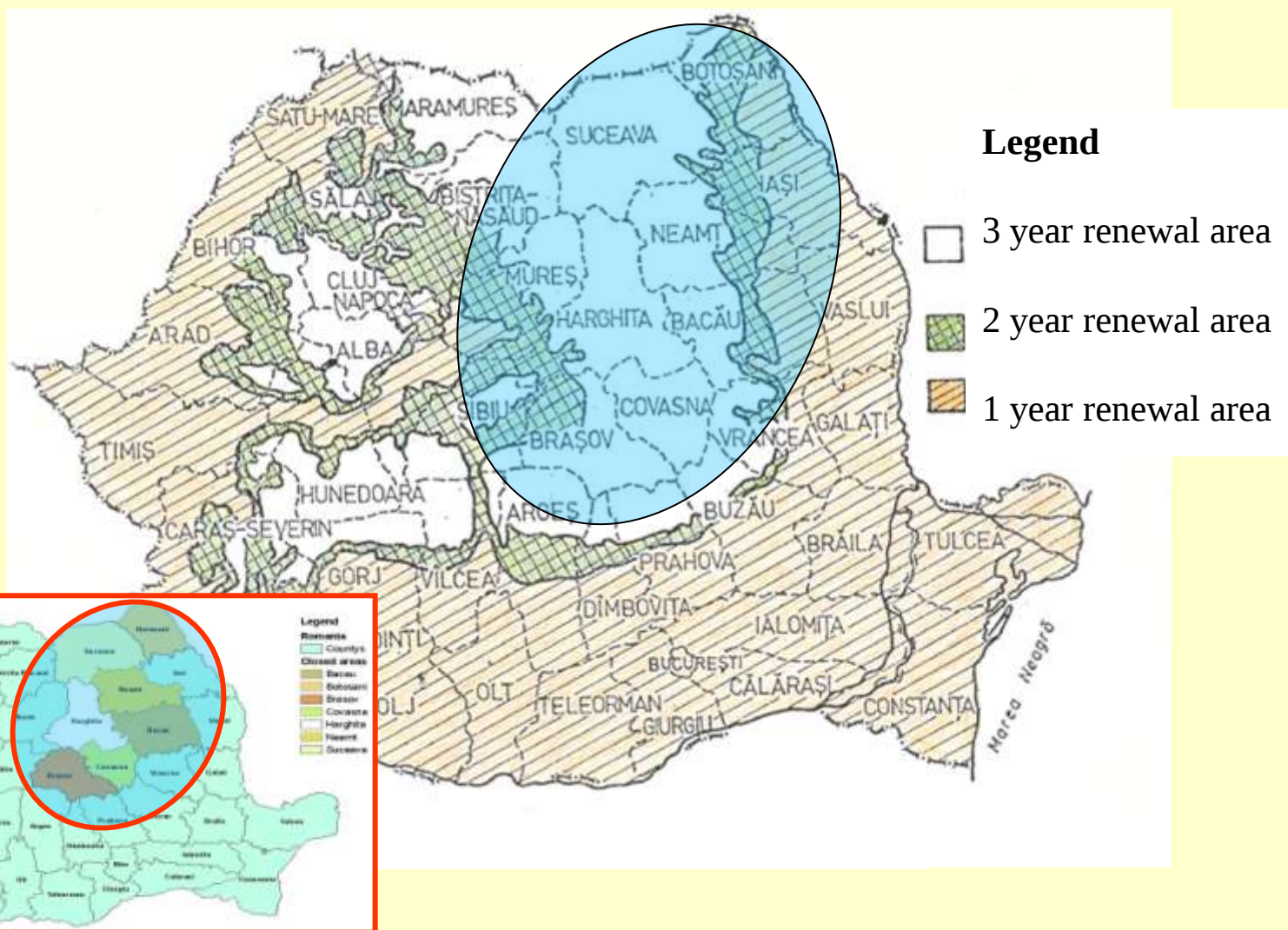




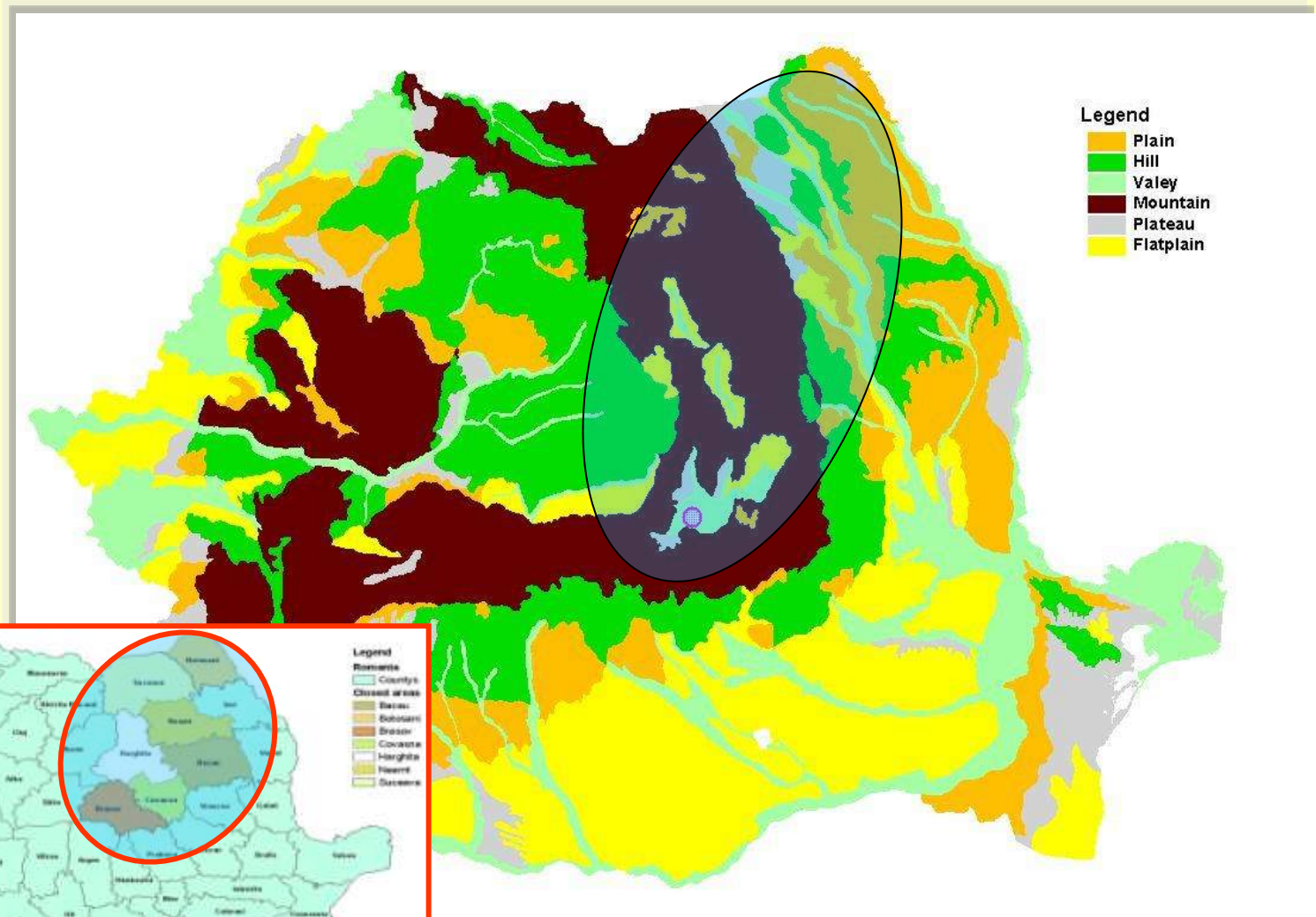
Organizing Principles

- ❑ Closed area for seed potato must be into 1st renewal area
- ❑ It has to be separated by natural obstacles and protection lines that ensure an efficient isolation from consumption potato crops
- ❑ On meteorological conditions that would limit the development and spread of v diseases transmitting aphids
- ❑ The closed area has to cover a relatively large zone that would allow the annual potato cultivation on at least 1.500 ha
- ❑ All areas inside the closed zone have to be planted only with seeding material from superior biological categories
- ❑ On areas planted with seed potato inside the zone, the whole complex of phytosanitary measures for prevention of viruses diseases spread has to be applied

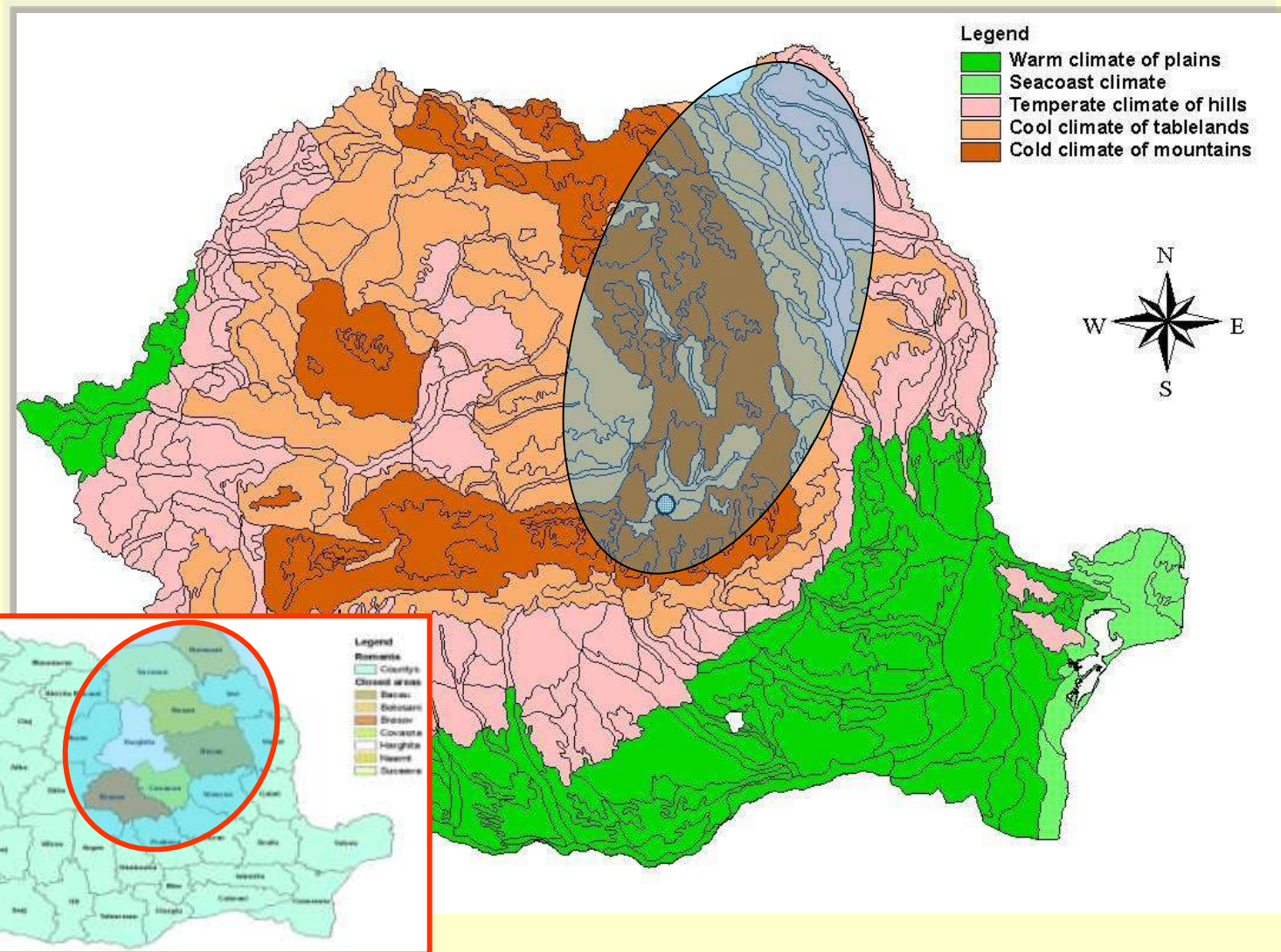
Renewal area for seed potato in Romania



Physical Map of Romania



Climatic Map of Romania



Closed area RASNOV, Brasov County



Localization: Western area of Bârsa Depression

Altitude: 600m

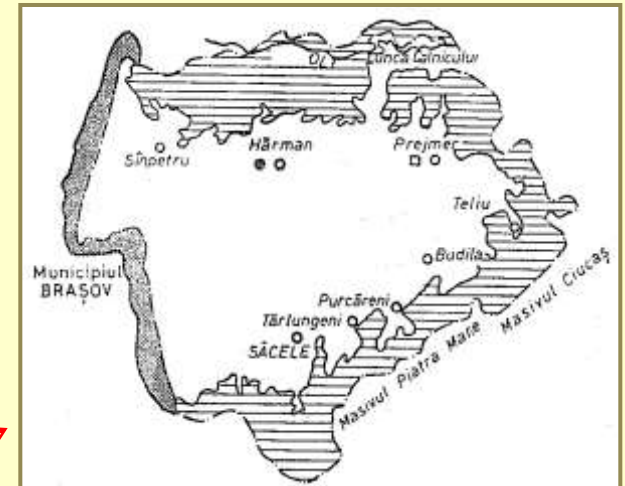
Isolation: 1. Natural (Postăvarul Mountain massive, Bucegi Mountains, Piatra Craiului massive, Persani Mountain); 2. Protection isolation line North

Participation: INCDCSZ, Codlea, Cristian, Ghimbav, Râșnov, Stupini, Vulcan, Zărnești

Soil Condition: "brancioguri", alluvial

Climatic condition: MAA Pp=725.6 mm, MAA Temp=7.80 C

Closed area HARMAN, Brasov County



Localization: Eastern area of Bârsa Depression

Altitude: 560m

Isolation: 1. Natural (Piatra Mare massive, Ciucas Peak, Olt River);

2. Protection line Isolation North

Participation: Hărman, Prejmer, Sâmpetru, Săcele,

Purcăreni, Telu, Târlungeni, Budila, Feldioara, Hălchiu

Soil Condition: “brancioguri”, alluvial

Clime condition: MAA Pp=610.0 mm, MAA Temp=7.5o C



SWOT analysis of Romanian seed potato production

Strengths	Weaknesses
- good tradition on seed potato, favorable conditions for seed potato production; - available micro areas for seed production; - big number of adequate potato varieties; - increasing of industry demands; - potato is still a staple food for Romania.	- low price for seed on domestic market; - small sized potato farms; - relative high production costs; - few up to date farms.
Opportunities	Threats
- new releases varieties; - demand of potatoes for eastern countries; - Romania still has more than 200,000 ha of potato crop.	- economical crises; - the governmental subsidies for seed potato production were cut; - high pressure from other EU countries; - global climate change; - lack of guaranteed minimum prices.



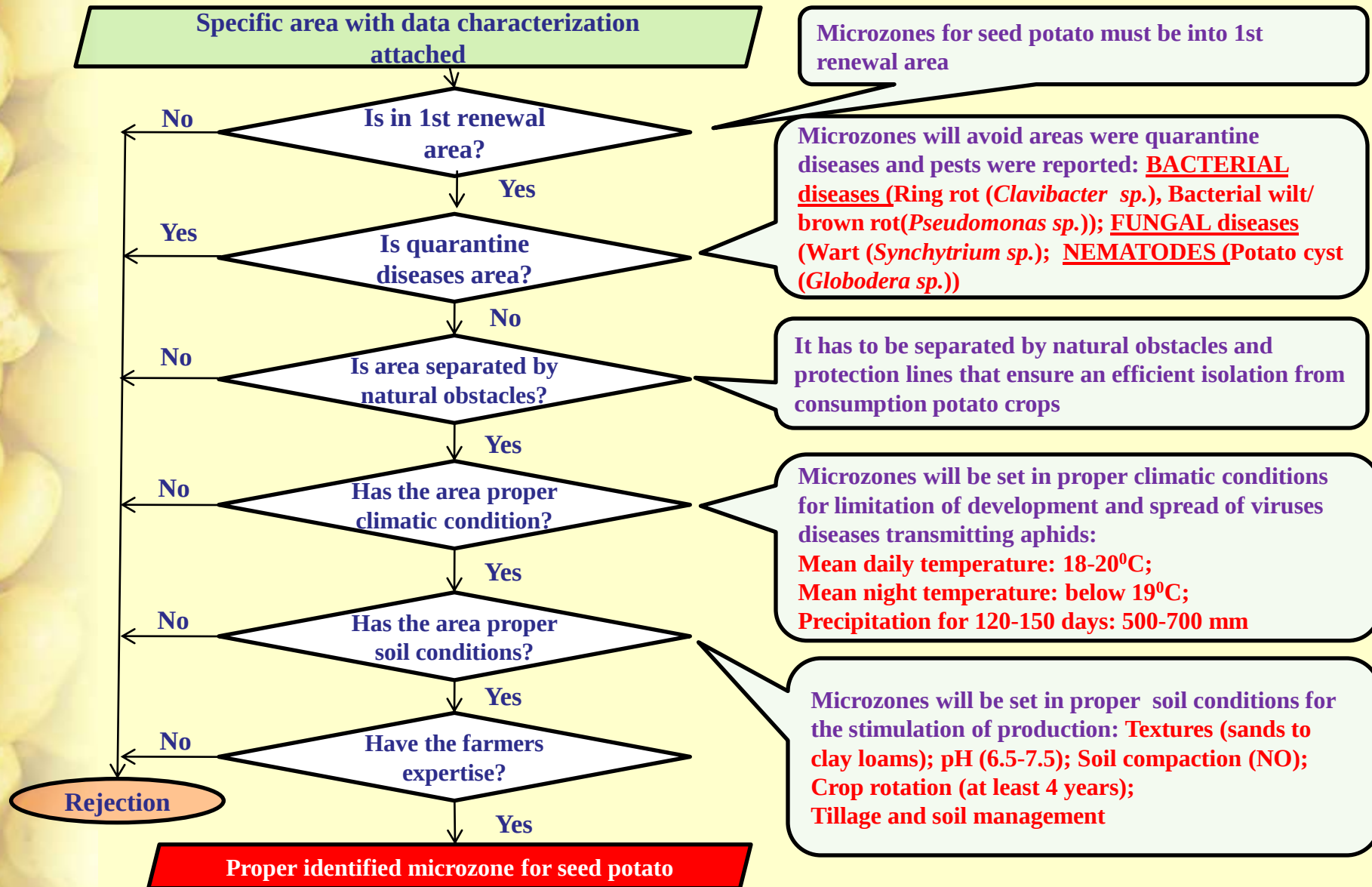
4. Proposed strategic plan for seed potato

Proposed strategic plan for seed potato microzonig

Taking into consideration the new situation for the seed potato production system in Romania, the following principles for organizing the micro zones were stated:

- ❖ Micro zones for seed potato must be into 1st renewal area
- ❖ Micro zones will avoid areas were quarantine diseases and pests were reported
- ❖ It has to be separated by natural obstacles and protection lines that ensure an efficient isolation from consumption potato crops
- ❖ Micro zones will be set in proper climatic and soil conditions for the stimulation of production and the limitation of development and spread of viruses diseases transmitting aphids
- ❖ All areas inside the closed zone have to be planted only with seeding material from superior biological categories
- ❖ Proper monitoring and management of the micro zone crops according to he best agricultural practices (BAP) and precision agriculture principles

Proposed strategic plan for seed potato microzonig



Logical scheme for identifying the potato seed microzone



- ❑ Reorganization of seed potato production in micro zones based on the current socio-economic realities, the results on scientific research and specially the most recent investigation system and GIS, GPS, DSS analysis and monitoring of soil, water resources, biological vectors, crop health and experience of farmers in seed potato cultivation
- ❑ The processing of agricultural data was done with ESRI Arc View v. 9.3 (ESRI, 2000 a). One of the components of the Arc View used for data analysis was Spatial Analyst (ESRI, 2000 b) with its Model Builder module (ESRI, 2000 c)

- Were used geographic information at Romanian level (scale 1:1,000,000), at county level (scale 1:100,000) and farm level (scale 1:10,000)
- The examples are made on Brasov county for the administrative organization (figure 2), soil status (figure 3)



Figure 2. Administrative map of Brasov county



Figure 3. Soil map of Brasov county

- Based on the principles presented above were identified two micro zone in each former closed areas (Rasnov and Harman) from Brasov county.
- In figure 5 are presented the micro zone Brasov-Ghimbav and Codlea-Vulcan, from former Rasnov closed area.
- In figure 6 are presented the microzone Harman and Halchiu from former Harman closed area
- This micro zone offer best conditions for seed potato production



Fig. 5. Micro zones for potato seed in Harman closed area

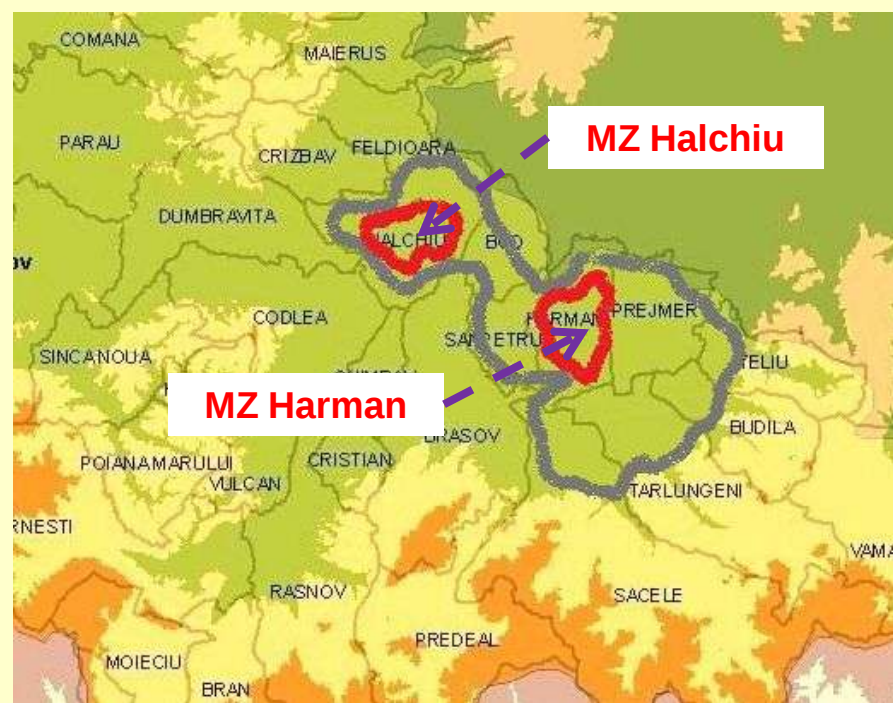
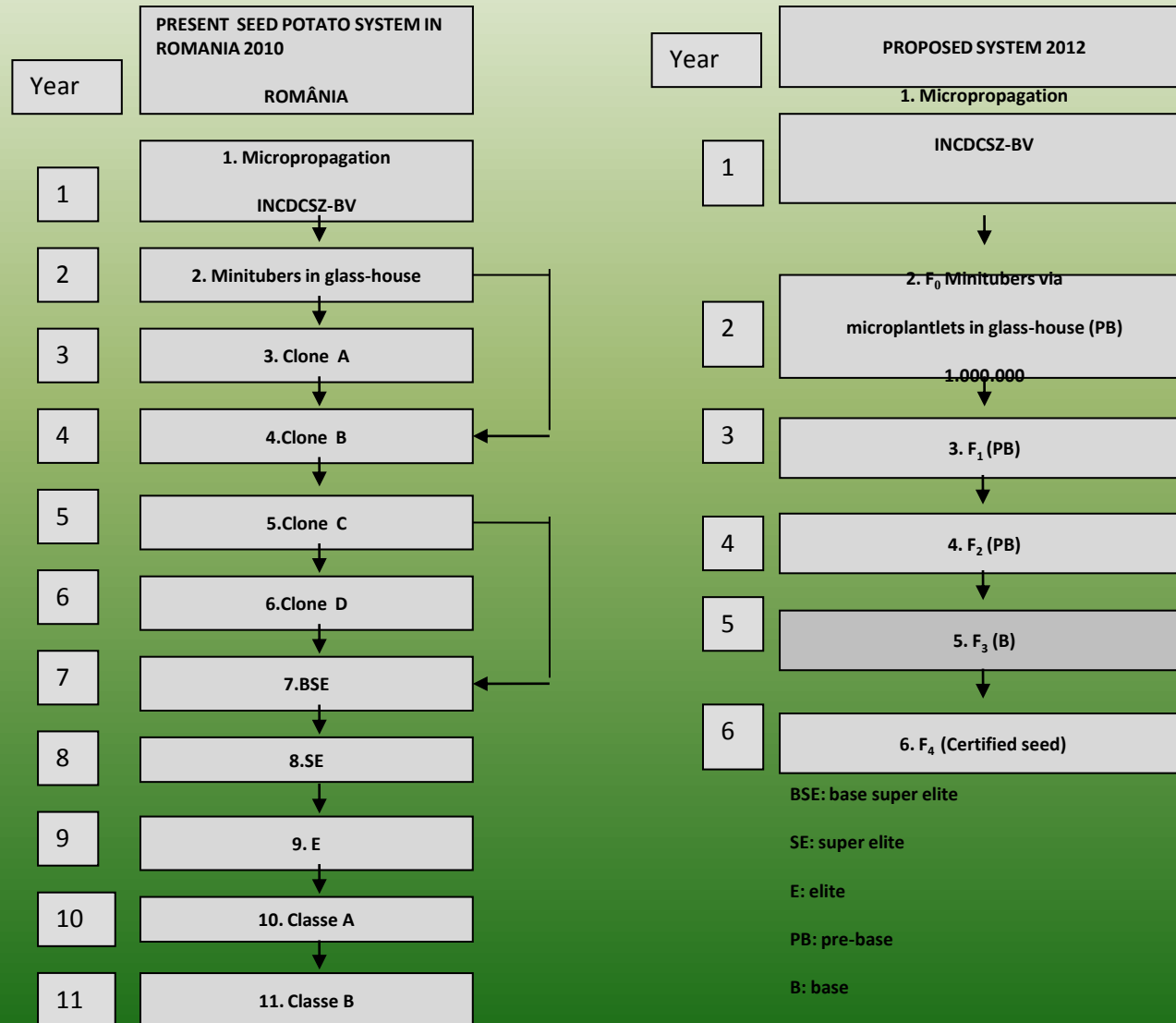


Fig. 6. Micro zones for potato seed in Harman closed area

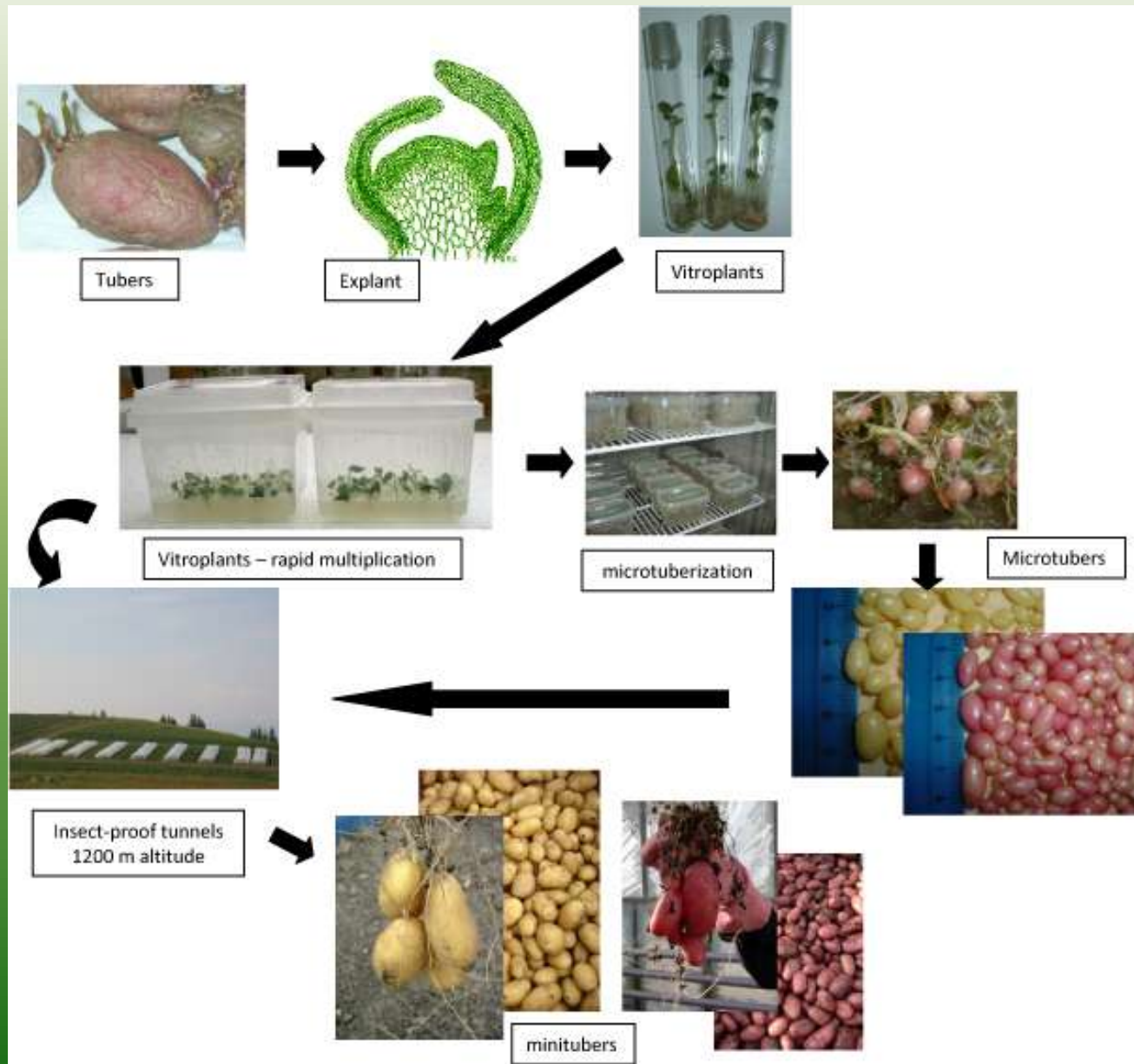
MAKIS Project

- Supported by Romanian Government and World Bank
- New facilities for seed potato production from disease tested tissue culture plantlets
- cca. 1,000,000 minitubers/year
- Romanian varieties
- Total amount 1,500,000 Euro

The diagram of producing seed potato (present and proposed system)



Producing seed potato in Romania





Thank you!