

## **MICROZONING OF SEED POTATO SYSTEM**

### **Objectives:**

- Achieving an efficient and sustainable microzoning system for certified seed potato with low impact of environmental.
- Organization of certified seed potato production from demand varieties and Romanian new creations in specialized microzone.

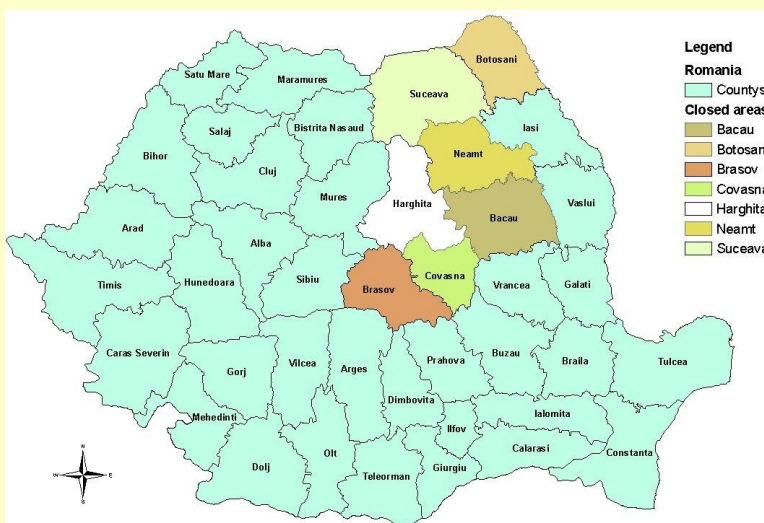
### **Financial resources (projects):**

- Sectorial Program PS 221 – Microzoning 2006-2010
- Sectorial Program ADER 531 – DSS 2011-2014

## **Current situation on potato seed zoning in Romania until 1989**

- Transformations occurring in Romanian agriculture and climate and economic global change resulted in the need to reorganize the system for seed potato production
- Starting from centralized zoning system for seed potatoes, in Romania, until 1989 operated a production and multiplication system of seed potato based on organization of closed areas, mainly in six county: Brasov, Covasna, Harghita, Bacau, Neamt and Suceava (see map)

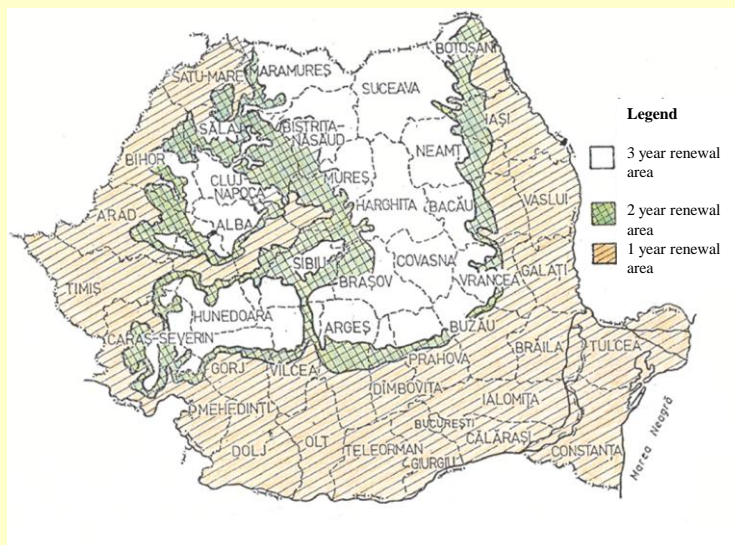
## Closed area for seed potato in Romania



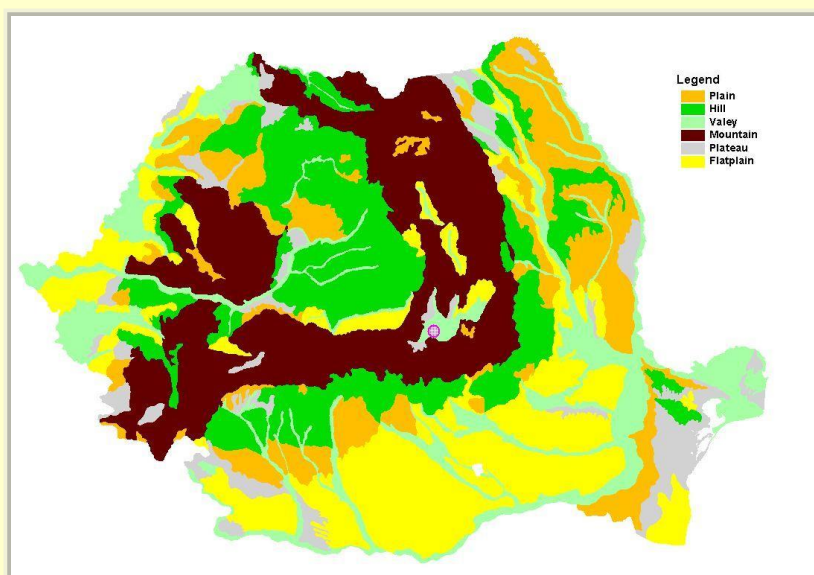
## Organizing Principles

- ☐ 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 (see relief map, RO)
- ☐ On meteorological conditions that would limit the development and spread of v diseases transmitting aphids (see degeneration map, RO)
- ☐ 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

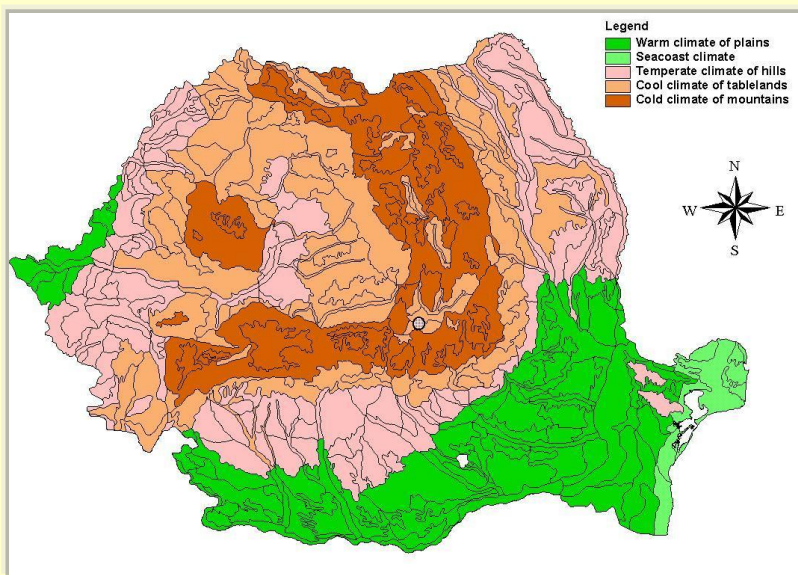
## Renewal area for seed potato in Romania



## Physical Map of Romania



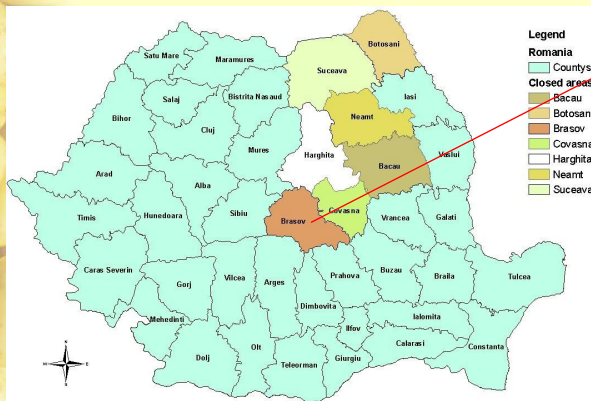
## Climatic Map of Romania



## 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
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- ☐ 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

## Closed area RASNOV, Brasov County



**Localization:** Western area of Bărsa Depression

**Altitude:** 600m

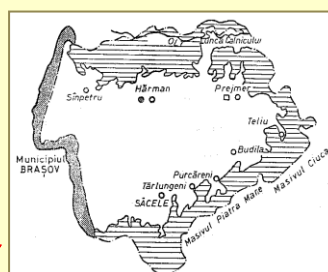
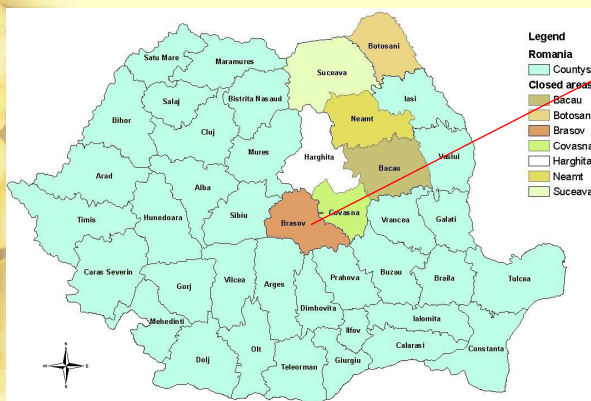
**Isolation:** 1. Natural (Postăvarul Mountain massive, Bucegi Mountains, Piatra Craiului massive, Persani Mountain); 2. Protection isolation line North

**Participation:** INCDCSZ, Codlea, Cristian, Ghimbav, Râsnov, Stupini, Vulcan, Zărnești

**Soil Condition:** "brancioguri", alluvial

**Climate condition:** MAA Pp=725.6 mm, MAA Temp=7.8o C

## Closed area HARMAN, Brasov County



**Localization:** Eastern area of Bărsa 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

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



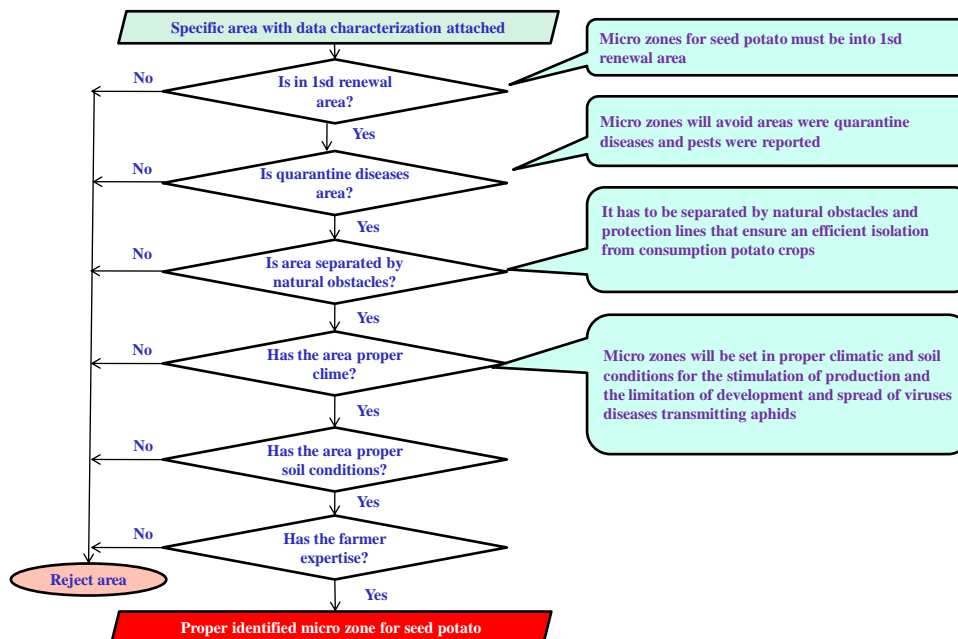


## **Proposed strategic plan for seed potato microzonig**

**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 the best agricultural practices (BAP) and precision agriculture principles

### Logical scheme for identifying the potato seed micro zone



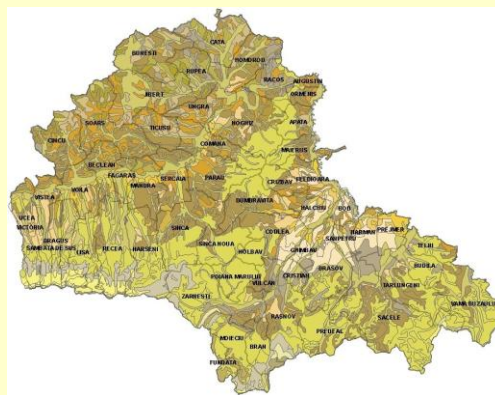
*National Institute of Research and Development for Potato and Sugar Beet Brasov, Romania*

- ❑ 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)

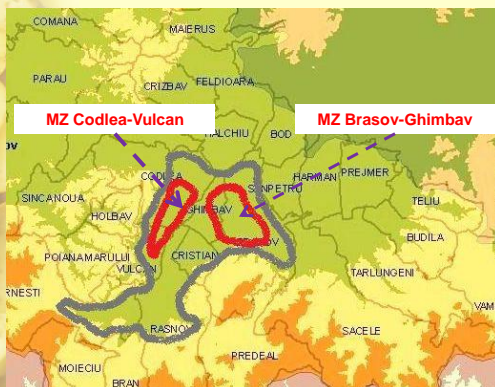


**Figure 2. Administrative map of Brasov county**

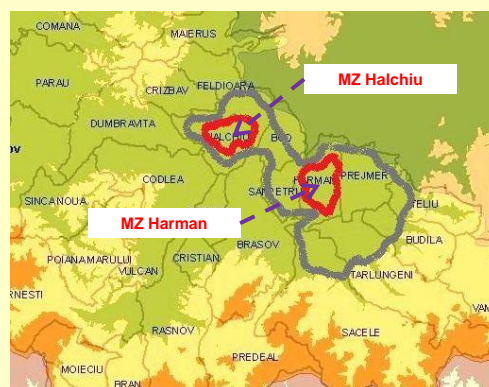


**Figure 3. Soil map of Brasov county**

- 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



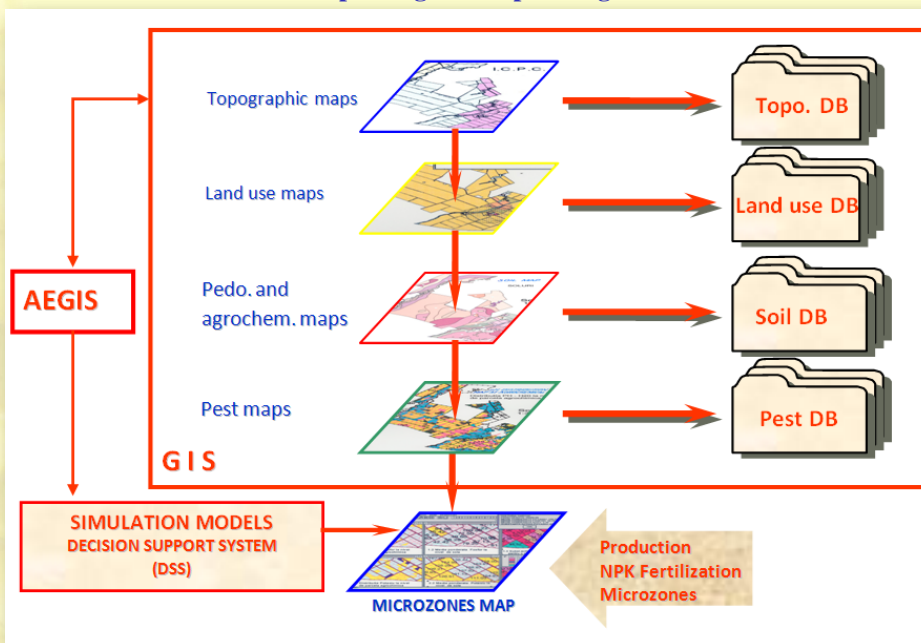
**Fig. 5. Micro zones for potato seed in Harman closed area**



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



## Use of the GIS for identifying the potato seed micro zone and improving the crop management



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pentru Cartof și Sfeclă de Zahăr (INCDCSZ) Braşov*

- ❖ Microzone strategy for MARD
- ❖ Support for new seed potato regulations
- ❖ Foreseen cost yield evaluation
- ❖ It is a background for implementation of DSS in seed potato farms
- ❖ Model for Agricultural Universities

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