New potato varieties created at the National Institute of Research and Development for Potato and Sugar Beet Brasov

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Abstract Potatoes are breeding oriented to obtain varieties with resistance to biotic and abiotic factors and with high yield capacity to satisfy both quantitative and qualitative needs of consumers. Productivity, quality and stability are achieved through crop improvement works to promote new varieties with advanced traits.

Among the achievements of the National Institute of Research and Development for Potato and Sugar Beet in 2014 are registered the varieties Brasovia, Castrum, Marvis and Sarmis. These varieties are medium early and are obtained through sexual hybridization and individual clonal selection.

All mentioned varieties have a high yield capacity and resistance to black wart (Synchitrium endobioticum), middle resistance to different viruses (PVY and PLRV) and to late blight (Phytophthora infestans). The consumption destination is for autumn-winter, being suitable for all kinds of culinary preparations, from salads to mash potatoes.

Materials and Method

All varieties are obtained by sexual hybridization followed by individual clonal selection, according to the classical scheme of potato breeding (3,2).

The main steps of working method were:
- establish of genitors according to the physiological and technological qualities of the tubers;
- sexual hybridization, including seedlings, vegetative populations, descendants, comparative crops (3 years...
in the network of National Institute for Testing and Registration of Varieties – ISTIS);
- obtaining license and registration in the National List of Cultivated Varieties.

The resistance to black wart was determined at Pojorata Centre Suceava. The starch content and processing quality were determined in the NIRDPSB Brasov laboratory. Also resistance to late blight and viruses were determined in the fields and laboratories of NIRDPSB Brasov.

**Results and Discussions**

Potato variety **BRASOVIA**

Genitors: Amelia x Impala

**Morphological characters:** The plant is well developed, with a large number of stems. The leaf with intermediary opening, strong presence of leaflets, dark green color. Medium size of corolla, low frequency of white flowers. The tubers are round-oval with yellow skin and white-yellow flesh. The sprouts are medium, conical, with strong anthocyanin colouration and medium pubescence of base.

**Physiological characteristics:** Brasovia variety belongs to the group of middle varieties with a vegetation period of 100 days.

**Resistance to pests and diseases:** Is middle sensitive to late blight on foliage and tubers, middle resistant to PVY and leaf roll viruses and resistant to potato wart (*Synchitrium endobioticum*).

**Culinary quality:** It has a good culinary quality (class A/B) and a starch content of 13.25%. This variety is suitable for a range of uses.

High yielding in a wide range of soil types.

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Potato variety **CASTRUM**

Genitors: Christian x Dura

**Morphological characters:** The plant is tall with semierect port. The leaf with intermediary opening, strong presence of leaflets, light green color. Medium to low frequency of white flowers with corolla medium to little.

The tubers are round-oval with yellow skin and pale yellow flesh. The sprouts are ovoid, with red purple strong anthocyanin colouration and low pubescence of base.

**Physiological characteristics:** Castrum variety belongs to the group of middle varieties with a vegetation period of 110-120 days.

**Resistance to pests and diseases:** Is middle sensitive to late blight on foliage and tubers, very resistant to PVY and leaf roll viruses, resistant to potato wart (*Synchitrium endobioticum*).

**Culinary quality:** It has a good culinary quality (class B) and a starch content of 10.25%.
Potato variety **MARVIS**
Genitors: Amelia x Impala

**Morphological characters:** The plant is well developed, with medium number of stems. The leaf with intermediary opening, absent or very low presence of leaflets, light green color. Very low to low frequency of white flowers, with little to medium corolla. The tubers are oval with medium yellow skin and pale yellow flesh. The sprouts are medium, conical, with strong anthocyanin colouration and medium pubescence of base.

**Physiological characteristics:** Marvis variety belongs to the group of middle varieties with a vegetation period of 90-100 days.

**Resistance to pests and diseases:** Is middle resistant to late blight on foliage and tubers and also medium resistant to PVY and leaf roll virus and resistant to potato wart (*Synchitrium endobioticum*).

**Culinary quality:** It has a good culinary quality (class B) and a starch content of 14.75%.

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Potato variety **SARMIS**
Genitors: Tresor x Impala

**Morphological characters:** Medium to intermediate type foliage structure, steams semi-upright. The leaf with intermediary opening, absent to very low presence of leaflets, light green color. Medium frequency of white flowers. Tubers long oval, pale yellow skin and yellowish white flesh and shallow eyes.

**Physiological characteristics:** Sarmis variety belongs to the group of middle varieties with a vegetation period of 100 days.

**Resistance to pests and diseases:** Is moderately resistant to late blight on foliage and tubers, moderately resistant to PVY and leaf roll viruses and resistant to potato wart (*Synchitrium endobioticum*).

**Culinary quality:** Sarmis has a good culinary quality (class A / B) and a starch content of 14.0%.
Comparing yield data obtained in network ISTIS is observed that the new varieties exceed the control varieties, Magic respectively Sante with percent between 4.43% Marvis variety and 14.86% Brasovia variety. From these percentages can be inferred production capacity in various environmental conditions and also ecological plasticity of varieties. It is recommended cultivation in favorable areas and in thermo-hydric risk areas using irrigation system.

Culinary quality was assessed in the Technology laboratory of NIRDPSB Brasov. Based on determined attributes and the score obtained (notes for desintegration, consistency, mealliness, humidity and granulation) a variety can fit in a class of use. Class A include firm potatoes for salad but potatoes from this class can also be used for other dishes. Tubers of this type does not shatter, remain whole, are unmeally and have a fine structure. The taste is good and starch content is low. Class B tubers are reasonably firm, suitable for most culinary preparations. At boiling shatter a little, are a little mealy, slightly moist and have a fine structure. Due to the multiple uses and good taste this kind of varieties are greatly demanded by consumers.

After the determination of defining elements of culinary quality, the varieties Brasovia and Sarmis were placed in A/B class and Castrum and Marvis varieties in B class.
### Table 2

<table>
<thead>
<tr>
<th>Character</th>
<th>Braşovia</th>
<th>Castrum</th>
<th>Marvis</th>
<th>Sarmis</th>
<th>Magic</th>
<th>Santé</th>
<th>Observations</th>
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<tbody>
<tr>
<td>Aspect</td>
<td>1,5</td>
<td>2,5</td>
<td>1,5</td>
<td>2,0</td>
<td>2,5</td>
<td>1,5</td>
<td>1-very showy 4-unshowy</td>
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<tr>
<td>Taste</td>
<td>3,0</td>
<td>3,0</td>
<td>3,5</td>
<td>2,5</td>
<td>3,7</td>
<td>3,0</td>
<td>1-excellent 4-less good</td>
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<tr>
<td>Color</td>
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<td>4,0</td>
<td>4,5</td>
<td>4,5</td>
<td>4,0</td>
<td>4,5</td>
<td>1-white 6-intense yellow</td>
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<td>Disintegration</td>
<td>1,0</td>
<td>2,0</td>
<td>1,5</td>
<td>1,0</td>
<td>1,7</td>
<td>1,5</td>
<td>1-remain whole 4-hard crush</td>
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<td>Consistency</td>
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<td>3,0</td>
<td>3,5</td>
<td>1,5</td>
<td>2,4</td>
<td>2,0</td>
<td>1-firm hearty 4-unhearty</td>
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<td>Mealiness</td>
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<td>2,0</td>
<td>1,5</td>
<td>2,5</td>
<td>2,1</td>
<td>1,5</td>
<td>1-unmealy 4-very mealy</td>
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<td>1,5</td>
<td>2,5</td>
<td>2,7</td>
<td>2,5</td>
<td>1-moist 4-dry</td>
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<td>Granulation</td>
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<td>2,5</td>
<td>2,5</td>
<td>2,5</td>
<td>2,3</td>
<td>1,0</td>
<td>1-fine 4-very coarse</td>
</tr>
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<td>Cooking type</td>
<td>AB</td>
<td>B</td>
<td>B</td>
<td>AB</td>
<td>B</td>
<td>A/B</td>
<td></td>
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<td>Rawdiscolouration</td>
<td>3,0</td>
<td>2,0</td>
<td>4,0</td>
<td>2,0</td>
<td>2,5</td>
<td>2,0</td>
<td>1-uncolored 9-blackened</td>
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<td>Starch content</td>
<td>13,25</td>
<td>10,25</td>
<td>14,75</td>
<td>14,0</td>
<td>15,3</td>
<td>15,0</td>
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</table>

### Conclusions

The need to create new potato varieties in Romania is imposed by a number of factors, like quarantine pests and diseases *Globodera sp.*, *Clavibacter michiganensis* and *Ralstonia solanacearum*.

The presence of viral infection in our country is above the pressure existing in European countries with tradition in potato culture. Varieties developed in these countries have a short life due to the degeneracy viruses.

It is important to have adapted varieties to the climatic conditions to avoid stress and physiological injuries.

The varieties Braşovia, Castrum, Marvis and Sarmis are recommended to be cultivated in favorable and very favorable areas for potato. In the thermohydric stress areas is recommended to use irrigation to obtain satisfying production.

The potato varieties created in the last years at NIRDPSB Brasov have a good capacity of yield and are well adapted to the Romanian climatic and soil conditions according to the tests in the network of State Institute for variety Testing and Registration (ISTIS).

### References