QUALITY AND PRESERVATION COORDINATES OF SOME APPLE TREE VARIETIES

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QUALITY AND PRESERVATION COORDINATES
OF SOME APPLE TREE VARIETIES INTRODUCED
IN THE REPUBLIC OF MOLDOVA

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ABSTRACT – The Republic of Moldova has all the natural conditions for the intensive
development of fruit-growing. This branch had and still has chances to remain one of the
pillars of the national agriculture, determining the efficiency of the entire agrarian field of the
country. Occupying only 6.5 – 7% of the arable land from the Republic, in the last two
decades, the fruit-growing ensured permanently about 15-20% of the incomes, which
proceeded from commercializing the farming production. In the intensive orchards of
Moldova, apple trees occupy more than 70% of the area of 110 thousands ha and yield 60-
70% of the total fruit production.

Key Words: apple tree varieties, newly introduced, Republic of Moldova

REZUMAT – Calitatea și capacitatea de păstrare a soiurilor de măr introduse în Moldova.
Republica Moldova dispune de toate condițiile naturale pentru dezvoltarea intensivă a
pomiculturii. Această ramură a avut și are șanse să rămână una dintre pilonii agriculturii
naționale, determinând eficiența întregului sector agrar al țării. Ocupând doar 6,5 – 7,0% din
suprafața terenurilor arabile ale republicii, pomicultura, în ultimile două decenii, asigură în
permanență circa 15-20% din veniturile bănești provenite din comercializarea producției
agricole. În livezile intensive ale Moldovei predomină mărul, ce ocupă mai mult de 70% din
suprafața de 110 mii ha, realizând 60-70% din producția totală a fructelor.

Cuvinte cheie: soiuri, măr, introdus recent, Republica Moldova

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INTRODUCTION

The industrial growing of apple trees highlighted the qualities and drawbacks of the region variety. For instance, the region variety Jonathan is highly attacked by powdery mildew, Golden Delicious Variety from Codru region proves to be less resistant at frost, and Delicious rosu is strongly attacked by scald on great areas.

The future apple tree varieties are required by the socio-economic level of the society, and by the needs of producers and consumers. The consumer requires better, qualitative, good-looking fruits and qualitative products, obtained from fruit processing. The producer is not interested to maintain in production varieties, which are not asked by the market, because the rapid change of the variety by a new cultivation, with an accelerated potential of fruit bearing, high productivity and qualities, results in substantial benefits. The future apple tree varieties should be more resistant or even immune to pest and diseases, thus avoiding the toxicity of pesticides in humans and nature. Apple trees should produce fruits in the first 1-2 years after planting in the orchard, having a low vigour, frameworks well garnished with spur-type fruits, in order to increase the density of plants/ha (Țurcan, Bucarciuc, 1995). That is why, in the latest years, the following disease resistant and immune varieties were introduced and tested in the Republic of Moldova: Prima, Redfri (coop. 13), Pristila, Golden Rezistent, Coop 10, Flirina and Jonoan. Prima, Pristila and Redfri varieties are immune to scurf. The Coop 10 Variety is immune to the attack of scurf and powdery mildew (Rapcea et al., 2002). The disease-immune varieties need 6-8 chemical treatments, while the common ones, over 12 treatments.

The cultivation of immune varieties in individual plantations results in diminishing the chemical processing, where energy expenses reach 50% and insecto-fungicides dose-70% / one ha of orchard (Bucarciuc, 1991).

Melrose is the new variety, introduced in the orchards of Moldova. It presents advantages as concerns size, colour, and structure-texture of tissues, chemical composition and taste qualities of fruits. Besides these, the mode of fruit preservation is also important (Cimpoieș et al., 2006).

MATERIALS AND METHODS

We have conducted experiments during 2002-2003 and 2003-2004, for the determination of quality and capacity of preserving Melrose, the new apple tree variety, showing resistance to diseases. As control, we have used Wagner, the prized region variety. The apples for experiments were harvested at the beginning of October, by the “Prietenia Agro” Association from Soroca Department. The pulp of the new variety Melrose is cream-white coloured, fine, succulent and crisp. It has a sweet acidulated, well-balanced, very pleasant taste, and good flavour. The resistance of the Melrose Variety was average to drought.
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The average weight of a fruit was determined by weighing 100 fruits and dividing it by 100, in Melrose and prized Wagner varieties.

The apples harvested from the orchard were packed in standard cases no 3 and preserved in the frigorific installation of the Trușeni Commune, Chisinau City, at the temperature of 0…-1°C, with air relative humidity of 90%, at normal atmosphere (0.03% CO₂, 20.8% O₂) NGE (normal gaseous environment) and at variant MGE (modified gaseous environment). They were packed in polyethylene bags with the thickness of 40-50 microns, and hermetically closed. The temperature was of 0…± 1°C, and air relative humidity was of 90-95%, CO₂ 3-5%, and O₂ 5-7%.

The quality of apples in the orchard and after conservation has been determined according to the State standard 21122-75: fresh apples, winter varieties.

At the end of preservation, the weight losses were determined according to in force standards.

RESULTS AND DISCUSSION

Table 1 presents the results of apples quality after harvesting within the “Prietenia Agro” Association of Soroca Department.

Table 1
Influence of varieties on the quality of apples after harvesting

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Years of experiments</th>
<th>Fruit quality</th>
<th>Average weight of a fruit in g</th>
<th>Diameter of the fruit, mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High quality and 1st quality</td>
<td>IInd quality</td>
<td>IIIrd quality</td>
</tr>
<tr>
<td>Melrose</td>
<td>2002-2003</td>
<td>79.6</td>
<td>14.4</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>2003-2004</td>
<td>92.4</td>
<td>4.2</td>
<td>3.4</td>
</tr>
<tr>
<td>Prized Wagner</td>
<td>2002-2003</td>
<td>62.9</td>
<td>25.6</td>
<td>11.5</td>
</tr>
<tr>
<td>(control)</td>
<td>2003-2004</td>
<td>69.3</td>
<td>22.8</td>
<td>7.9</td>
</tr>
</tbody>
</table>

Data from Table 1 have shown clearly that the quality of apples (extra and the 1st quality) was higher in the fruits of the newly introduced variety – Melrose against the region variety prized Wagner (control). For instance, in 2003, the apples of the Melrose Variety (extra and the 1st quality) represented 92.4%, the IInd quality – 4.2% and the IIIrd quality – 3.4%. In the prized Wagner Variety, the corresponding rates were 69.3%, 22.8%, and 7.9%.

In the Melrose Variety, the average weight of a fruit was higher by 3.7…4.5%. The fruits had a greater diameter against the prized Wagner Variety. The fruits of the Melrose Variety were more coloured, good-looking and with higher taste qualities against the prized Wagner Variety.
<table>
<thead>
<tr>
<th>Varieties</th>
<th>Preservation without refrigerating</th>
<th>Preservation with refrigerating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Duration of conservation in days</td>
<td>Weight losses</td>
</tr>
<tr>
<td>Melrose</td>
<td>120</td>
<td>3.5</td>
</tr>
<tr>
<td>Prized Wagner</td>
<td>105</td>
<td>4.2</td>
</tr>
<tr>
<td>(control)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melrose</td>
<td>120</td>
<td>4.0</td>
</tr>
<tr>
<td>Prized Wagner</td>
<td>105</td>
<td>4.7</td>
</tr>
<tr>
<td>(control)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2

Quality of apples after conservation, in %
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Apples of extra quality and of the 1st quality were preserved in the frigorific installations. Investigations have demonstrated that Melrose, the new apple tree variety, had special trade qualities, even after conservation (Table 2).

The experiments have shown that the fruits from the tested Melrose Variety had greater conservation duration both in NGE and in MGE, during the conservation seasons 2002-2003 and 2003-2004 against the prized Wagner Variety (control).

The partial pressure of gases from polyethylene bags (MGE) has greatly influenced the intercellular gaseous composition, which regulated physical and biochemical processes in fruits, their weight losses and quality during the conservation period.

One of the main indices of apples quality after preservation was the 1st quality of fruits. After conservation, this was greater in Melrose Variety against the prized Wagner Variety, under conditions of all packing types.

CONCLUSIONS

By comparing the quality of fruits after harvesting, we found out that the Melrose apple-tree Variety introduced in Moldova, immune to scurf and mildew, needs 4-6 treatments, against the prized Wagner Variety (control), which needs 10-12 treatments. The Melrose Variety had a greater conservation capacity than the prized Wagner Variety. This will allow us to provide the consumers with long-term fresh fruits, without pesticide application.

REFERENCES