Prunus mahaleb rootstock trial

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• ratio of Mahaleb seedling rootstock is 70% in the Hungarian sweet cherry production and 100% in the Hungarian tart cherry production

• the Mahaleb rootstocks fit well to the Hungarian climate conditions

• The sweet cherry breeding program has been running since 1950 at the Fruitculture Research Institute.
What do the Hungarian cherry growers need?

- To establish an intenzive orchards among Hungarian climate conditions:
- at least medium vigorous rootstocks
- rootstocks with good lime and drought tolerance
- positive effect on the yield and fruit quality
- good stability
- good compatibility to the scions
- no suckers
Material and method

- Novel bred Mahaleb rootstocks from CUB
- SM 11/4
- Érdi V
- Egervár
- Bogdány
- Magyar
- Korponay (propagated by seeds)

- Some more rootstocks involved in the trial:
  - Cerasus mahaleb ‘Cemany’ – control
  - Cerasus avium ‘C. 2493’
  - INRA SL 64
  - GiSelA 6
Material and method

- Scions:
  - Petrus®
  - Vera®
  - Carmen®

- Planting time: spring 2004
- Non-irrigated trial
- Canopies were trained to spindle
- Distances in the row and between the rows:
  2 x 4 m
## Fruit site conditions of the trial

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average yearly temperature</td>
<td>10.7 °C</td>
</tr>
<tr>
<td>Average yearly temperature in the vegetation period</td>
<td>16.6 °C</td>
</tr>
<tr>
<td>Average yearly sunny hours</td>
<td>1981 hours</td>
</tr>
<tr>
<td>Average yearly precipitation</td>
<td>515 mm</td>
</tr>
</tbody>
</table>

Soil: $K_A = 40$, pH=8, total lime content in the top 60 cm layer 5%, humus content 2.3-2.5 %
Material and method

• Collected data between 2008 and 2014
• Trunk diameter measured 20 cm above the graft union
• Estimated yield
• Fruit size by fruit size categories
• Color of the fruits using CTIFL color scale (in 2013 only)
• Refraction

There was no crop on the rootstock-scion combinations in 2012 because of late spring frosts.
Material and method

• Calculated characteristics:

• Trunk Cross Sectional Area (TCSA)

• Cumulated Yield Efficiency Index (cumulated yield / trunk cross sectional area of the previous year)

• Value Equivalent Yield Efficiency Index (No. of fruits by size fraction x yield x farmer price of size fraction in EUR/kg)

<table>
<thead>
<tr>
<th>Fruit size categories (mm)</th>
<th>20,1-21,9</th>
<th>22,0-23,9</th>
<th>24,0-25,9</th>
<th>26,0-27,9</th>
<th>28,0-30,0</th>
<th>30,1≤</th>
</tr>
</thead>
<tbody>
<tr>
<td>farmer prices (EUR)</td>
<td>0,6</td>
<td>0,6</td>
<td>0,75</td>
<td>1,1</td>
<td>1,5</td>
<td>2</td>
</tr>
</tbody>
</table>
Cumulated yield (2008-2014)

Variety: **Petrus℗**
Cumulated yield (kg/tree)

Variety: **Carmen℗**
Cumulated yield (kg/tree)
Variety: **Petrus℗**
Cumulated Efficiency Index (kg/cm²)

Variety: **Vera℗**
Cumulated Efficiency Index (kg/cm²)

Variety: **Carmen℗**
Cumulated Efficiency Index (kg/cm²)
Fruit color (2013)

**Petrus**

**Vera**

**Carmen**

![Image of cherries and cherries on a plate](image)
VEYEI (2008-2014)
Conclusions

• Vigor of scion varieties grafted on rootstocks tested in our trial can be categorized the followings:
  – semi dwarf rootstock ‘GiSelA 6’.

• The highest yield was produced by Petrus®
• Carmen® and Vera® produced the best fruit size
• Since ‘Vera®’ produced higher yield than ‘Carmen®’, ‘Vera®’ reached the best Value Equivalent Yield Efficiency. The larger fruit size of ‘Carmen®’ couldn’t compensate the difference in yield.
Thank you for your attention!

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Carmen® grafted on GiSelA 6

Vera® grafted on Érdi V

Petrus® grafted on Magyar