Experiences with different cherry rootstocks in Belgium

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Proeftuin pit- en steenfruit (pps)
Cherry rootstocks

- Introduction
- Comparison Gisela 5 – Gisela 3
- Comparison Gisela 5 – Gisela 6
- Comparison Gisela 5 – PiKu 4.20
- Rootstock trial Lapins
- Comparison Gisela 5 – Krymsk 5
- Rootstock trial Kordia/Summit
- Rootstock trial Regina
Aim

We want to obtain trees which yield precociously and which have a reduced height

⇒ harvest of all of the cherries when standing on the ground
Sweet cherries in Belgium

- New start in the early nineties
- New varieties
- “Weak” growing rootstock: Gisela 5
- New training and pruning methods
Demands

- Compatibility
- Soil
- Climate
- Health = Virus status
- Vigour
- Production
- Fruit size
Gisela 5 (Gisela 148/2)

- Prunus cerasus x Prunus canescens
- Moderate to weak vigour
- Yield efficiency is very high
- Sometimes small fruit size
- Suitable for most modern varieties
- Planting distance: 5 x 3 m to 4 x 2 m
- Tree height: 3 to 4 m
- Best suited for intensive cherry culture
Rootstock trial Regina and Karina
Gisela 5 – Gisela 3
Root stock trial Regina - Karina

- Planting year: March 2005
- Varieties: Regina and Karina
- Rootstocks: Gisela 3 and Gisela 5
- Planting distance: 4 x 2 m
- With plastic covering
- With irrigation
Rootstock trial Regina - Karina

Increase trunk circumference (2005-2014)

Planting year: 2004-2005  Planting distance: 4.0 x 2.0 m
Rootstock trial Regina - Karina

Average shootlength 2006-2014

Planting year: 2004-2005
Planting distance: 4.0 x 2.0 m
Rootstock trial Regina - Karina

Yield data (2007-2014)

Planting year: 2004-2005
Planting distance: 4.0 x 2.0 m
Gisela 3 (Gisela 209/1)

- Prunus cerasus x Prunus canescens
- Weak vigour
- High yield efficiency
- Often smaller fruit size
- Suitable for most modern varieties
- Planting distance: 4 x 2 m to 3.5 x 1.5 m
- Tree height: 3 to 4 m
- Very suitable for intensive cherry culture
Conclusion for Gisela 3

- 20 to 33 % less vigour as Gisela 5
- Yield is good
- Good fruit size, sometimes slightly smaller
- Shorter planting distance required
- Suitable for intensive cherry culture
Rootstock trial with Samba
Gisela 5 – Gisela 6
Rootstock trial Samba

- Planting year: 2007-2008
- Variety: Samba
- Rootstocks: Gisela 5 and Gisela 6
- Planting distance: 5 x 2 m
- No plastic covering
- With irrigation
Rootstock trial Samba

Increase trunk circumference (2008-2014)

Planting year: 2007-2008

Planting distance: 5.0 x 2.0 m
# Rootstock trial Samba

## Shootlength 2014

<table>
<thead>
<tr>
<th>Rootstock</th>
<th>Shootlength (cm)</th>
<th>Number of shoots</th>
<th>Total shootlength (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gisela 5</td>
<td>24.3</td>
<td>33</td>
<td>8.1</td>
</tr>
<tr>
<td>Gisela 6</td>
<td>30.4</td>
<td>33</td>
<td>10.0</td>
</tr>
</tbody>
</table>

- **Planting year:** 2007-2008
- **Planting distance:** 5.0 x 2.0 m
Rootstock trial Samba

Tree volume 2014

Planting year: 2007-2008

Planting distance: 5.0 x 2.0 m
Rootstock trial Samba

Yield data (2009-2014)

Planting year: 2007-2008
Planting distance: 5.0 x 2.0 m

Gisela 5
Gisela 6

Kg/tree

Fruit weight (g)
Gisela 6 (Gisela 148/1)

- Prunus cerasus x Prunus canescens
- Moderate vigour
- High yield efficiency
- Recommended for self-fertile varieties
- Not suitable for all varieties
- Planting distance: 5 x 3 m to 4 x 2 m
- Tree height: 4 à 5 m
- Less suitable for intensive cherry culture
Conclusion for Gisela 6

- 15-20% more vigour as Gisela 5
- Production is slightly higher
- Fruit size can be smaller
- Wider spacing required
- Suitable for lighter soils
- Suitable for self-fertile varieties ???
- Support material is necessary
Kordia

Gisela 5

Gisela 6
Rootstock trial with Satin Gisela 5 – PiKu 4.20
Rootstock trial Satin

- Variety : Satin
- Planting year : 2006-2007
- Rootstock : Gisela 5 and PiKu 4.20 (= PiKu 1)
- Planting distance : 5,0 x 2,5 m
- No plastic covering
- With irrigation
Rootstock trial Satin

**Increase trunk circumference (2007-2013)**

Planting year: 2006-2007

Planting distance: 5.0 x 2.5 m
### Rootstock trial Satin

#### Shootlength 2013

<table>
<thead>
<tr>
<th>Rootstock</th>
<th>Shootlength (cm)</th>
<th>Number of shoots</th>
<th>Total shootlength (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gisela 5</td>
<td>67.6</td>
<td>179</td>
<td>120.7</td>
</tr>
<tr>
<td>PiKu 4.20</td>
<td>75.3</td>
<td>135</td>
<td>101.6</td>
</tr>
</tbody>
</table>

Planting year: 2006-2007  
Planting distance: 5.0 x 2.5 m
Rootstock trial Satin

Tree volume 2013

Planting year: 2006-2007
Planting distance: 5.0 x 2.5 m
Rootstock trial Satin

Yield data (2009-2013)

Planting year: 2006-2007
Planting distance: 5.0 x 2.5 m
Hertford on PiKu 1

50 % healthy trees and 50 % weak trees
PiKu 4.20 (PiKu 1)

- Prunus avium x (P. canescens x P. tomentosa)
- Dresden-Pillnitz (D)
- Moderate vigour
- Poor soil: too weak and too small fruit size
- Planting distance: 5 x 3 m to 4 x 2 m
- Tree height: 4 to 5 m
- Less suitable for intensive cherry culture
Conclusion for PiKu 4.20

- 10 % weaker vigour as Gisela 5
- In older trials stronger vigour
- Previous results are not confirmed
- Production is lower
- Fruit size is smaller
- Wider spacing required
- No recommendation
Kordia

Gisela 5

PiKu 4.20
Rootstock trial with Lapins
Gisela 5 – Gisela 3
Gisela 6 – PiKu 4.20
Rootstock trial Lapins

- Variety : Lapins
- Planting year : 2009-2010
- Rootstock + Planting distance :
  - PiKu 4.20 (= PiKu 1) : 4.0 x 2.5 m (900 trees/ha)
  - Gisela 6 : 4.0 x 2.5 m (900 trees/ha)
  - Gisela 5 : 4.0 x 2.0 m (1.125 trees/ha)
  - Gisela 3 : 4.0 x 1.5 m (1.500 trees/ha)
- No plastic covering - With irrigation (since 2014)
Rootstock trial Lapins

Increase trunk circumference (2010-2014)

<table>
<thead>
<tr>
<th>Rootstock</th>
<th>Planting year : 2009-2010</th>
<th>Planting distance : 4.0 x ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>PiKu 4.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gisela 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gisela 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gisela 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Rootstock trial Lapins

## Shootlength 2014

<table>
<thead>
<tr>
<th>Rootstock</th>
<th>Shootlength (cm)</th>
<th>Number of shoots</th>
<th>Total shootlength (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PiKu 4.20</td>
<td>40.9</td>
<td>23</td>
<td>9.2</td>
</tr>
<tr>
<td>Gisela 6</td>
<td>39.1</td>
<td>30</td>
<td>11.6</td>
</tr>
<tr>
<td>Gisela 5</td>
<td>28.6</td>
<td>25</td>
<td>7.0</td>
</tr>
<tr>
<td>Gisela 3</td>
<td>27.1</td>
<td>15</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Planting year: 2009-2010  
Planting distance: 4.0 x
Rootstock trial Lapins

Tree volume 2014

- PiKu 4.20
- Gisela 6
- Gisela 5
- Gisela 3

Planting year: 2009-2010
Planting distance: 4.0 x
Rootstock trial Lapins

Yield data (2011-2014)

Planting year : 2009-2010  Planting distance : 4.0 x …

![Bar chart showing yield comparison for different rootstocks.]

Yield data for various rootstocks over the years 2011-2014.
Rootstock trial Lapins

Yield data (2011-2014)

Planting year: 2009-2010

Planting distance: 4.0 x ...
Rootstock trial with Regina
Gisela 5 – Krymsk 5
Rootstock trial Regina

- Variety: Regina
- Planting year: 2010-2011
- Rootstock: Gisela 5 – Krymsk 5
- Planting distance: 4.0 x 2.0 m
- No plastic covering
- With irrigation (since 2014)
**Rootstock trial Regina**

**Increase trunk circumference 2011-2014**

<table>
<thead>
<tr>
<th>Rootstock</th>
<th>Increase trunk circumference 2014 (cm)</th>
<th>Increase trunk circumference Total (cm)</th>
<th>% to Gisela 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gisela 5</td>
<td>4.5</td>
<td>11.3</td>
<td>100</td>
</tr>
<tr>
<td>Krymsk 5</td>
<td>6.3</td>
<td>15.4</td>
<td>135</td>
</tr>
</tbody>
</table>

Planting year : 2010-2011  
Planting distance : 4.0 x 2.0 m
Rootstock trial Regina

Shootlength 2013

<table>
<thead>
<tr>
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<th>Total shootlength (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gisela 5</td>
<td>56.2</td>
<td>25</td>
<td>14.1</td>
</tr>
<tr>
<td>Krymsk 5</td>
<td>79.3</td>
<td>34</td>
<td>27.2</td>
</tr>
</tbody>
</table>

Planting year: 2010-2011  Planting distance: 4.0 x 2.0 m
Rootstock trial Regina

Tree volume 2014

Planting year: 2010-2011

Planting distance: 4.0 x 2.0 m

Gisela 5

Krymsk 5

m³
Rootstock trial Regina

Gisela 5  Krymsk 5
Rootstock trial Regina

Yield data 2013-2014

Planting year : 2010-2011     Planting distance : 4.0 x 2.0 m
Rootstock trial Kordia and Summit
Gisela 5 – Gisela 3 – Gisela 12
Gisela 13 (148/13) – Weiroot 720
Rootstock trial Kordia and Summit

- Variety: Kordia and Summit
- Planting year: 2012-2013
- Rootstocks: Gisela 3, Gisela 5, Gisela 12, Gisela 13 (148/13) and Weiroot 720
- Planting distance: 4.0 x 2.0 (1.125 trees ha)
- No plastic covering
- With irrigation (since 2014)
Rootstock trial Kordia and Summit

Increase trunk circumference (2013-2014)

Planting year: 2012-2013  Planting distance: 4.0 x 2.0 m
Rootstock trial Kordia and Summit

Tree volume 2014

Planting year: 2012-2013

Planting distance: 4.0 x 2.0 m
Rootstock trial with Regina
Gisela 5 – WeiGi 1 – WeiGi 2
Rootstock trial Regina

- Variety: Regina
- Planting year: 2013-2014
- Rootstocks: Gisela 5, WeiGi 1 and WeiGi 2
- Planting distance: 4.0 x 2.0 (1.125 trees ha)
- No plastic covering
- With irrigation
Rootstock trial Regina

Increase trunk circumference 2014

Planting year: 2013-2014  
Planting distance: 4.0 x 2.0 m
## Conclusion rootstocks

<table>
<thead>
<tr>
<th></th>
<th>Gisela 3</th>
<th>Gisela 5</th>
<th>Gisela 6</th>
<th>PiKu 4.20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vigour</td>
<td>75-80 %</td>
<td>100 %</td>
<td>90-115 %</td>
<td>90 %</td>
</tr>
<tr>
<td>Production</td>
<td>Good</td>
<td>Good</td>
<td>Very good</td>
<td>Moderate</td>
</tr>
<tr>
<td>Fruit size</td>
<td>Moderate</td>
<td>Good</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Tree</td>
<td>Light green leaves</td>
<td>Healthy</td>
<td>Healthy</td>
<td>?</td>
</tr>
</tbody>
</table>

**Gisela 5 remains our advice!!!**
General conclusion for Gisela 5

- Moderate to weak vigour
- Yield efficiency is very high
- Very good fruit size
  - in dry circumstances sometimes too small
  - solved quite easily by irrigation
- Suitable for most modern varieties
- Best suited for intensive cherry culture
Thank you for your attention!

Sweetheart on Gisela 5 in a V-system