Fruit set of sour cherry cultivars in Latvia

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Introduction

Fruit set is important precondition of the productivity and fruit quality of sour cherries and it is influenced both by environmental factors and peculiarities of genotypes.

The aim of the research
- to evaluate fruit set for sour cherry cultivars,
- to determine the effect of bumblebee hive in the orchard.
Materials and methods (I)

Sour cherry flowering and fruit set was observed in Latvia State Institute of Fruit-Growing (located in Dobele).

Fruit set: ratio of fruit and flower number on sample shoots, expressed in percents.

Fruit set after free pollination:
• in 2009 – 2014 (except 2012), in the orchard planted in 2007
  - for landraces ‘Latvijas Zemais’ and ‘Zentenes’,
  - for introduced cultivars ‘Bulatnikovskaya’, ‘Desertnaya Morozovoi’, ‘Orlica’ and ‘Shokoladnica’;

• in 2012 – 2014, in the orchard planted in 2008
  - for landraces ‘Latvijas Zemais’ and ‘Zentenes’,
Materials and methods (II)

In 2014

- self pollination and hand pollination with several cultivars was tested for the cultivars ‘Latvijas Zemais’ and ‘Zentenes’
- Effect of the bumblebee hive (Biobest) was tested for the cultivars ‘Latvijas Zemais’, ‘Zentenes’, ‘Shokoladnica’ and ‘Bulatnikovskaya’.
Weather conditions in the time of sour cherry flowering and fruit set of ‘Latvijas Zemais’

<table>
<thead>
<tr>
<th>Year</th>
<th>Time of flowering</th>
<th>Air temperature during flowering time (7 days), °C</th>
<th>Days with precip.</th>
<th>Fruit set, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BBCH 61</td>
<td>BBCH 65</td>
<td>min</td>
<td>average</td>
</tr>
<tr>
<td>2009</td>
<td>5th May</td>
<td>7th May</td>
<td>4.7</td>
<td>11.4</td>
</tr>
<tr>
<td>2010</td>
<td>13th May</td>
<td>16th May</td>
<td>10.8</td>
<td>17.5</td>
</tr>
<tr>
<td>2011</td>
<td>11th May</td>
<td>13th May</td>
<td>4.4</td>
<td>12.8</td>
</tr>
<tr>
<td>2012</td>
<td>9th May</td>
<td>12th May</td>
<td>-0.4</td>
<td>12.3</td>
</tr>
<tr>
<td>2013</td>
<td>11th May</td>
<td>14th May</td>
<td>4.3</td>
<td>15.2</td>
</tr>
<tr>
<td>2014</td>
<td>5th May</td>
<td>8th May</td>
<td>0.0</td>
<td>8.6</td>
</tr>
</tbody>
</table>
Results
In 2014, hand pollination of ‘Latvijas Zemais’ with various cultivars lead to fruit set:

- with ‘Zentenes’ – 12%,
- with ‘Haritonovskaya’ – 10%,
- self pollination – 4%.
‘Bulatnikovskaya’ vs. ‘Latvijas Zemais’

![Graph showing the fruit set percentage of 'Bulatnikovskaya' and 'Latvijas Zemais' over the years 2008 to 2015. The graph indicates a comparison of fruit set efficiency between the two varieties, with 'Latvijas Zemais' generally having a higher fruit set percentage throughout the years.]
Cultivars with low fruit set vs. ‘Latvijas Zemais’

In 2014, hand pollination of ‘Zentenes’ with various cultivars lead to fruit set:
• with ‘Latvijas Zemais’ – 9%,
• with ‘Bulatnikovskaya’ – 8%,
• with ‘Haritonovskaya’ – 17%,
• self pollination – 0%.
In 2014

- Fruit set of ‘Shokoladnica’ and ‘Latvijas Zemais’ was not influenced significantly by presence of bumblebee hive in the orchard.
- Fruit set of ‘Zentenes’ and ‘Bulatnikovskaya’ was improved by bumblebees.
Conclusions

• The cultivar ‘Bulatnikovskaya’ showed most acceptable fruit set.


• Low fruit set was detected for ’Zentenes’, ‘Pervocvet’, ‘Zhukovskaya’.

• Crosspollination improved fruit set for ‘Latvijas Zemais’ un ‘Zentenes’, without significant differences among used pollinator cultivars.

• Set of bumblebee hive improved fruit set for ‘Zentenes’ and ‘Bulatnikovskaya’.
Acknowledgement

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Thank you for the attention!