# Fruit set of sour cherry cultivars in Latvia

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The aim of the study was to evaluate fruit set of sour cherry cultivars influenced by different growing conditions.

# Materials and methods

The research was carried out in Institute of Horticulture (Latvia, Dobele) in 2009 – 2016.

- Fruit set of cultivars ‘Latvijas Zemais’ and ‘Zentenes’, ‘Bulatnikovskaya’ and ‘Orlica’ was investigated under influence of:
  - drip irrigation and woodchip mulch *vs.* control
  - weather conditions during flowering.
- Fruit set: ratio of fruit and flower number on sample shoots (in %)

Additional tests in 2014

- Self pollination and hand pollination with several cultivars - for ‘Latvijas Zemais’ and ‘Zentenes’.
- Effect of the bumblebee hive (*Biobest*) - ‘Latvijas Zemais’, ‘Zentenes’, ‘Shokoladnica’ and ‘Bulatnikovskaya’.

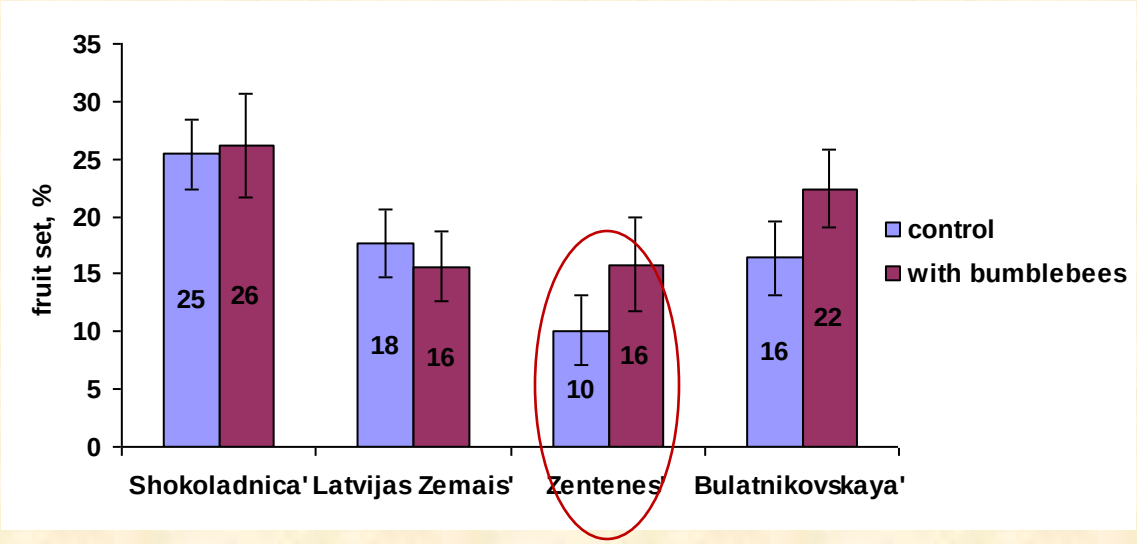
Data were statistically processed using analysis of variance and Kendal’s correlation in SPSS software.

# Weather conditions during sour cherry flowering

| Year | Time of flowering | | Air temperature during flowering time, °C | | | Number of days with precip. | Wind | |
|---|---|---|---|---|---|---|---|---|
| | BBCH 61 | BBCH 65 | min | average | max | | speed | direction |
| 2009 | 5th May | 7th May | 4.7 | 11.4 | 19.1 | 0 | 1.8 | SW |
| 2010 | 13th May | 16th May | 10.8 | 17.5 | 26.8 | 3 | 1.2 | various |
| 2011 | 11th May | 13th May | 4.4 | 12.8 | 25.0 | 5 | 2.4 | SW |
| 2013 | 11th May | 14th May | 4.3 | 15.2 | 28.6 | 4 | 1.6 | various |
| 2014 | 5th May | 8th May | - 0.1 | 8.6 | 17.6 | 6 | 2.6 | SW |
| 2015 | 6th May | 11th May | 2.7 | 11.7 | 20.0 | 2 | 2.6 | S |
| 2016 | 6th May | 9th May | 6.2 | 9.4 | 26.1 | 0 | 1.2 | various |

# Results

# Effect of bumblebee hive and hand pollination on fruit set

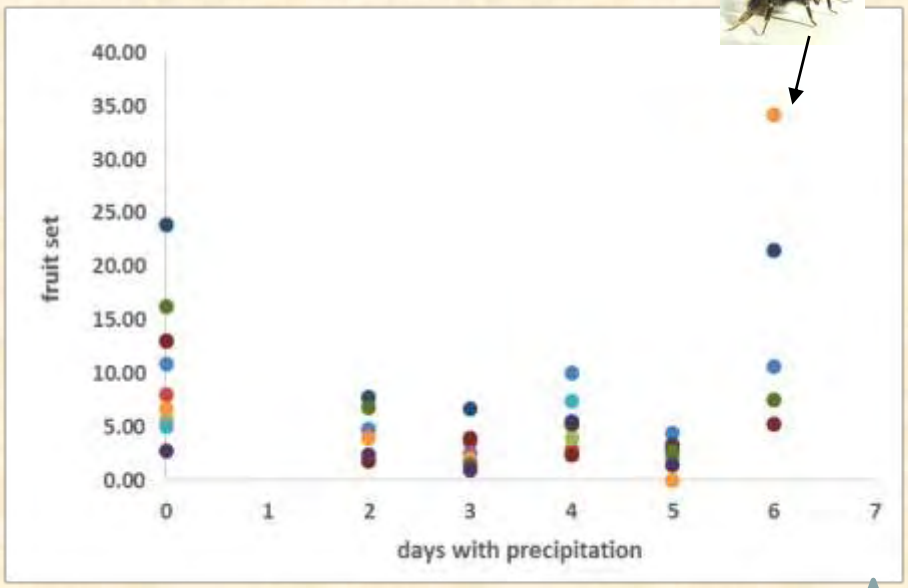


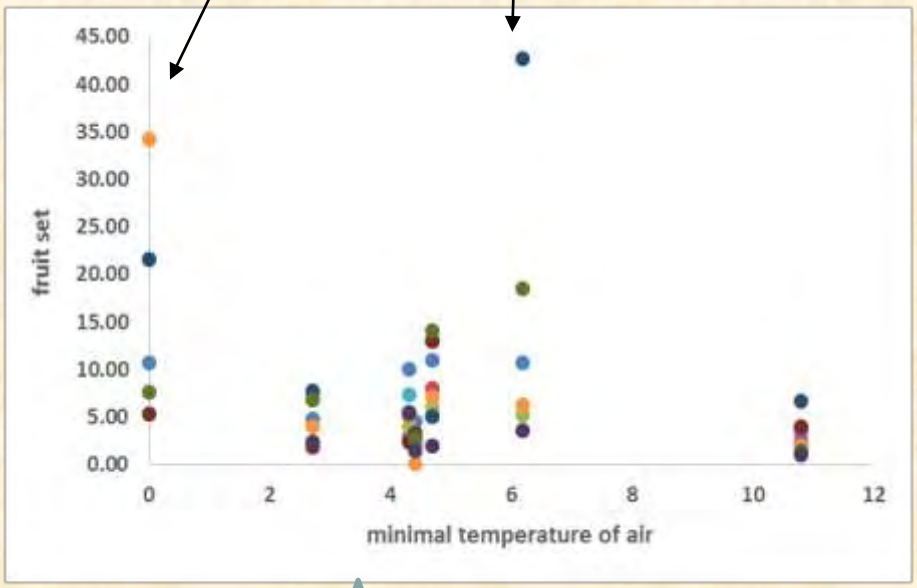

- Fruit set of ‘Shokoladnica’ and ‘Latvijas Zemais’ was not influenced significantly by presence of bumblebee hive in the orchard.
- Fruit set of ‘Zentenes’ and ‘Bulatnikovskaya’ was improved by bumblebees.

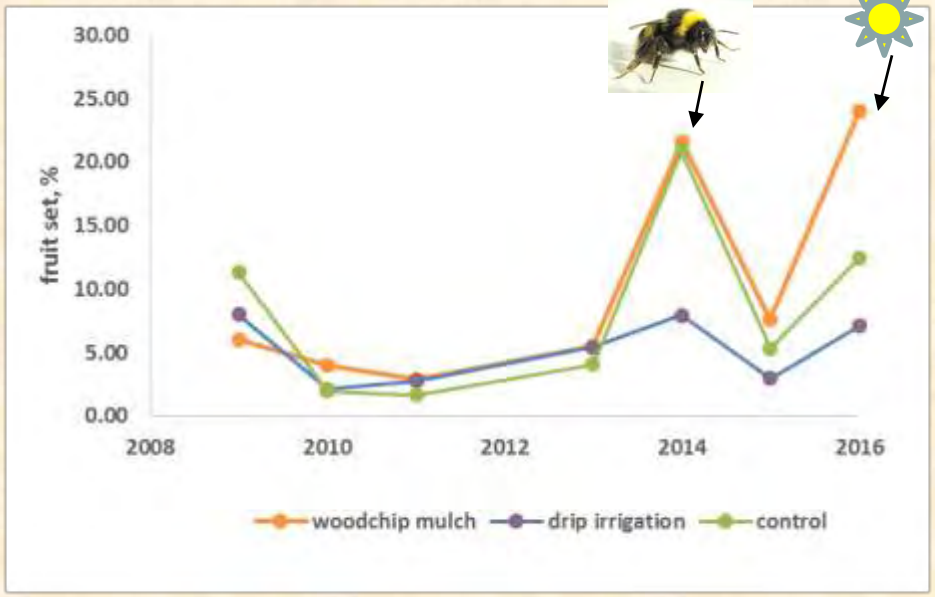
| Pollinators | Cultivars which were pollinated | |
|---|---|---|
| | Zentenes | Latvijas Zemais |
| Zentenes | 0 | 12 |
| Latvijas Zemais | 9 | 4 |
| Haritonovskaya | 17 | 10 |
| Bulatnikovskaya | 8 | - |

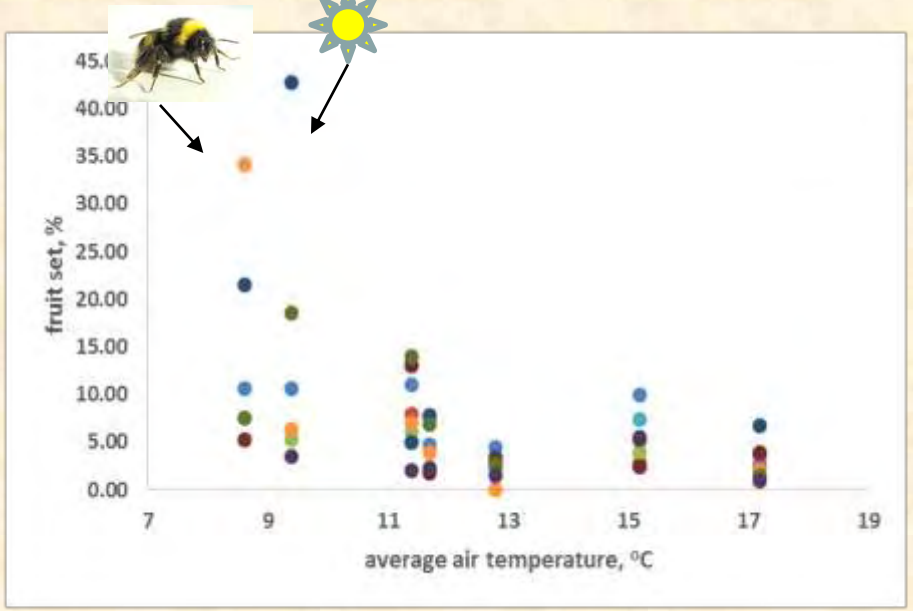
- Self-pollination did not result in fruit set for ‘Zentenes’.

# Zentenes

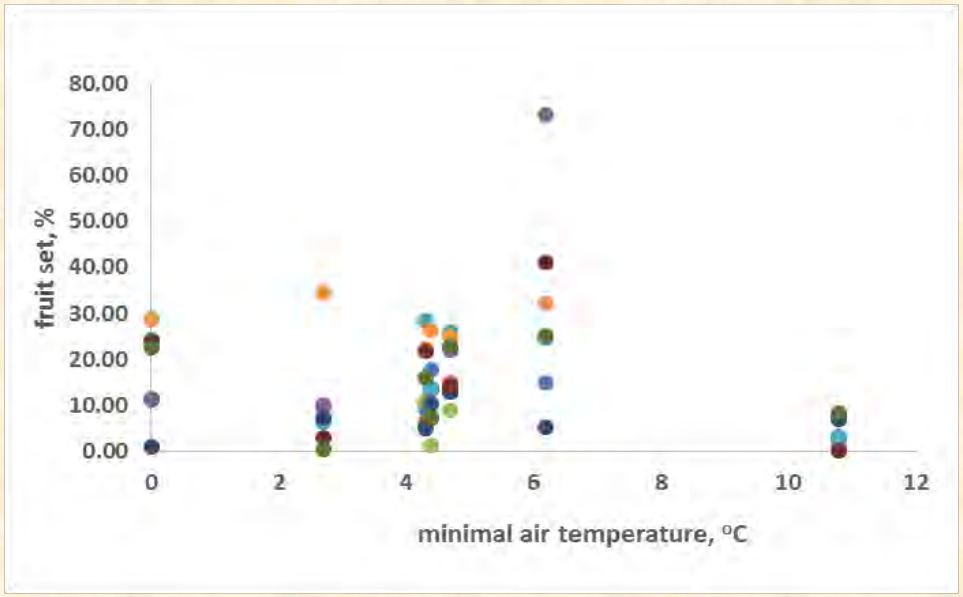

fruit set
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
1
2
3
4
5
6
7
days with precipitation

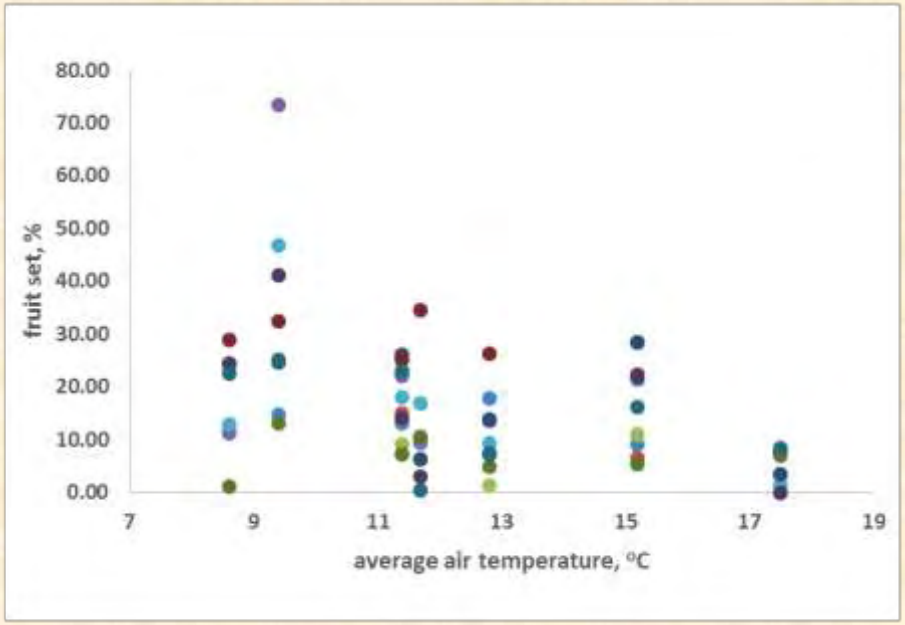

fruit set
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
2
4
6
8
10
12
minimal temperature of air

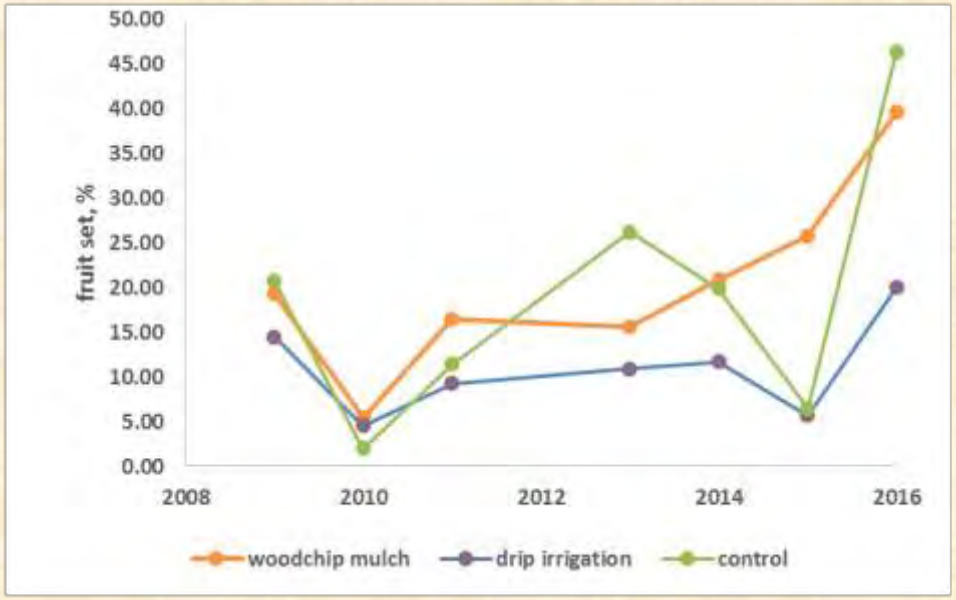

fruit set, %
30.00
25.00
20.00
15.00
10.00
5.00
0.00
2008
2010
2012
2014
2016
woodchip mulch
drip irrigation
control

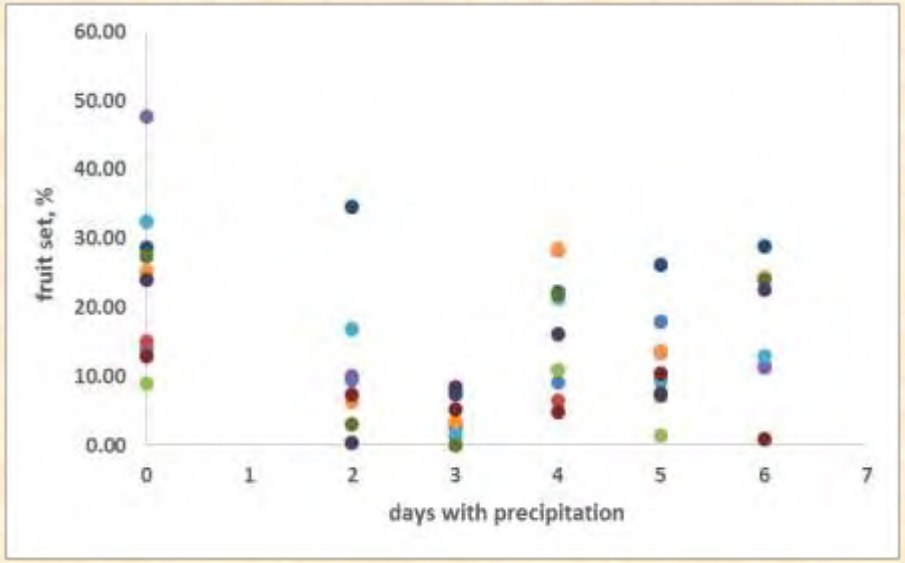

fruit set, %
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
7
9
11
13
15
17
19
average air temperature, °C

# Latvijas Zemais

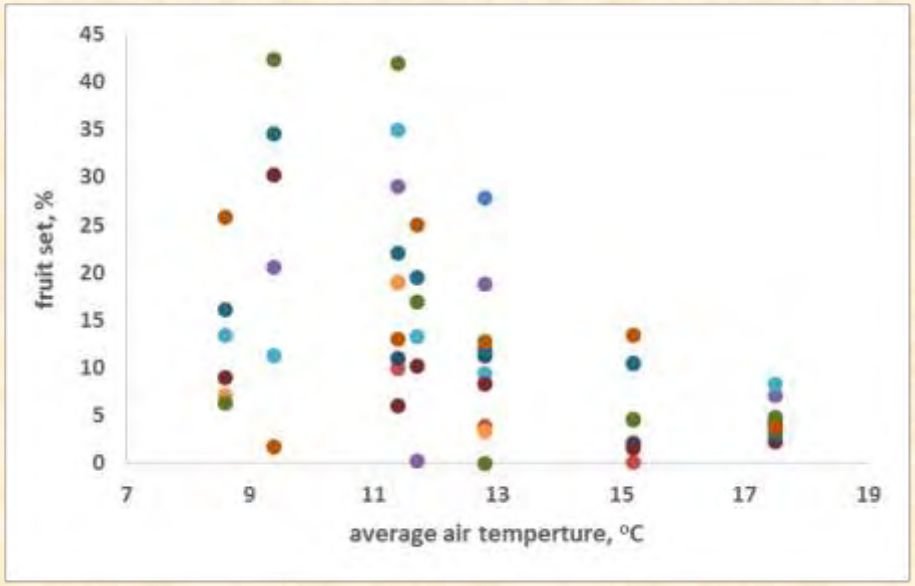


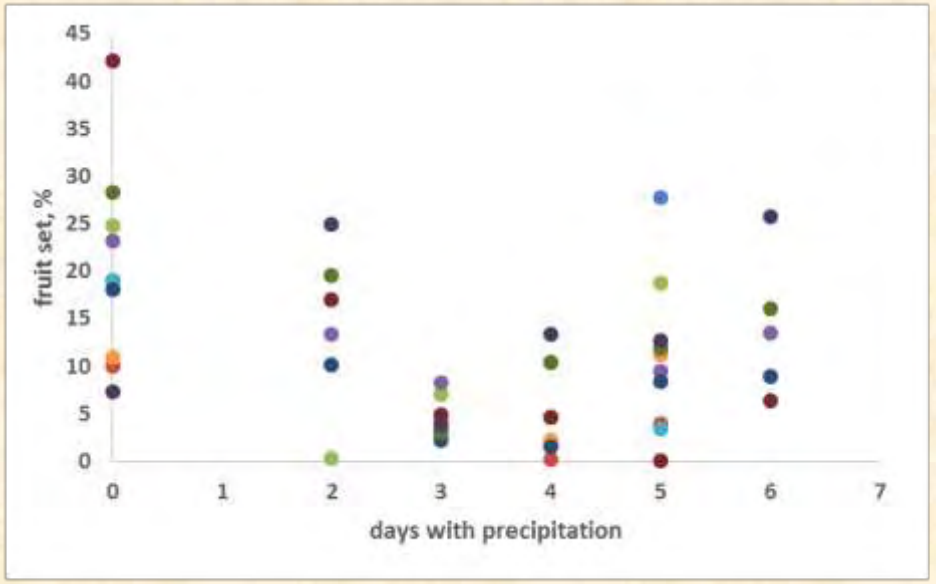



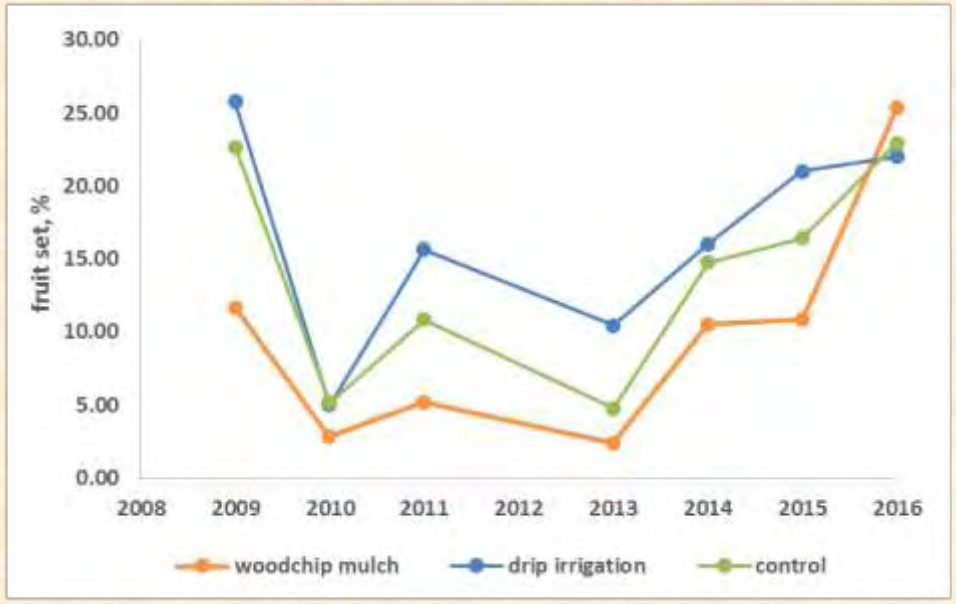



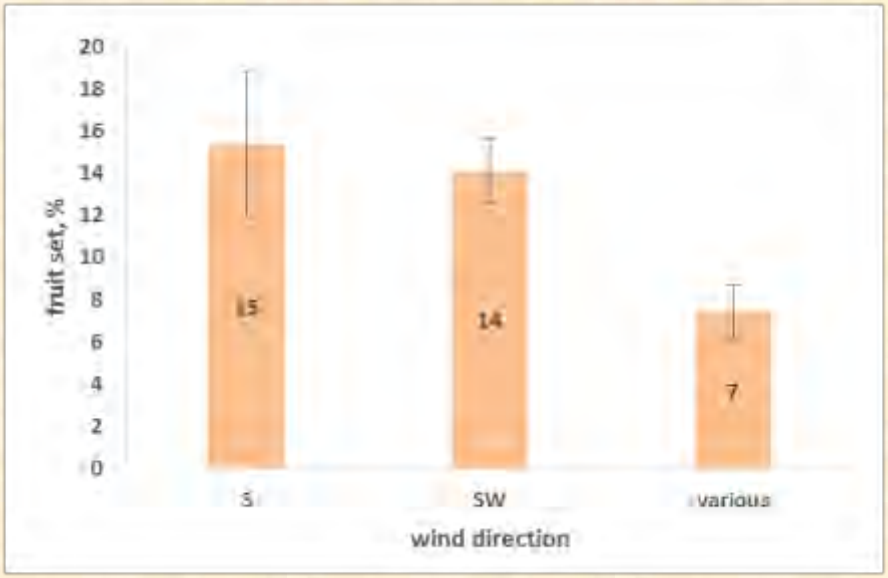



# Orlica

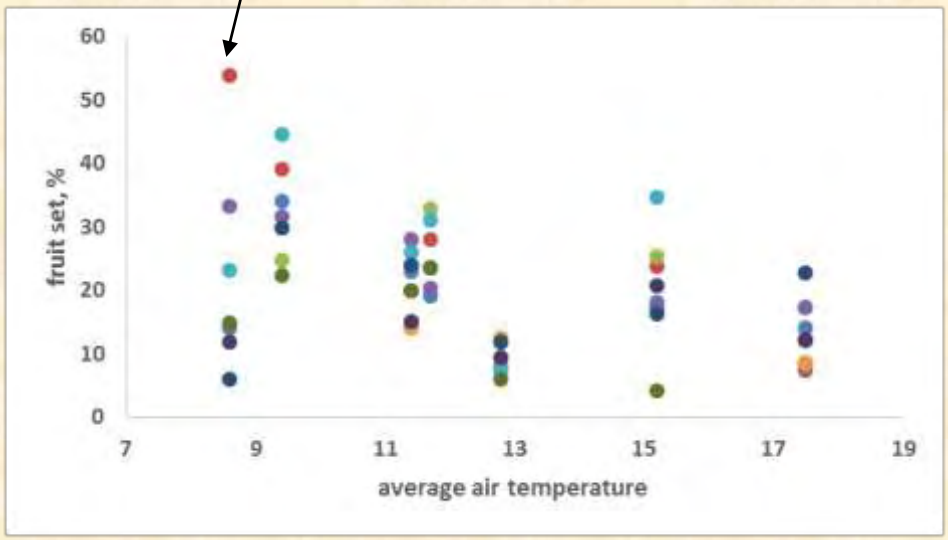

fruit set, %
45
40
35
30
25
20
15
10
5
0
7
9
11
13
15
17
19
average air temperture, °C

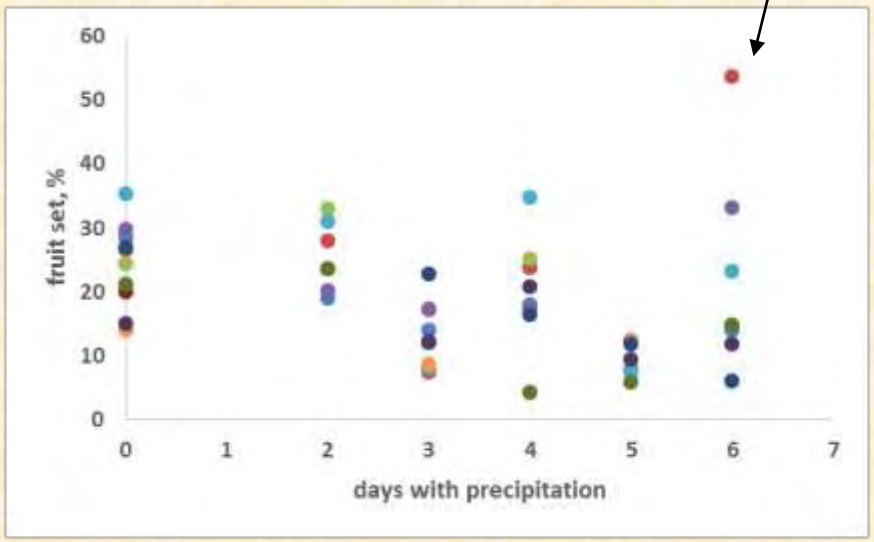

fruit set, %
45
40
35
30
25
20
15
10
5
0
0
1
2
3
4
5
6
7
days with precipitation


fruit set, %
30.00
25.00
20.00
15.00
10.00
5.00
0.00
2008
2009
2010
2011
2012
2013
2014
2015
2016
woodchip mulch
drip irrigation
control


fruit set, %
20
18
16
14
12
10
8
6
4
2
0
15
14
7
S
SW
various
wind direction

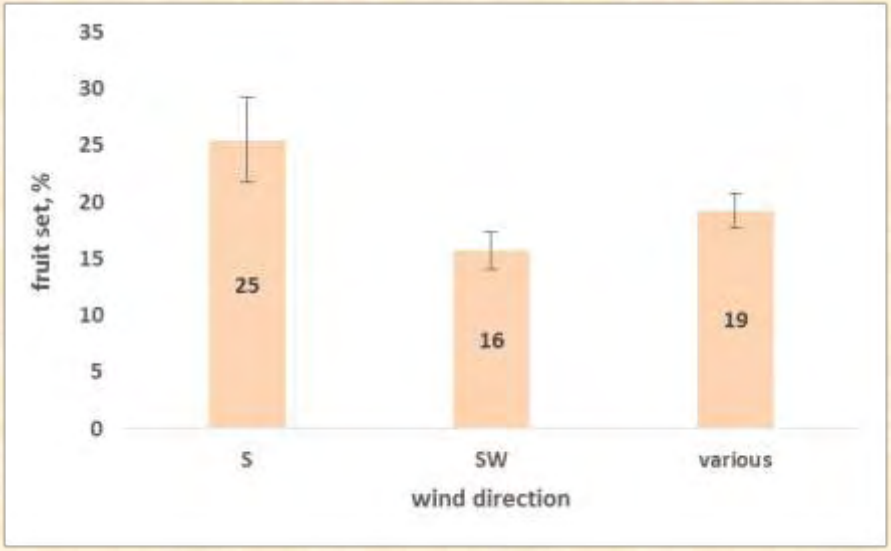
# Bulatnikovskaya









# Conclusions

- Fruit set of sour cherries showed tolerance to short-time dropping of temperature til 0 $^{o}$C. However, fruit set decreased when average temperature raised to 17.5 $^{o}$C during flowering time. ‘Bulatnikovskaya’ was influenced by raising temperature less than other cultivars.

- The effect of other factors differed depending on the cultivar:

  - fruit set of landraces ‘Latvijas Zemais’ and ‘Zentenes’ was not affected by wind direction instead to introduced cultivars ‘Orlica’ and ‘Bulatnikovskaya’ ,

  - fruit set of ‘Zentenes’ and ‘Bulatnikovskaya’ was improved by set of bumblebee hive,

  - fruit set of ‘Orlica’ was improved by drip irrigation.

# Acknowledgement

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# Thank you for the attention!