



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Federal Department of Economic Affairs,  
Education and Research EAER

**Agroscope**

# Thinning trials in Switzerland 2017

## Thomas Kuster

1.3.2018

[www.agroscope.ch](http://www.agroscope.ch) | good food, healthy environment



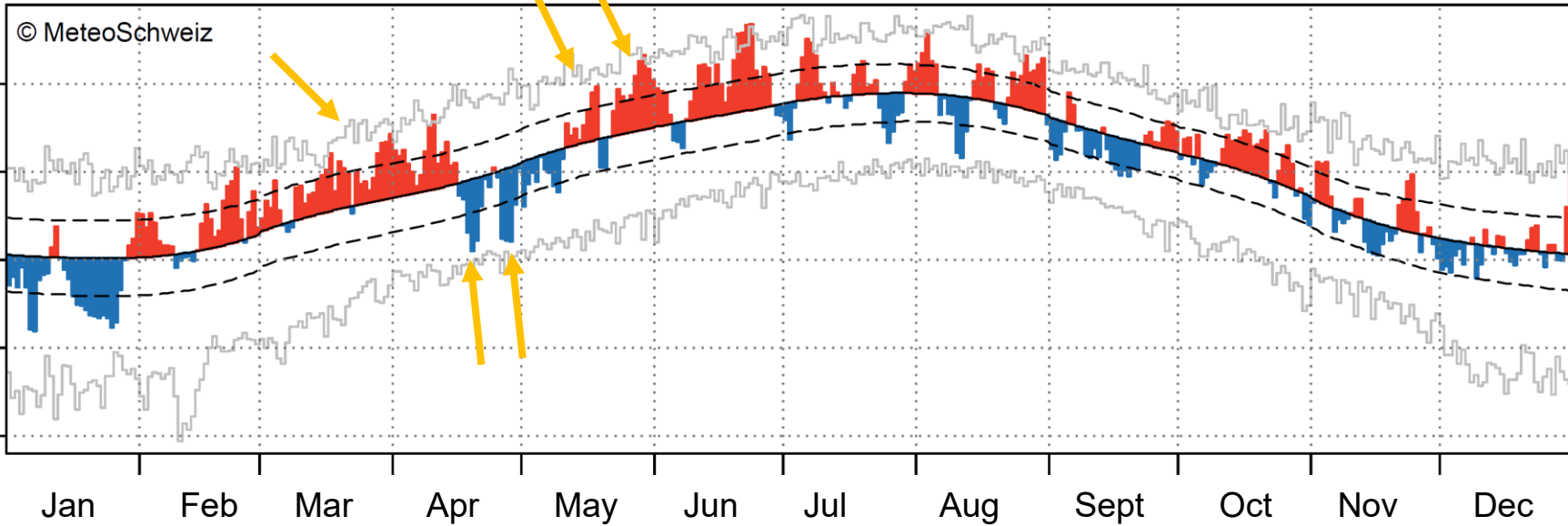
# Thinning trials 2017

- Golden: thinning trial with Brevis
  - Evaluation of the new model «BreviSmart»
  - Evaluation of the new PS meter
- Ladina: pilot trial with BA and Brevis
  - Agroscope's new fire blight tolerant apple variety (Topaz × Fuji)
  - Evaluation of different thinning agents
- Williams: thinning trial with BA and Brevis
  - Trial was cancelled due to heavy frost damage





Average daily temperatures (°C)



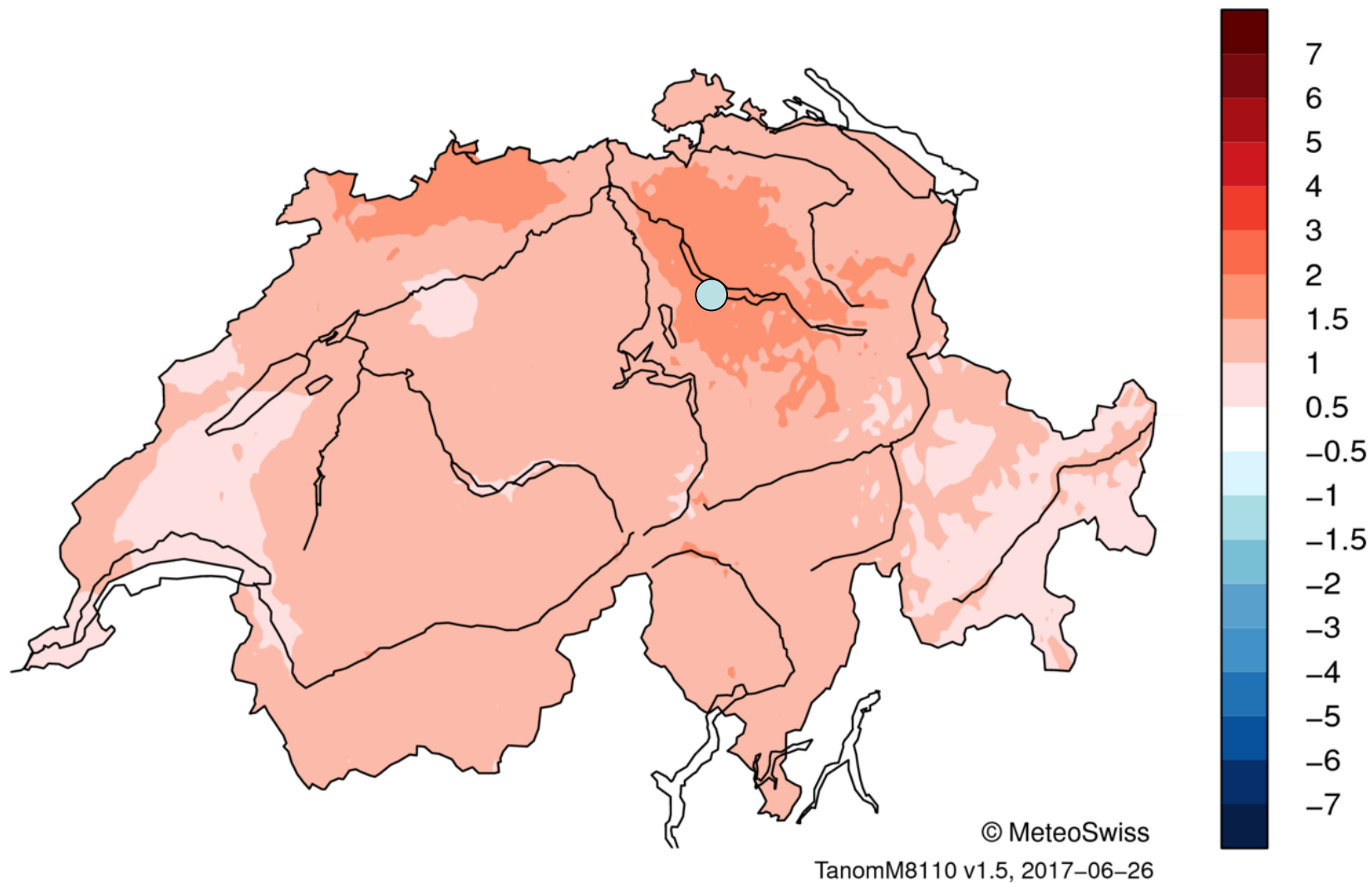
- High temperatures in early spring:  
one of the earliest flowering ever recorded
- 18.-22. April: strong frost nights with minimum temperatures of  $-2.0$  to  $-5.5^{\circ}\text{C}$
- In some regions: lowest temperatures in late April since measures started
- End of April: heavy snowfall
- High temperatures during thinning period



Schöneberg/ZH at 715 m, 28. April 2017  
(picture: Daniel Gerstgrasser/MeteoSchweiz)

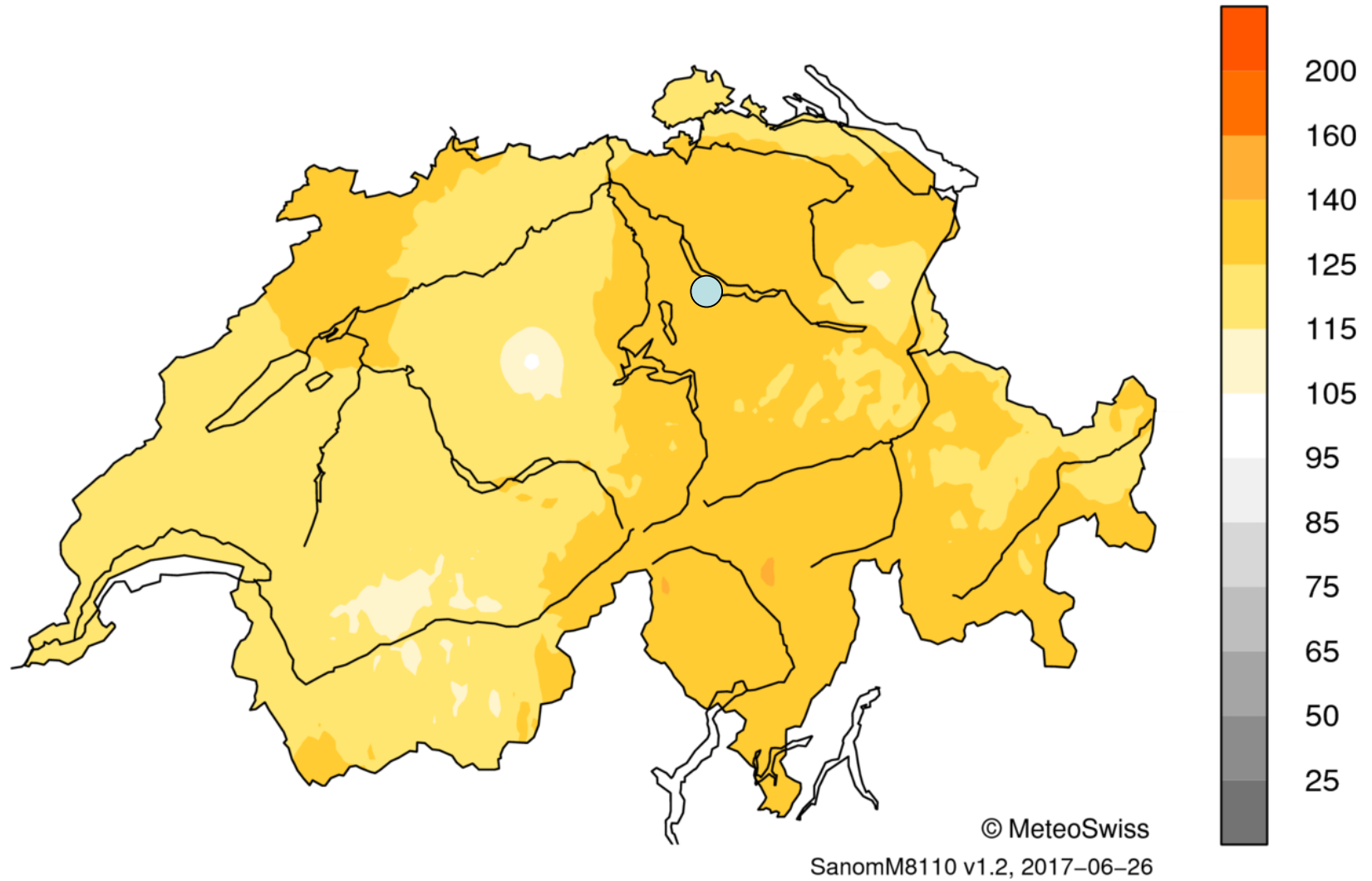


# Monthly Temperature Anomaly (degC) May 2017 (Ref. 1981–2010)





# Monthly Sunshine Duration Anomaly (%) May 2017 (Ref. 1981–2010)





# BreviSmart Wädenswil 2017

## Factors: Night temperature, radiation

Description	2017										
	9 May	Wednesday 10	11	Friday 12	13	14	Monday 15	16	Wednesday 17	18	
T night	7.9	5.9	12.7	15.5	11.5	13.7	12.2	12.2	14.9	17.4	
T night last 5 days	9.5	9.1	8.6	9.2	10.3	10.7	11.9	13.1	13.0	12.9	
T night next 5 days	10.7	11.9	13.1	13.0	12.9	14.1	14.8	15.8	16.9	17.4	
Radiation	1490	2544	1423	1646	2213	1335	2339	2575	2567	1783	
Radiation next 5 days	1863	1832	1791	2022	2206	2120	2209	2098	1940	1783	
brevissmart golden 6 mm	4.0	4.4	4.8	4.0	5.1	7.6	10.2	14.8	16.8	18.2	
brevissmart golden 8 mm	9.1	9.4	9.8	9.1	10.1	12.7	15.2	19.9	21.8	23.2	
brevissmart golden 10 mm	12.5	12.9	13.3	12.5	13.6	16.1	18.7	23.3	25.3	26.7	
brevissmart golden 12 mm	14.3	14.7	15.1	14.3	15.4	18.0	20.5	25.1	27.1	28.5	
brevissmart golden formula (13 mm)	14.7	15.0	15.4	14.7	15.7	18.3	20.8	25.5	27.4	28.8	
brevissmart golden 14 mm	14.6	14.9	15.3	14.6	15.6	18.2	20.8	25.4	27.3	28.8	
brevissmart golden 16 mm	13.2	13.6	14.0	13.2	14.3	16.8	19.4	24.0	26.0	27.4	
brevissmart golden 18 mm	10.3	10.6	11.0	10.3	11.3	13.9	16.4	21.1	23.0	24.4	

## Predicted thinning efficacy (%)



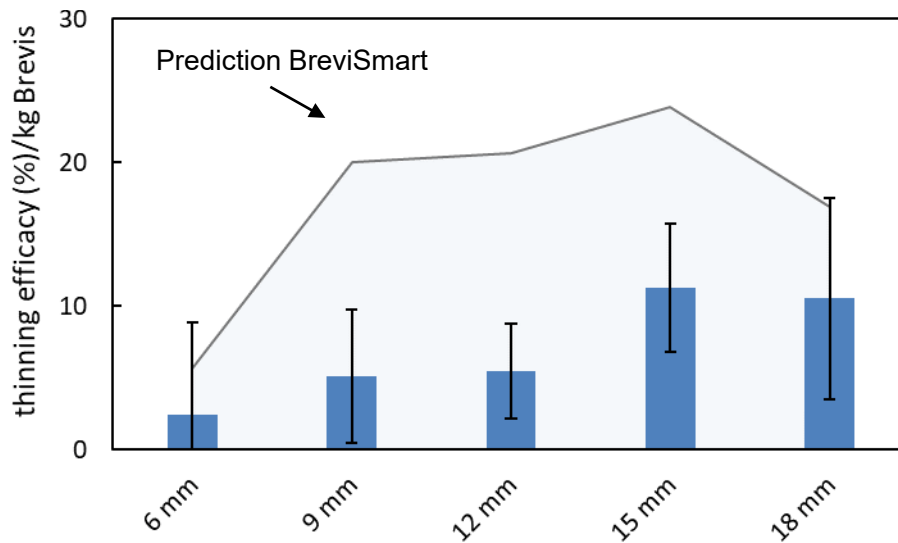
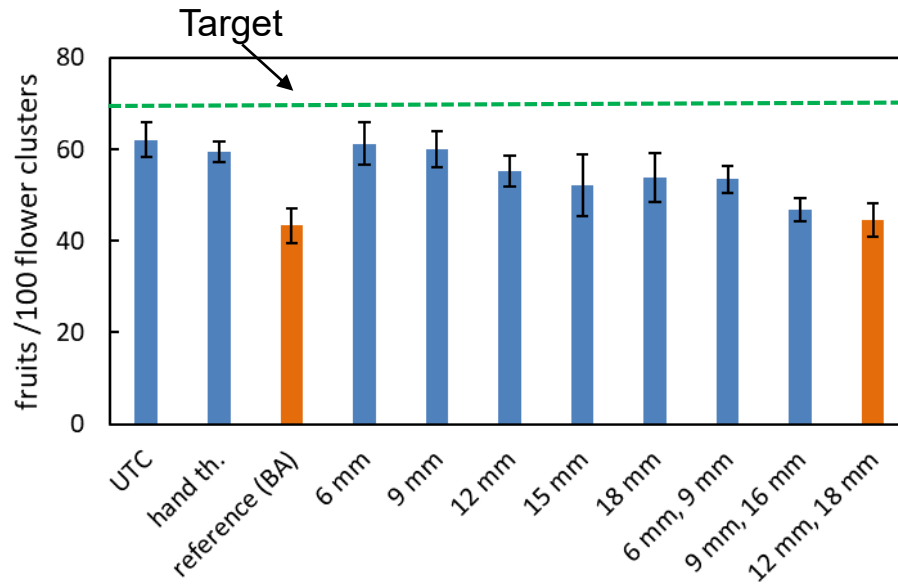
# Treatments Golden trial

- Untreated control (UTC)
- Hand thinning
- Reference treatment with BA at 16 mm (22.5; NAD cancelled due to frost)
- 1.65 kg/ha Brevis at 6 mm (10.5.)
- 1.65 kg/ha Brevis at 9 mm (16.5.)
- 1.65 kg/ha Brevis at 12 mm (18.5.)
- 1.65 kg/ha Brevis at 16 mm (22.5.)
- 1.65 kg/ha Brevis at 18 mm (26.5.)
- 1.65 + 1.65 kg/ha Brevis at 6 & 9 mm (10.5., 16.5.)
- 1.65 + 1.65 kg/ha Brevis at 9 & 16 mm (16.5., 22.5.)
- 1.65 + 1.65 kg/ha Brevis at 12 & 18 mm (18.5., 26.5.)
- 1.65 + 1.1 kg/ha Brevis at 9 & 16 mm (16.5., 22.5.)





# Results Golden trial 2017



- General low efficacy of Brevis
- Big variation between and within trees in crop load and fruit growth
- **Crop load: UTC < target**
- no increase in fruit quality observed



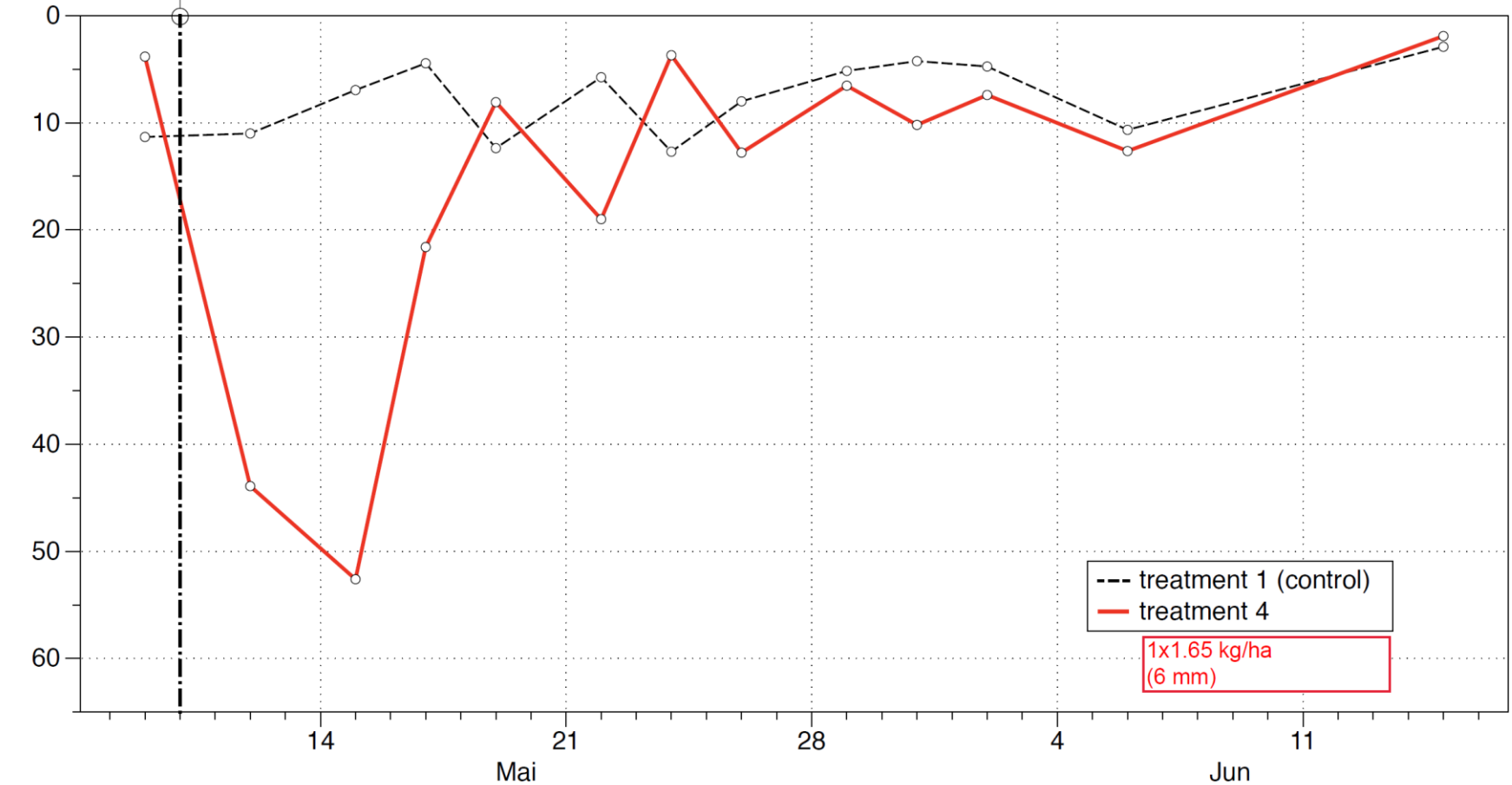


# PS measurements I



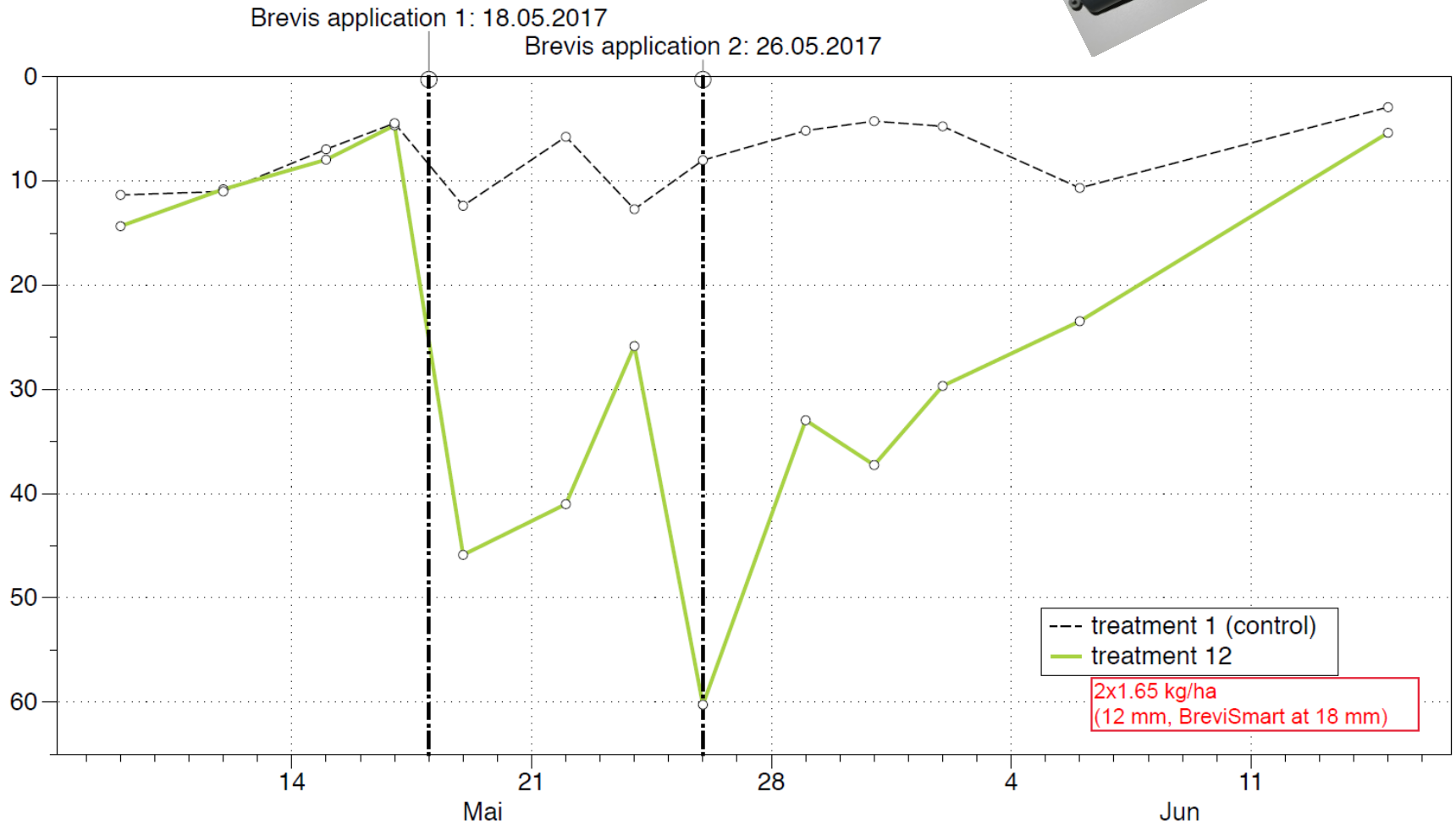
Chlorophyll fluorescence after Brevis treatment

Brevis application: 10.05.2017





# PS measurements II





# Ladina pilot trial

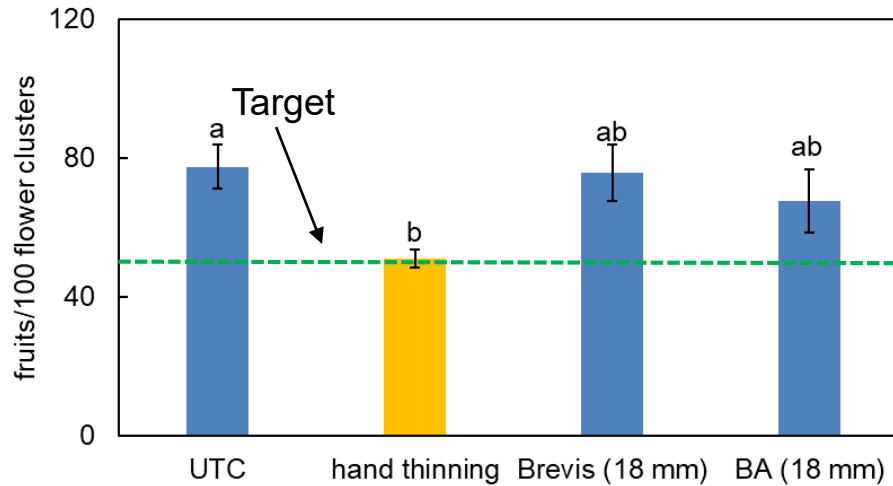


- Treatments
  - Untreated control
  - Hand thinning
  - Reference treatment with BA at 18 mm (22.5; NAD cancelled)
  - 1.65 kg/ha Brevis at 18 mm (16.5.)
- Planted in 2014

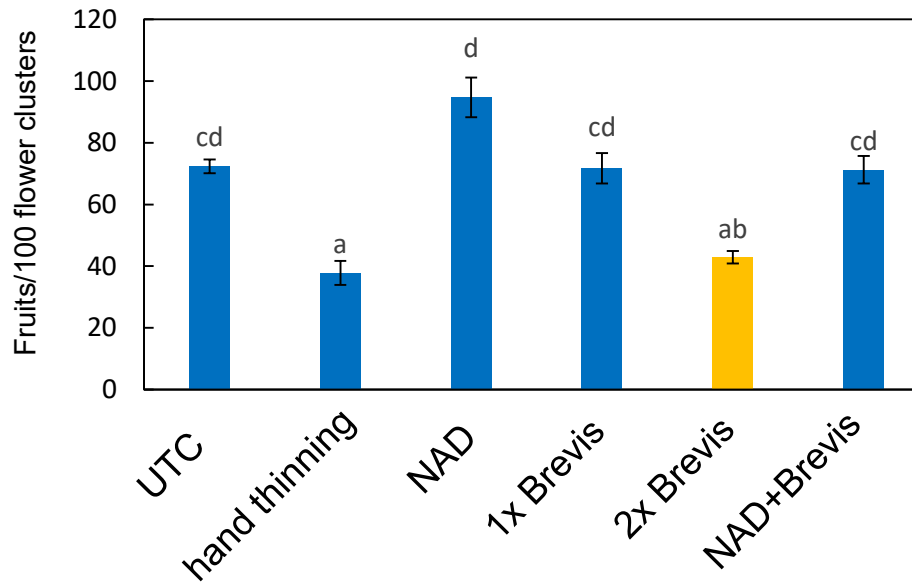


# Results Ladina trial 2017

2017



2015



- No thinning efficacy of Brevis and BA
- Temperatures were rather high before/after application
- Application was probably late (16-20mm) due to:
  - bad weather conditions (4 days of rain)
  - quick fruit growth
- 2015: Good thinning efficacy with Brevis



# Summary and outlook 2018

- Thinning efficacy of Brevis was too low in both trials even though weather conditions with high temperatures were very favourable for the application of Brevis
  - Golden: crop load in UTC < target
    - → enough assimilates even after Brevis was applied
    - → no need for the trees to drop fruits
  - Ladina: application was probably too late
    - Frost, high global radiation
- Trials 2018:
  - Using Brevis and BA on Conférence
  - Testing different formulations of BA
  - Breaking biennial bearing with Regalis and GA<sub>47</sub>
  - Reducing fruit russeting with GA<sub>47</sub>



# Thank you for your attention

**Thomas Kuster**

[thomas.kuster@agroscope.admin.ch](mailto:thomas.kuster@agroscope.admin.ch)

**Agroscope** good food, healthy environment

[www.agroscope.admin.ch](http://www.agroscope.admin.ch)

