

1. Chemical fruit thinning

08-01-2019



Worldwide Expertise for Food & Flowers

Who am I?

- René Bal
- Consultant fruit growing
- Specialisme apples/pears
- Own fruit company South-West Netherlands
- Arrange Apple and Pear day the Netherlands
- Field demonstrations of spraying techniques
- Consultancy of fruit growers
- Support coöperatives by technical introduction new varieties (Sweet Sensation, Kizuri, etc),

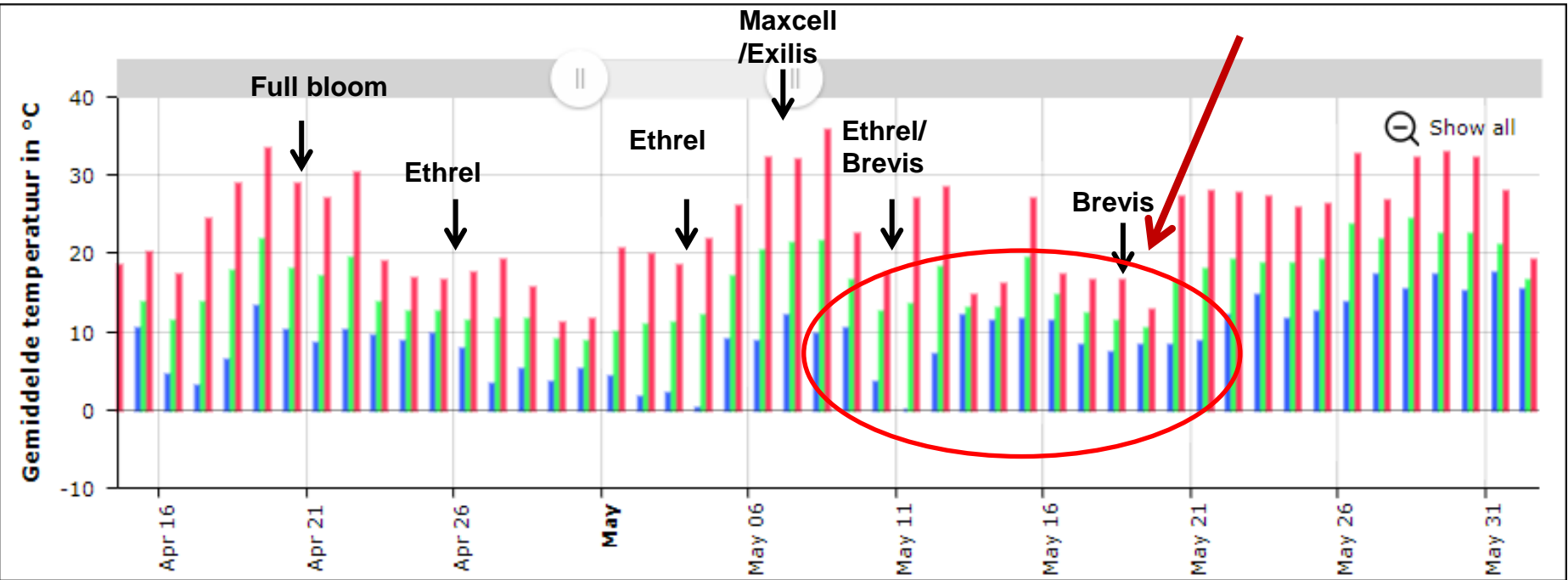


Parameters 2018?

- Production 2017 + vitality flowerbuds big differences
- Frost in March → “ Late” explosive spring development
- In the average good flowerbuds
- Spring start = dry (excl. S-W Netherlands).
- Chemical thinning → depending variety and plot
- Experiences Brevis = depending variety and plot
 - (Brevis / 6-Ba not aloud in Denmark)

Climate 2018

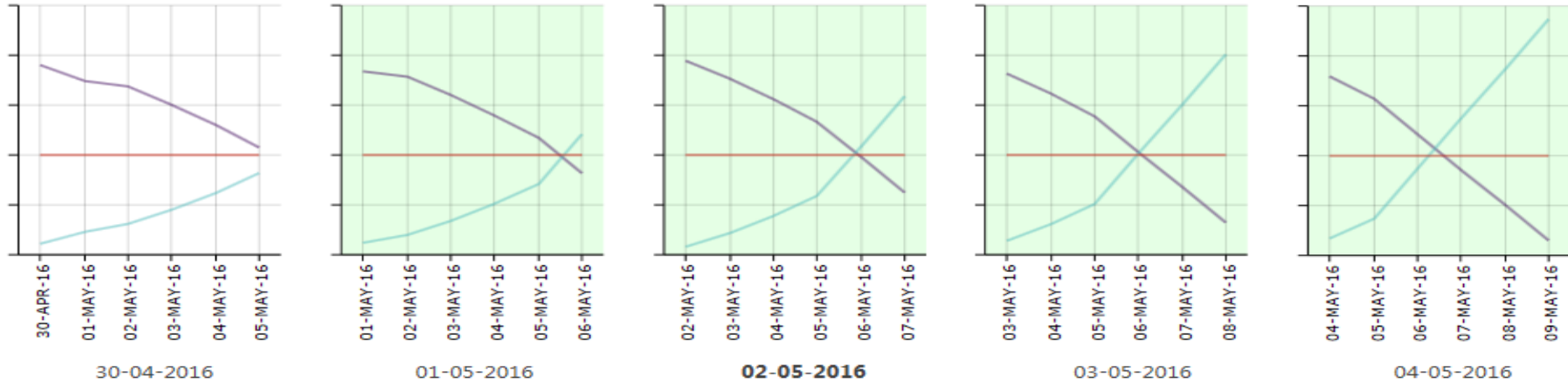
Brevis in cold period



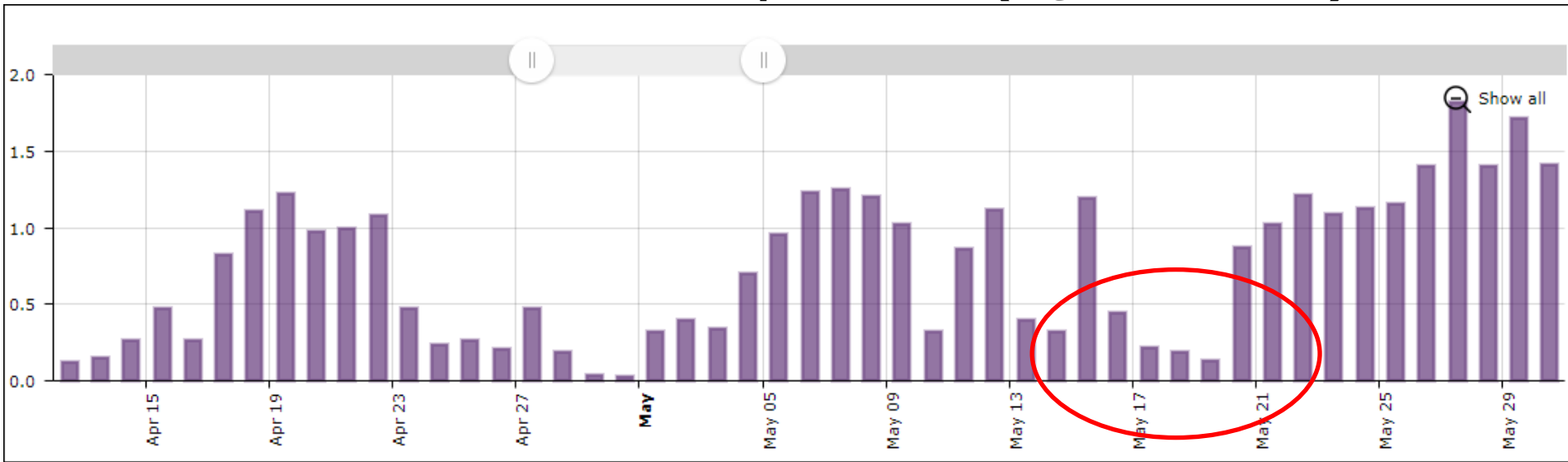
Egg cell/ pollentube growth (Apple)



Eicel Vitaliteit Afname - Pollenbuisgroei



RV?!? 60-70% optimal Combination Temp/RH. (QMSfruit)



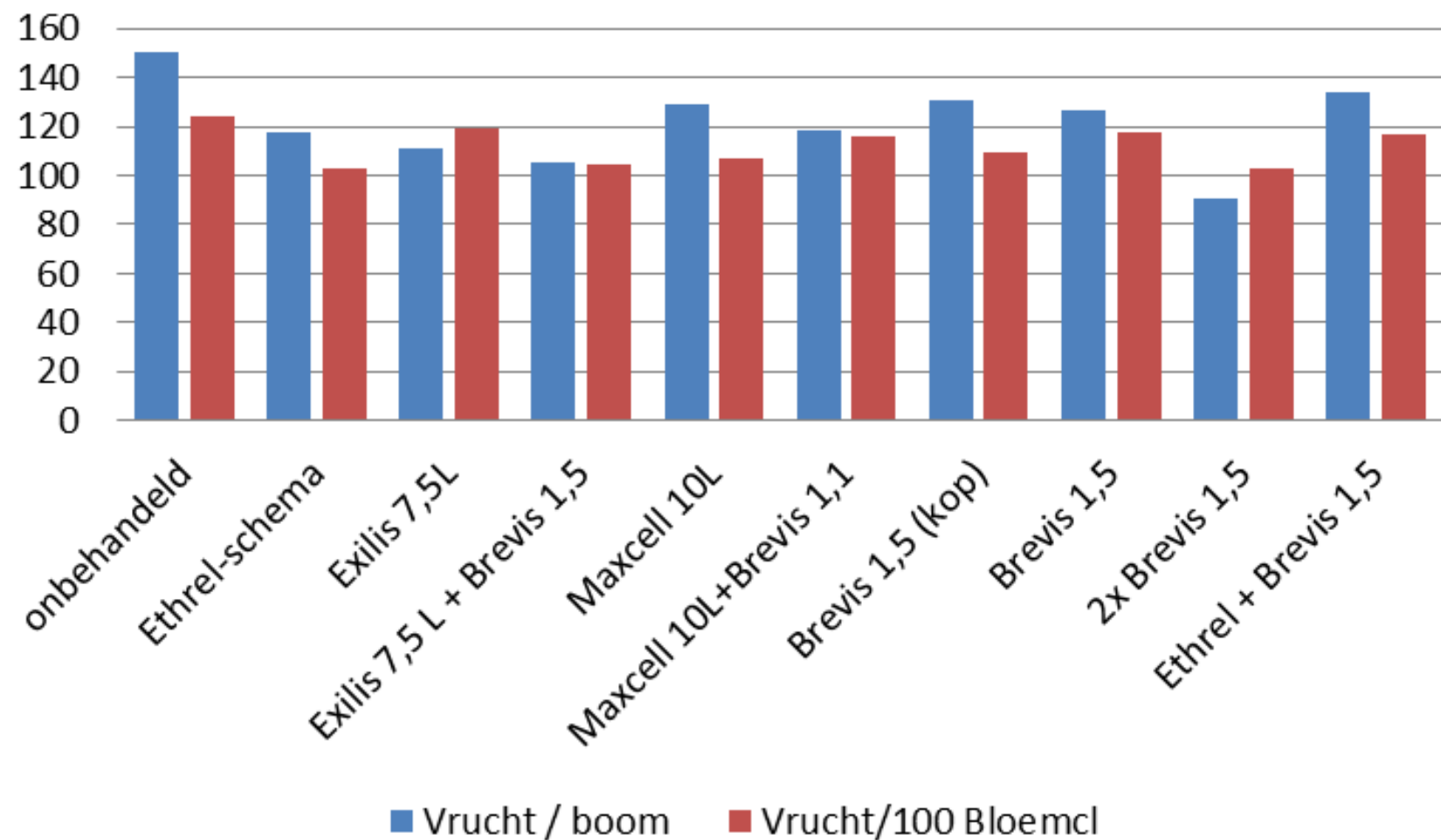
Low temp + low RH is low uptake.

Climate 2018 (Apple)

- After frost 2017 strong bloom 2018
- 30-40% of orchards overthinning!
- Short/strong blooming → NO fruitset
 - Humidity in blooming?
 - No pollination?
 - Strong effects ATS / Ethefon!

Trial scheme (treatments 10-11 hours)

	<u>1 week after flowers</u> <u>3-5-2018</u>	<u>8-12 mm</u> <u>7 & 11-5-2018</u>	<u>14-16 mm</u> <u>18-5-2018</u>	<u>Flowerbuds</u>
1	Untreated			121.7
2	Ethefon scheme (3x)			117.3
3		Exilis 7,5 L		97.0
4		Exilis 7,5 L	Brevis 1,5 kg	105.2
5		Maxcell 10 L		123.6
6		Maxcell 10 L	Brevis 1,1 kg	107.7
7		Brevis 1,5 kg only top		121.6
8		Brevis 1,5 kg		112.8
9		Brevis 1,5 kg	Brevis 1,5 kg	99.8
10	Ethrel 0,25 L	Brevis 1,5 kg		116,7



BreviSmart

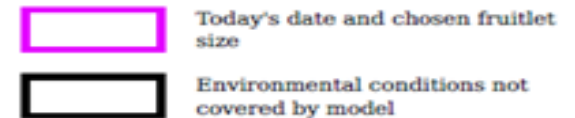
Subject. 8, 1x Brevis, 11-5-2018
Effect = 16%

Expected efficacy is **average** if standard dose of BREVIS® is used. Proceed with your normal program.

Date	TN	R	6	7	8	9	10	11	12	13	14	15	16
11/05/2018	12.7	24.9											
12/05/2018	15.7	25.7											
13/05/2018	11	6.4											
14/05/2018	15.3	17.6											
15/05/2018	14.4	27.5											
16/05/2018	10.1	24.5											
17/05/2018	7.3	27.6											
18/05/2018	7.8	18											
19/05/2018	9.9	8.6											
20/05/2018	14.1	28.3											
21/05/2018	15.2	24.3											
22/05/2018	15.7	26.6											
23/05/2018	16.8	24											
24/05/2018	16.7	22.5											
25/05/2018	17.2	18.7											
26/05/2018	16.7	23.2											

= 20-25%

The table above shows information based on 1Kg/Ha rate of Brevis®



Conclusions

- 6-BA treatments → climate perfect!
- No differences quality → optimal natural junedrop
- Ethefon → expected effect
- Brevis treatments becarefull
 - Results = 16% effective
 - Practice → Many top of the tree treatments
 - Relative strong effect in trial 2018



2. Stemphylium



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Motivation

- Past few years high stemphylium pressure
- Degree of infestation very
- Where does the infection come from?
- When does the infection take place.
- How can we prevent the orchard without chemical products?
- Less products available in Denmark.

		Beginning of may	Mid may	End of may	Beginning of june	Mid june	End of june	2nd week july		
1.	Untreated									
2.	Fontelis	Doorspuitschema							0,75 L/ha	
3.	Bayer schedule plus Purshade	Switch	Luna Exp.	Switch	Luna Privilege	Folicur SC	Folicur SC	Luna Exp.		plus Purshade
4.	Bayer schedule plus Purshade	Switch	Luna Exp.	Switch	Luna Privilege	Folicur SC	Folicur SC	Luna Exp.		
5.	Sercades (0,25 L/ha)	Doorspuitschema							0,25 L/ha	
6.	Silacon (0,5 L/ha)								0,5 L/ha	
7.	Optisyl (0,5 L/ha)								0,5 L/ha	
8.	Isabion (2,5 L/ha)	x	x		x				2,5 L	
9.	Si-syngenta	x	x		x				0,5 L/ha	

Biostimulants/ Nutrients?

Soil cover and windowtrial

- Howitec soil cloth
- windowtrial met Switch
 - Infection period stemphylium

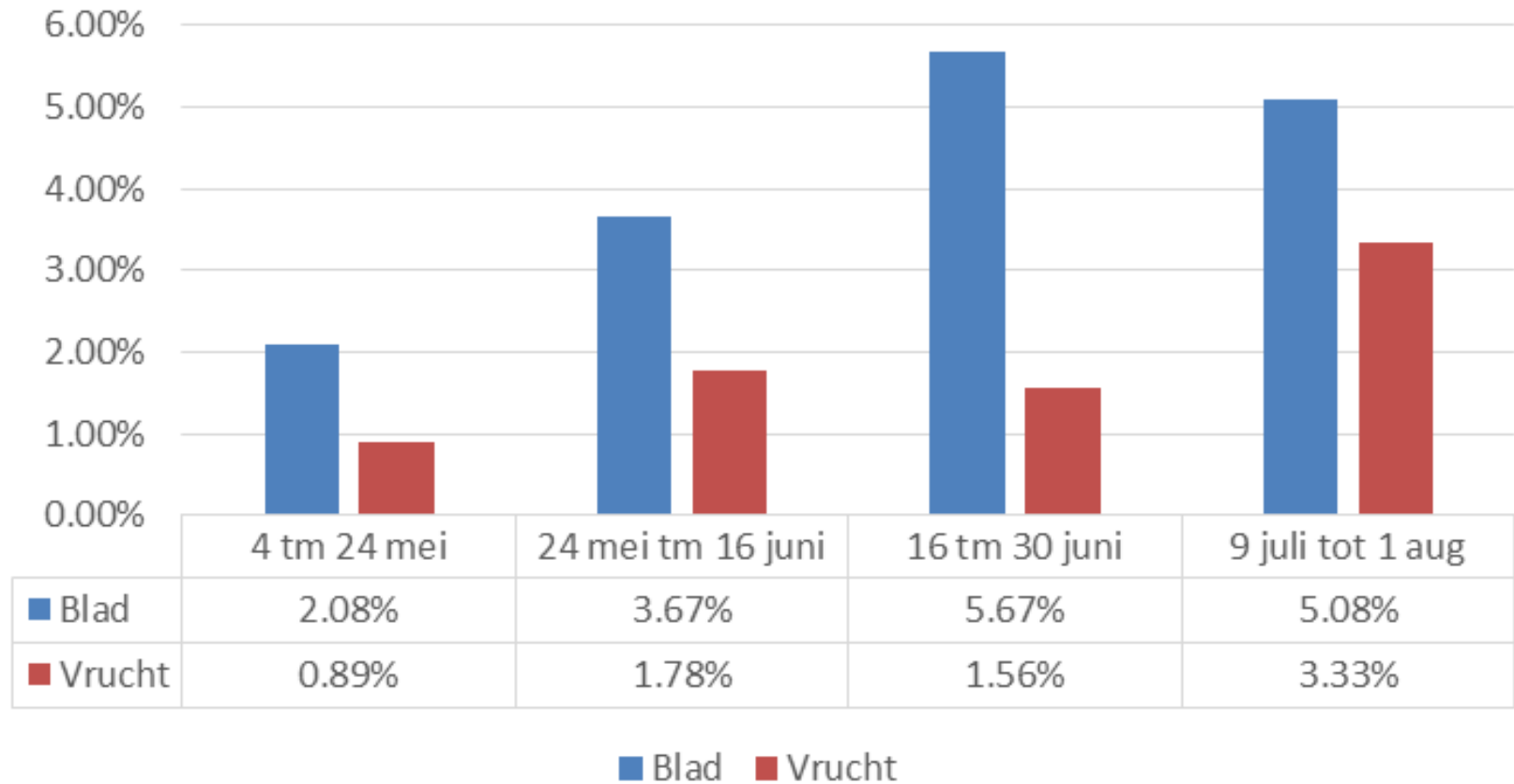


<u>Date</u>	<u>temperature</u>	<u>RV</u>	<u>Crop stage</u>	<u>weathertype</u>	<u>comments</u>
4/5	13°C	48%	7-8 mm vrucht	Sunny, increasing temp.	
13/5	14°C	62%	10-12 mm	Sunny, increasing temp	
24/5	17°C	75%	14-18 mm	Partly clouded	
6/6	17-21°C	70%	17-23 mm	Sunny, increasing temp	<u>Fast increasing temp.!! Sweltering weather</u>
16/6	20°C	60%	22-30 mm	sunny/partially cloudy	Rain in the evenings
30/6	18 °C	74%	27-34 mm	rainy	
9/7	18 °C	80%	34-38 mm	Some showers	
18/7	22 °C	62%	36-45 mm	Tropical	mon-wed >30°C, then around 25°C
1/8	17 °C	65%		Sunny day	

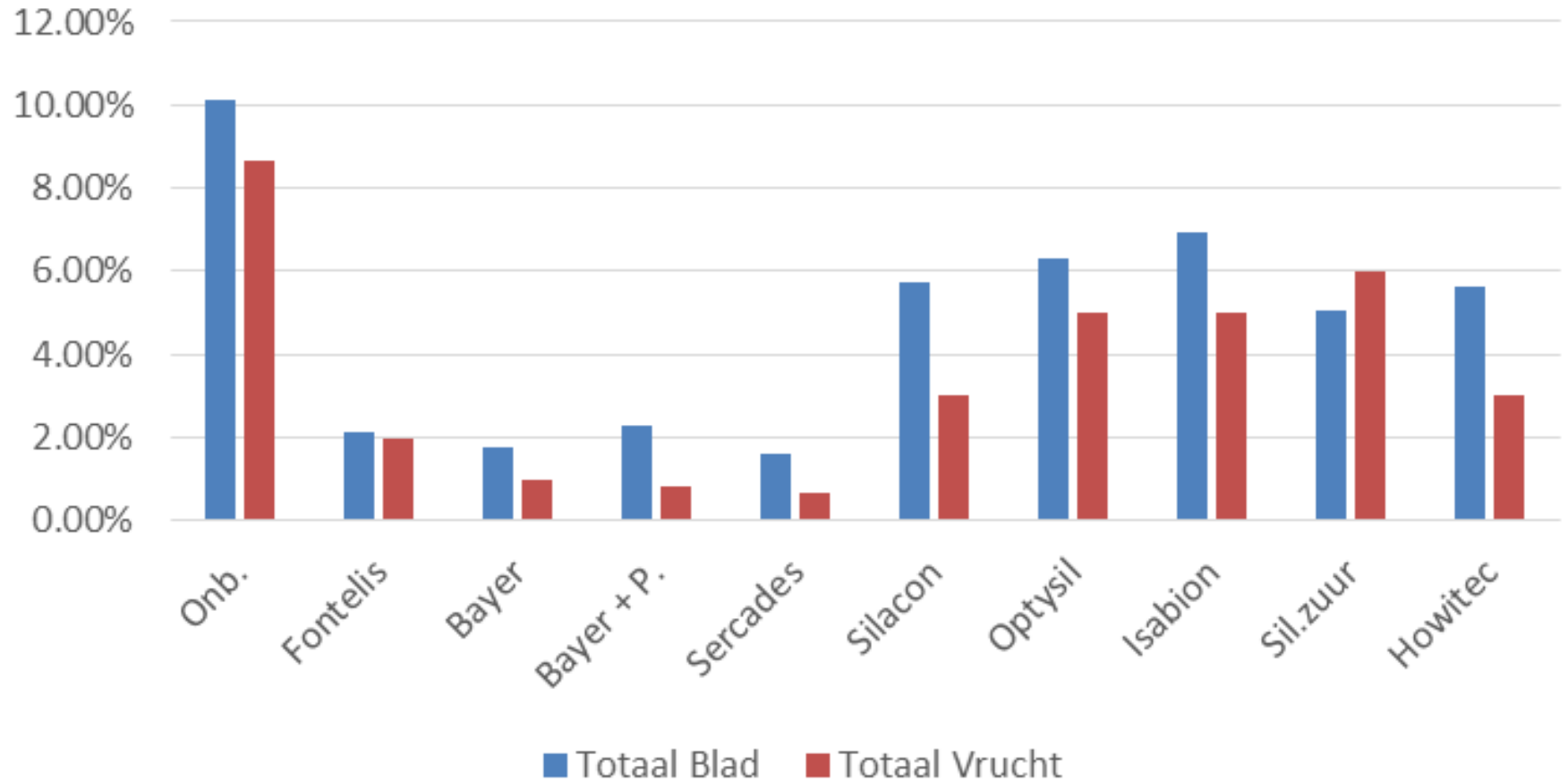
Products

- Fontelis: penthiopyrad; =>carboximide
- Sercades: Xemium
- Luna Experience: Fluopyram en Tebuconazool
- Switch: Fludioxonil en Cyprodinil
- **Purshade: claypreparate, absorbs UV**
- **Isabion: Derived from animal collagen.**
- **Silacon, optysil and Si-Syngenta: silicon based products**

Infection period



Results before harvesting 2016





Results 29/8

- Chemicals have a good effect
- Effect of biostimulants is smaller
- Soil covering has a good effect
 - Decrease infection pressure with optimal conditions:
 - Clean rootzone, active soil life
- Purshade (Kaoline) small effect on fruit infestation
- Silacon → there is an effect! (2017 effect on sugar %)

Results

- Stemphylium needs to be handled early on in the season → 6 weeks after full bloom.
- Biostimulants in combination with chemicals is the best strategy
- Stemphylium still a hard story to understand...

Advice

- Clean soil surface (infection source)
- Fertilisation and ratio between elements
- What with silaçon?
- Usage of strong products
(e.g. Sercades/Switch) early on in the season
- Good moisture balance in soil

3. Red pear varieties



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2015 setup pilots 2015

- **Sweet Sensation**
- **Regal Red**
- **Qtee (Celina)**
- Dicolor
- Queens Forelle
- **Gräfin Gepa**
- **Migo**
- Red Modoc (Lowry 2)
- Lowry 1

Qtee (Celina)

- ABCz Group/ Kris Wouters
- Cultivation in Belgium
- Harvest date: 14th of august
- 17.5 kg/tree
- 5.6 kg/ ½cm² / 11.2 brix
- 50% colored fruits/ 25-35% blush





Early Desire (Gräfin Gepa)

- Frupaks Vernooij
- Cultivation in The Netherlands
- Harvest: 16/8 Krabbendijke, 25/8 NH
- 10 kg/tree, Zld: difference between C and Eline
- 6.7 kg/ ½cm² / 13 Brix
- 85%/90% Colored fruits
- 70-75% blush



Migo (Cepuna)

- Fruitmasters
- Cultivation in The Netherlands
- Harvest: 30/8 ZLD 18/9 NH
- 10,9 kg ZLD / NH: 12 kg C / 14.4 Eline
- NH: 78 mm / 4.8 kg/ ½cm² / 13 Brix
- Water is essential, ZLD: emergency ripening



Sweet Sensation

- The Greenery
- Cultivation in the Netherlands/Belgium/Italy/...
- Harvest: 10/8 and 18/9
- 6.75 / 7.5 kg per tree
- 5.6 / 4.8 kg/½cm²
- 15.2 / 12.3 Brix
- 85% / 90% colored fruits
- 40% blush





Regal Red

- René Nicolai
- Small scale cultivation in NL/Belgium
- Comparable to Sweet Sensation
- Harvest: 10/9 / 18/9
- 4.25 kg / 7.5 kg per tree
- Yield in Krabbendijke is low due to alterbearing
- 5.43 / 4.8 kg/½cm²
- 15.24 / 12.53 brix
- 90% colored fruits/ 60(ZLD) and 70% blush





Red Modoc & Lowry 1

- René Nicolai, 1 lot in Belgium
- Harvest: 8/10 in Krabbendijke
- Lowry 1: 7.7 kg/tree
- Red Modoc: 12.1 kg/tree
- % Blush: Lowry 1 → 70% / Red Modoc 50%
- 99% / 90% colored fruits





Conclusions

- What's the trade strategy of the company?
- Is there a license partner in Denmark?
- Some earlier varieties, interesting Denmark!
- Every variety cultivation technical issues...
 - → challenges!

4. New techniques



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Target Delphy

- Select the best techniques
- Undependantly development/collecting of data
- Focus → practice results
- Grower need to trust the system
- More data = more overyear dicisions



QMS fruit → Delphy development

- Cultivation technique dashboard

The screenshot displays the Delphy cultivation technique dashboard. The interface includes a dark red sidebar with navigation options: Home, Weergegevens, Grafieken, and a list of specific metrics (Eicel Vitaliteit, Groeiactiviteit, Oogstprognose, Koude uren, Stress, Chemische dunning, WELTE, RIM, Beheer, and Contact). The main content area has a top navigation bar with 'Contact', 'Applications', 'BAL', and 'Log Out'. Below this, a 'Regio' dropdown is set to 'Buren'. The dashboard is divided into two main sections: 'Weer afgelopen dagen' (Weather from the past days) and 'Voorspelling' (Forecast). Both sections contain a table with the following columns: Datum, Gem. Temp, Min. Temp, Max. Temp, Neerslag, and Min. RV.

Weer afgelopen dagen

Datum	Gem. Temp	Min. Temp	Max. Temp	Neerslag	Min. RV
26-09-2017	13	9.3	18.7	0	75
27-09-2017	13.7	7.7	21	0	67
28-09-2017	15.7	12.9	20.9	7.2	80
29-09-2017	16.7	11.3	22.8	1.8	81
30-09-2017	13	6.7	15.5	5.8	100
01-10-2017	13.1	7.3	17.4	0	66

1 - 6

Voorspelling

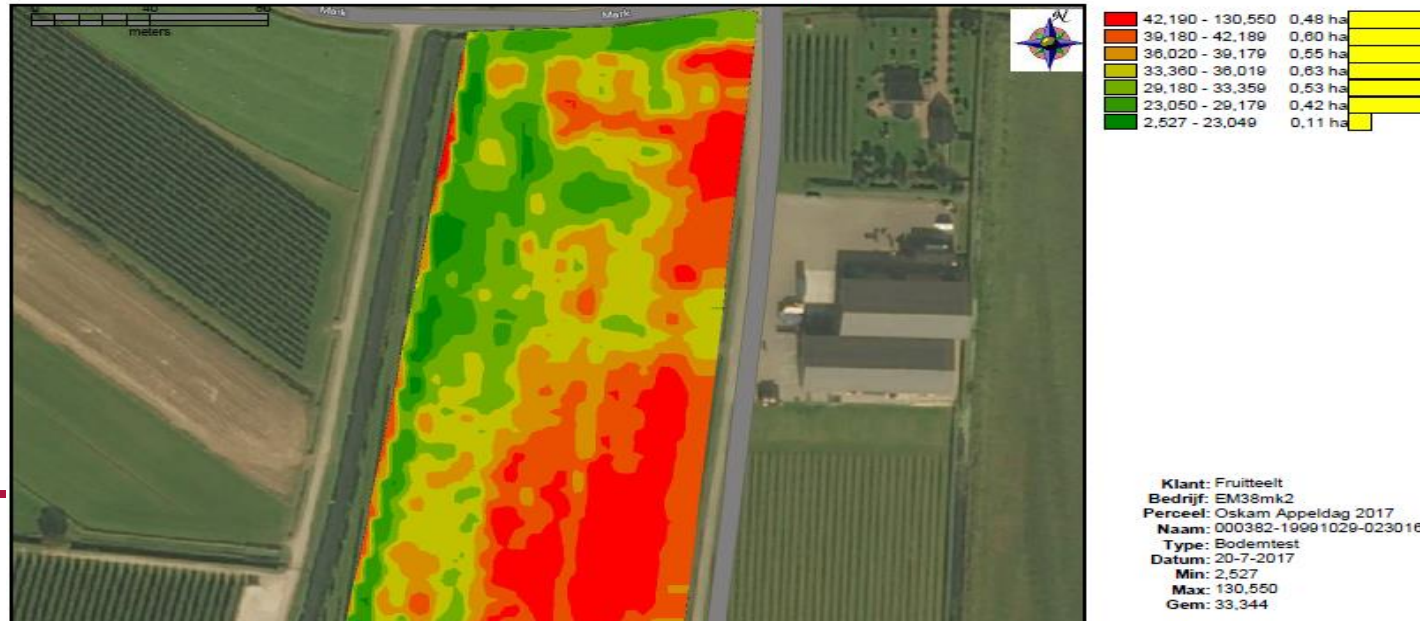
Datum	Gem. Temp	Min. Temp	Max. Temp	Neerslag	Min. RV
02-10-2017	14	13	15	1	73

EM-38

- EC
- Clay / Sand?

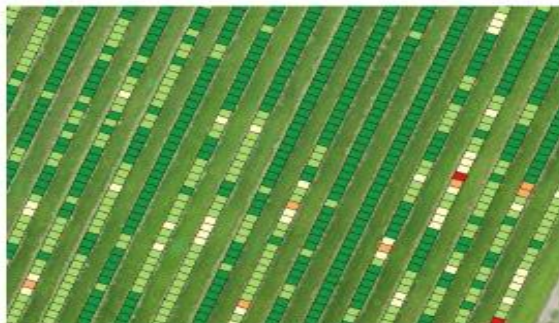


Oskam Appeldag 2017: Bodemtest
QP0_5(mS/m)



Date: 26-08-2017
Dronewerker: Aurea Imaging
UAV: senseFly
Camera: RGB

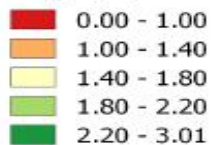
Area of Interest



0 6 12 18 24 30 m

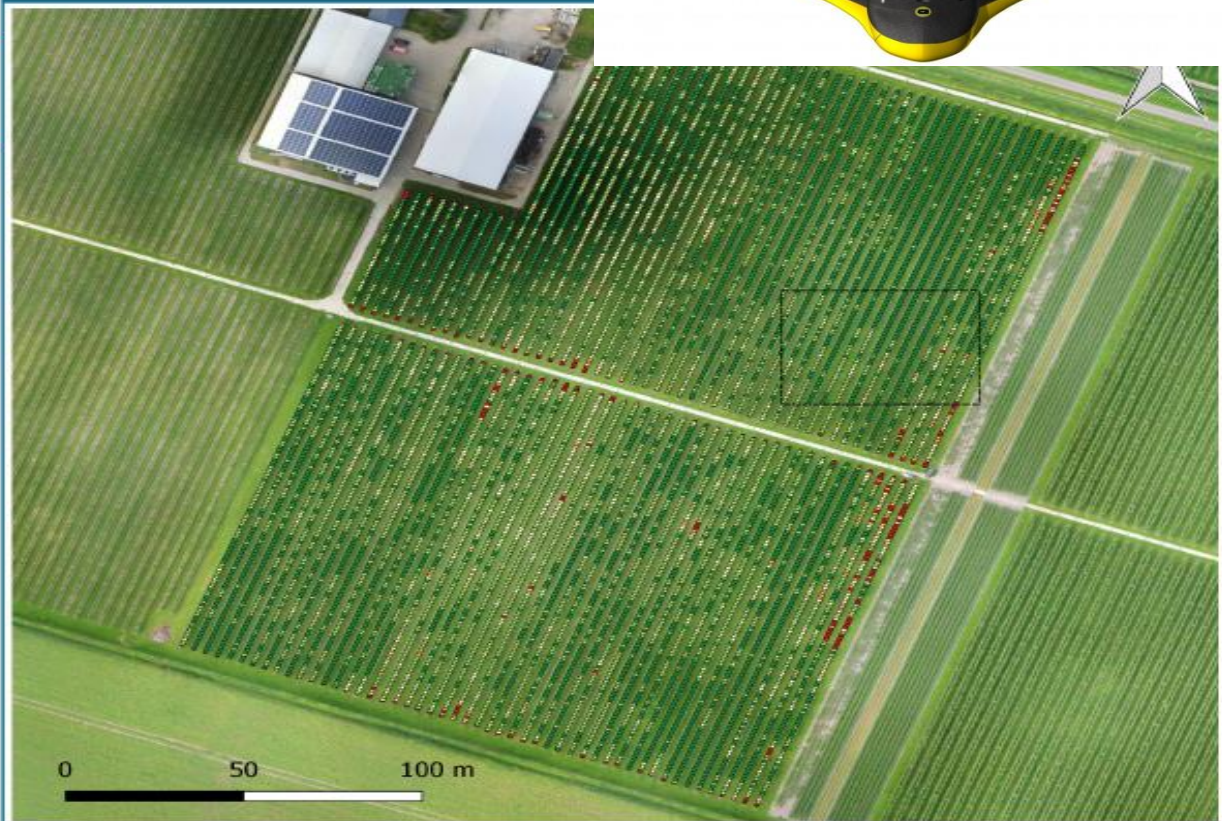
Legend

Height (m)



Ebee

Peren Heig



681450E

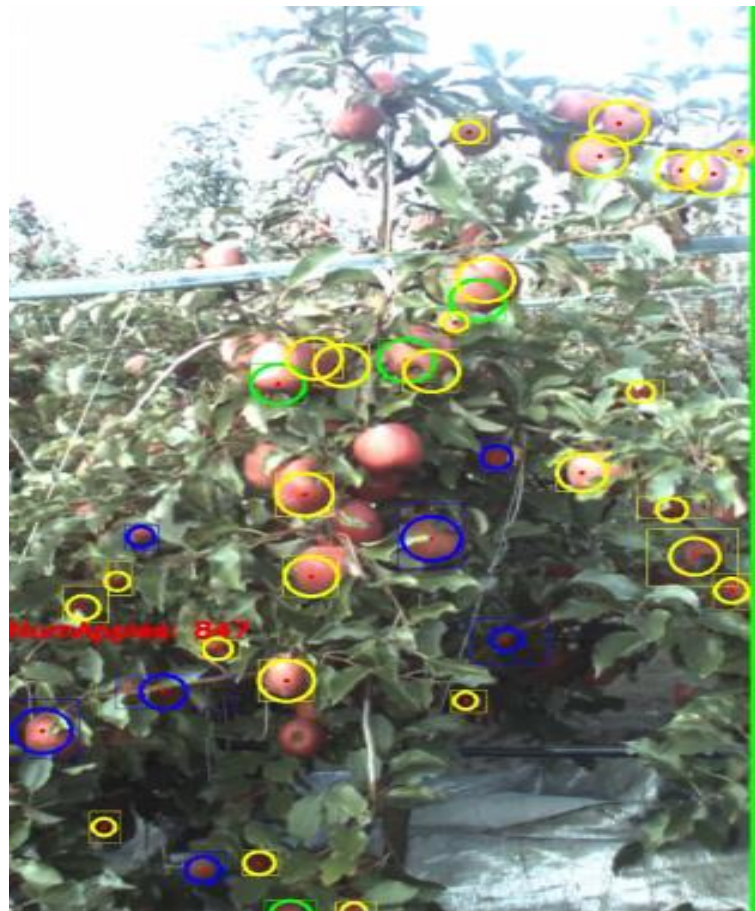
681600E

681750E

Registration of data

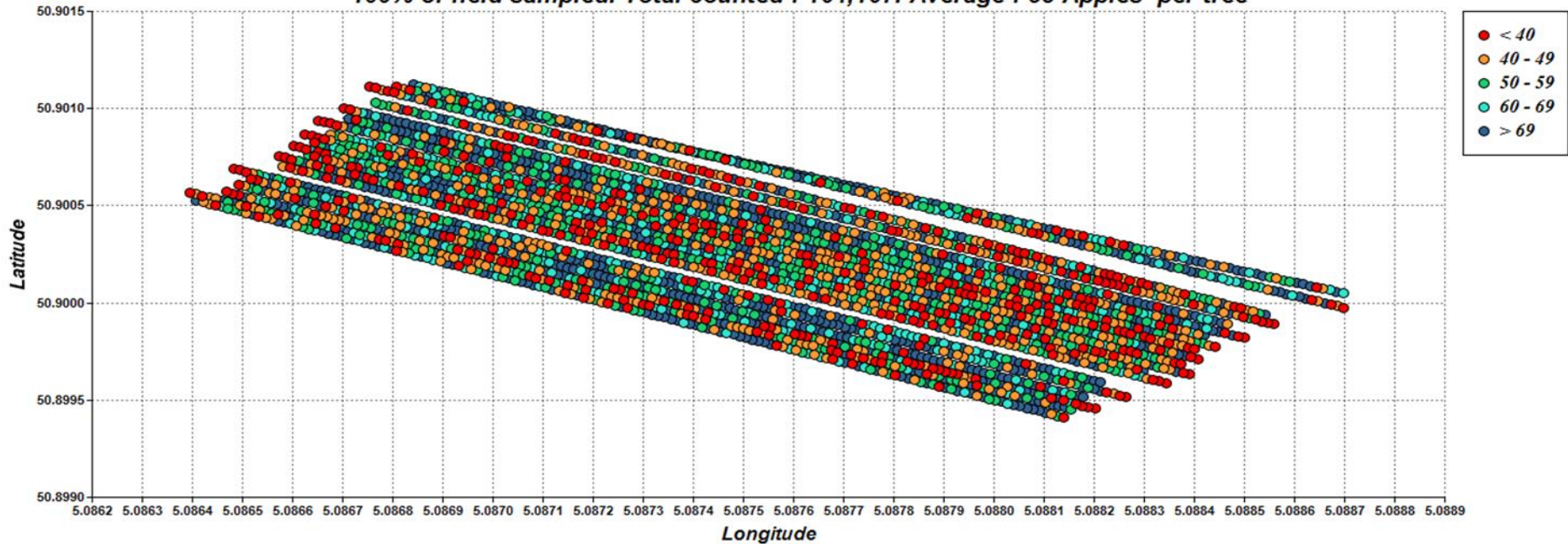
- Type of orchard
- Soil
- Plant distances
- Varieties
- Ages
- Growth curve/fruit size
- Blooming, vigor, tree curve

Cultivation technical decisions!
Implementation of data in one system



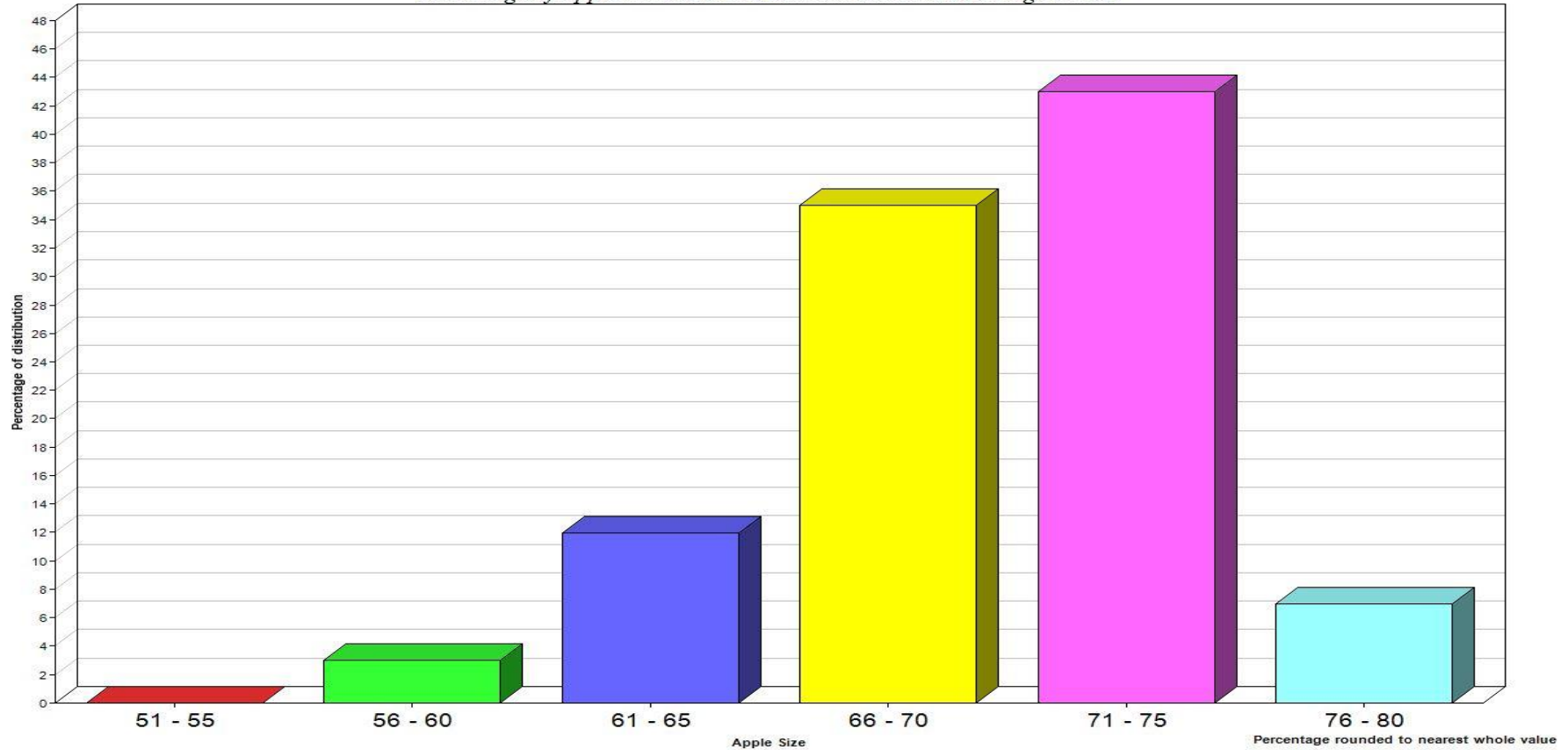
Results IFV

*Total number of Apples in boer links detected on 26 June 2017
100% of field sampled. Total counted : 164,167. Average : 58 Apples per tree*



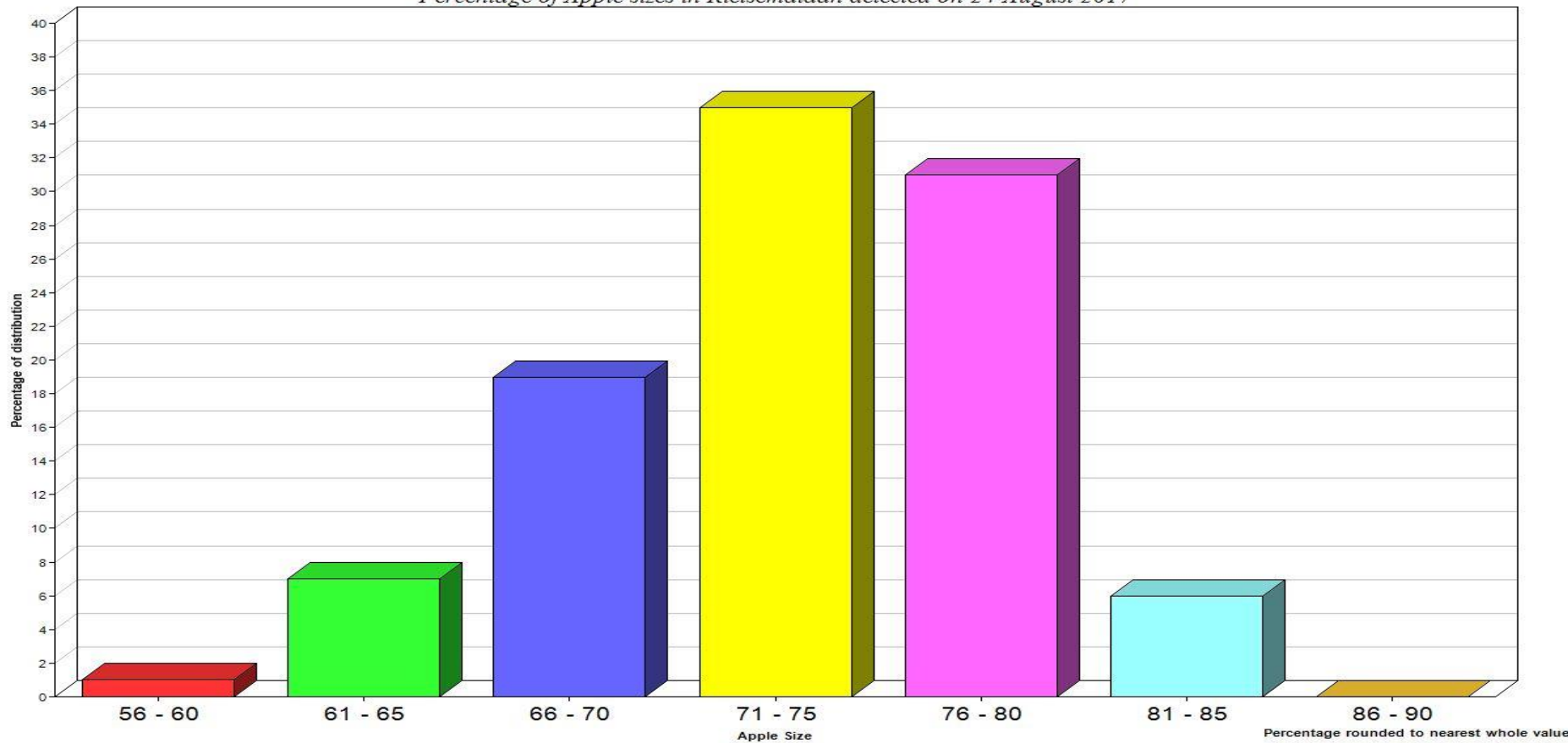
19 august

Percentage of Apple sizes in Rietsemalaan detected on 19 August 2017

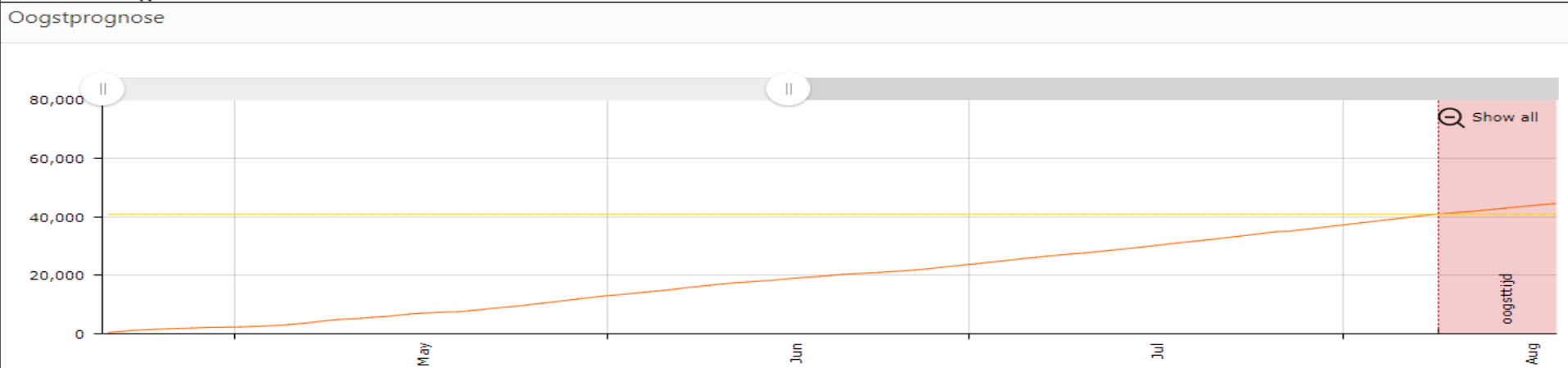
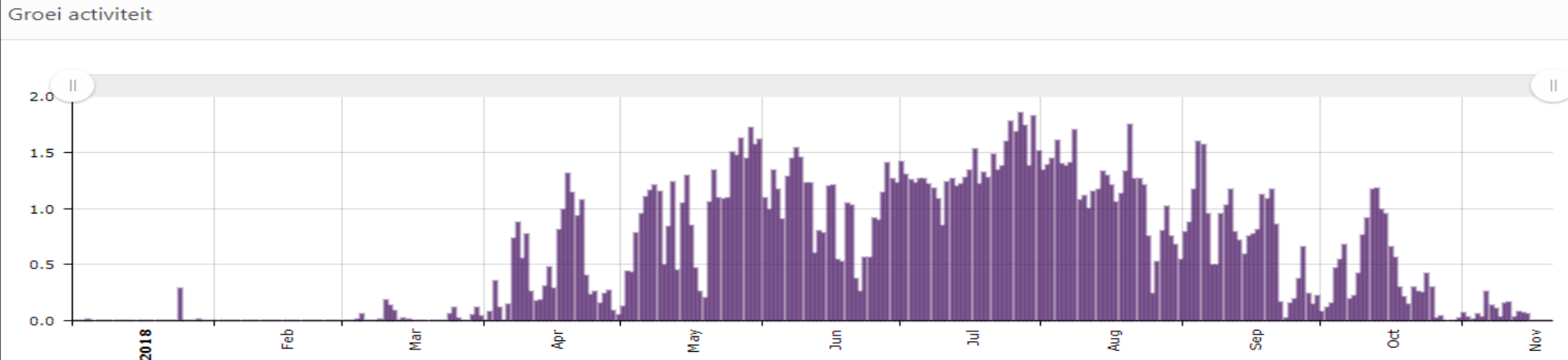


24 augustus.

Percentage of Apple sizes in Rietsemalaan detected on 24 August 2017



Stress / harvesting prognos

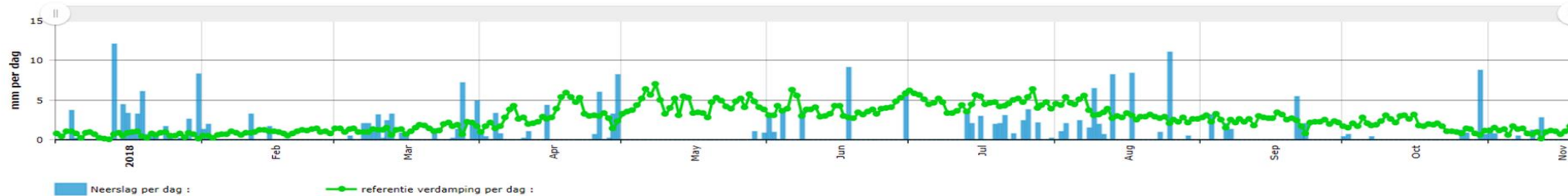


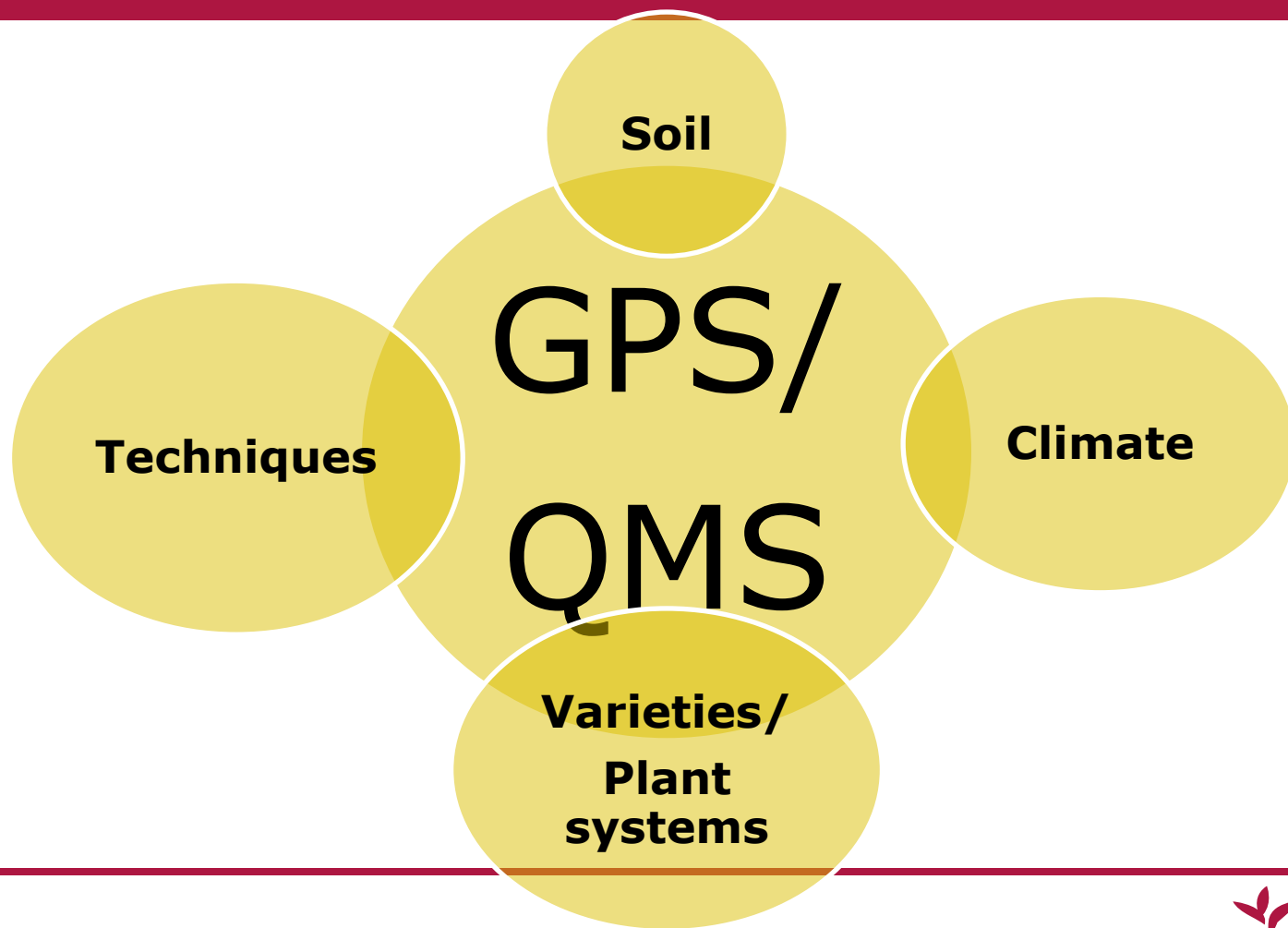
Smart irrigation



- 24 hours/7 day irrigation management
- Probes measurement

Referentie verdamping





27 june 2019 The Appelday
Van de Brink fruit, 't Goy, NL



Thank you for your attention!
René Bal r.bal@delphy.nl



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