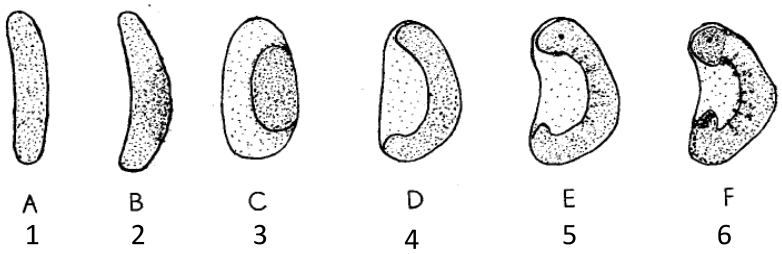
Apple Sawfly Biology

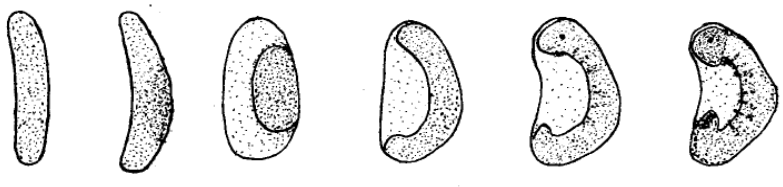
Field observations & expert advice



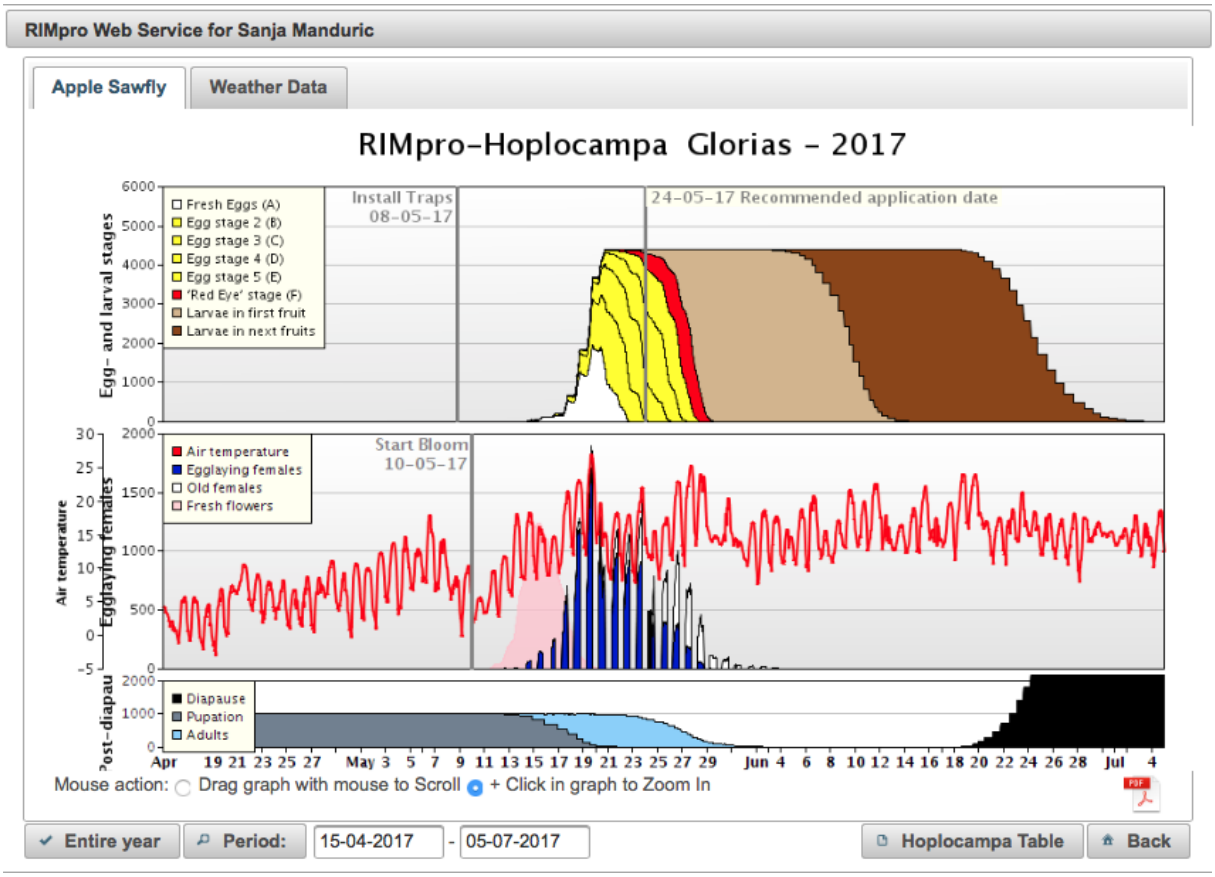
Stages in the embryonal development of an Apple Sawfly egg.
From: Keunen 1951.

- Observations on 30-75 flower clusters
- From each egg stage noted stage 1 till 6
- Repeated during flowering
- Results extrapolated to recommended day for treatment

Distribution of development stages found in samples taken on the same date (May 21) from and early-, mid- and late flowering apple variety in the same orchard. Bandholm, Denmark 2015.

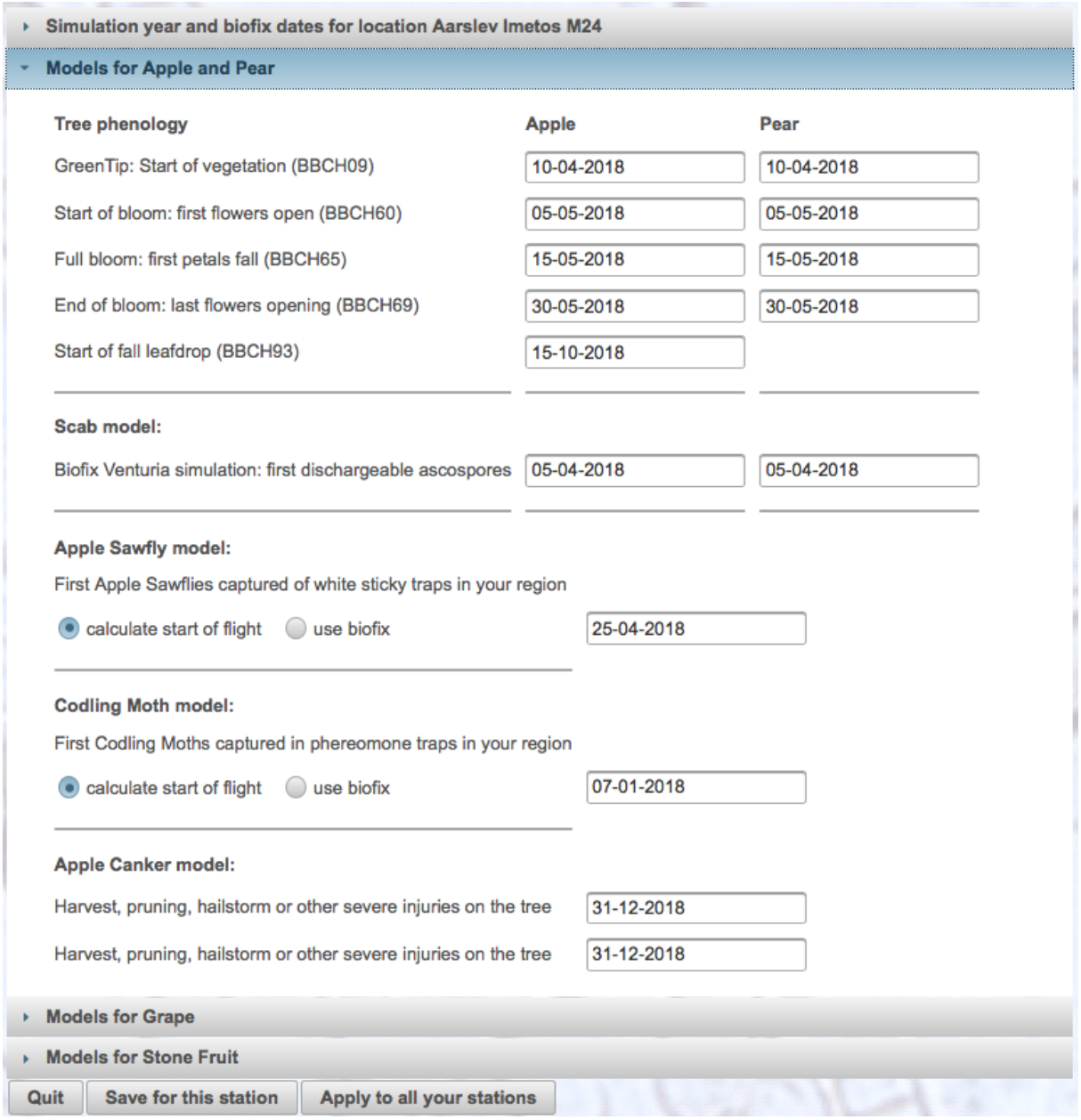


Apple variety	Start of bloom	% eggs in the development stages on May 21:							AVG stage
		1	2	3	4	5	6	Hatched	
Discovery	May 4			6	29	48	16		4.7
Bellida	May 6		13	30	30	25	3		3.8
Elstar	May 8		33	52	14				2.8



You have to set the date of start of bloom to make correct calculations for the variety. You can change the date to see the development for early and late varieties.

ONLY If you capture sawflies BEFORE the model simulates flight of the sawfly, you have to se the date of first catch as Biofix.



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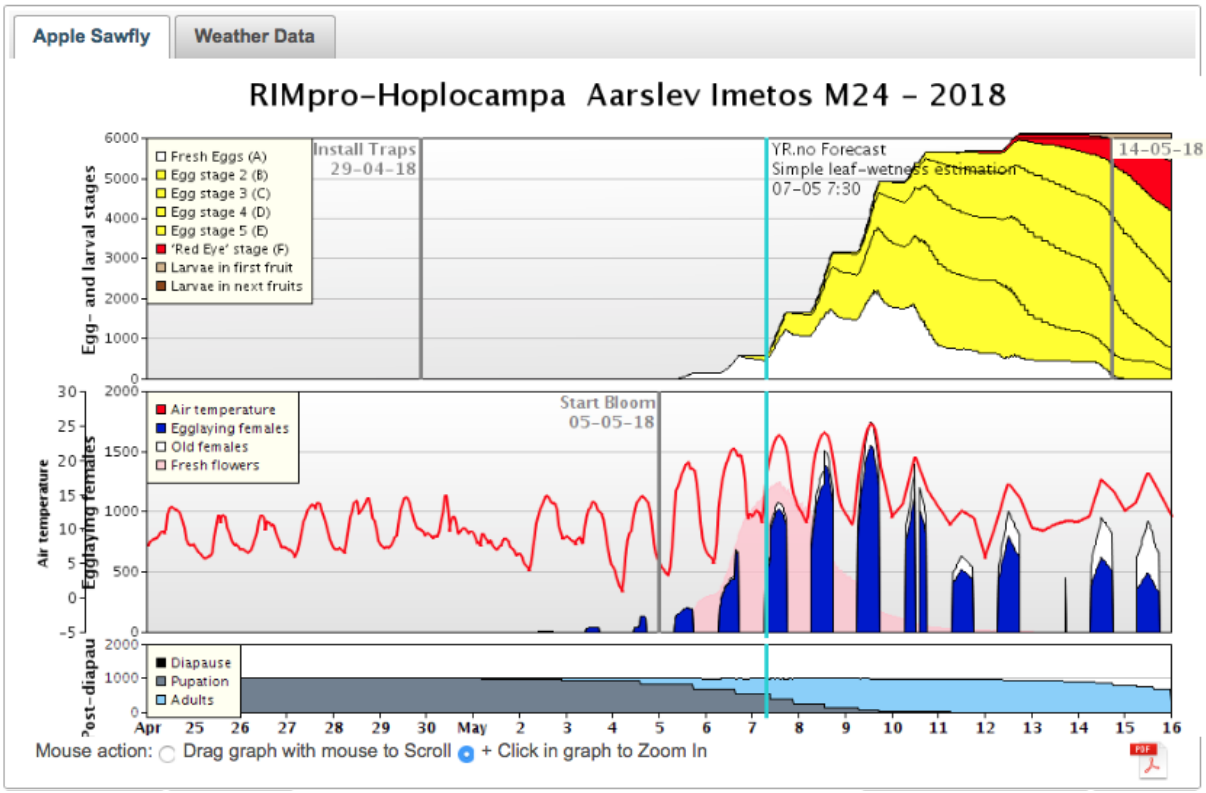
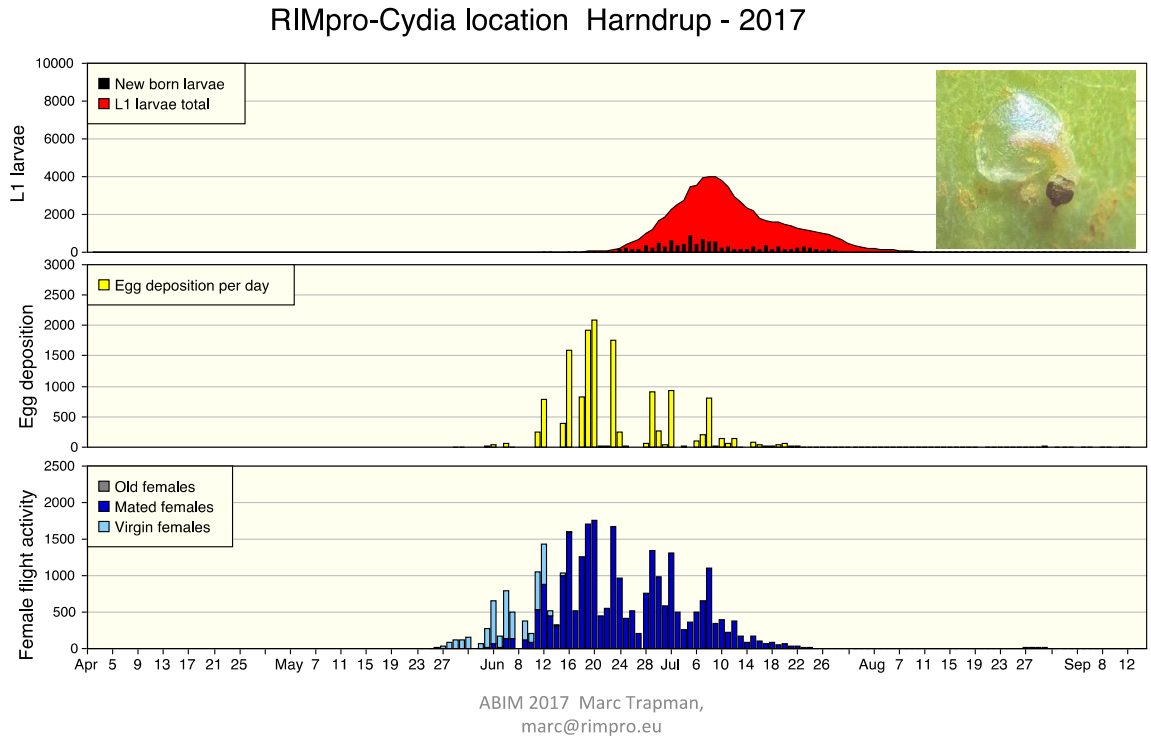


What to do:

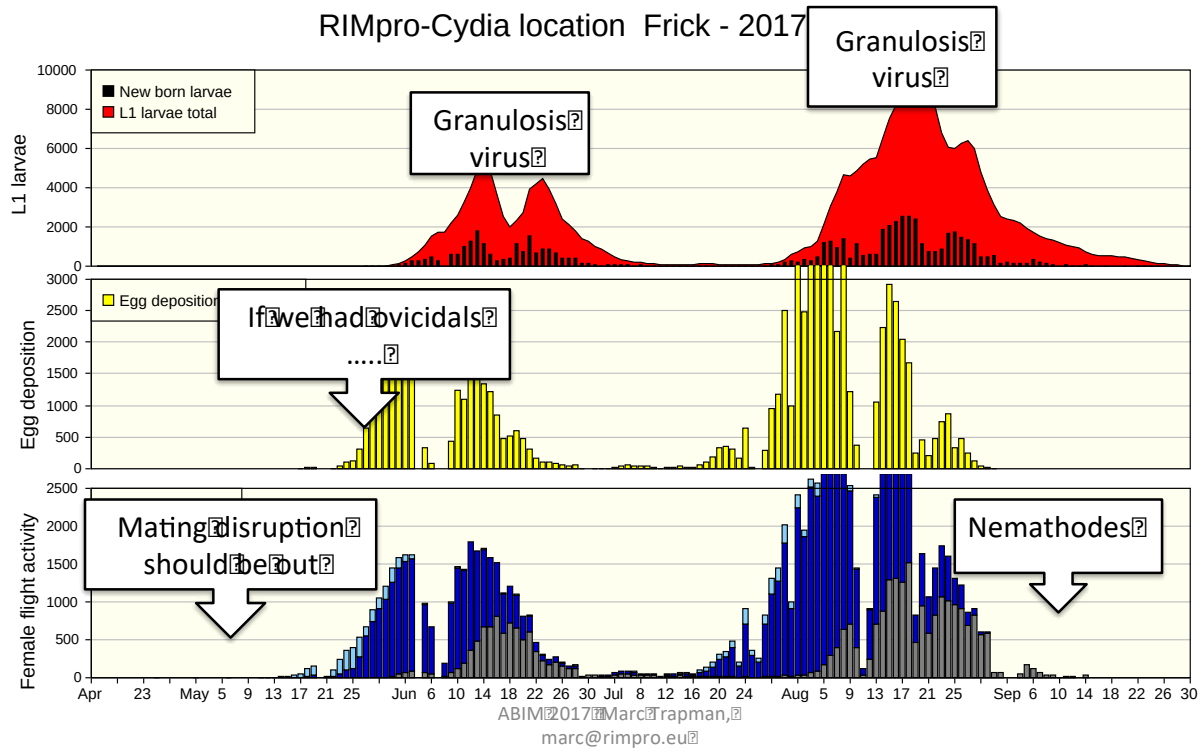
- Check that your weather station is functioning
- Hang out the sawfly traps before bloom: when the model indicates.
- Put in the correct date of start of flowering.
- Change the date to check results for early and late varieties.
- Monitor the advised date for early and late varieties.
- Spray on this day, or 1-2 days earlier, not later !
- 1 package of quassia / per ha.
- Or split-up: 50% day 2 before 50% on the advised date.
- In the morning, with high water volume + soap.
- Decide and apply per variety !

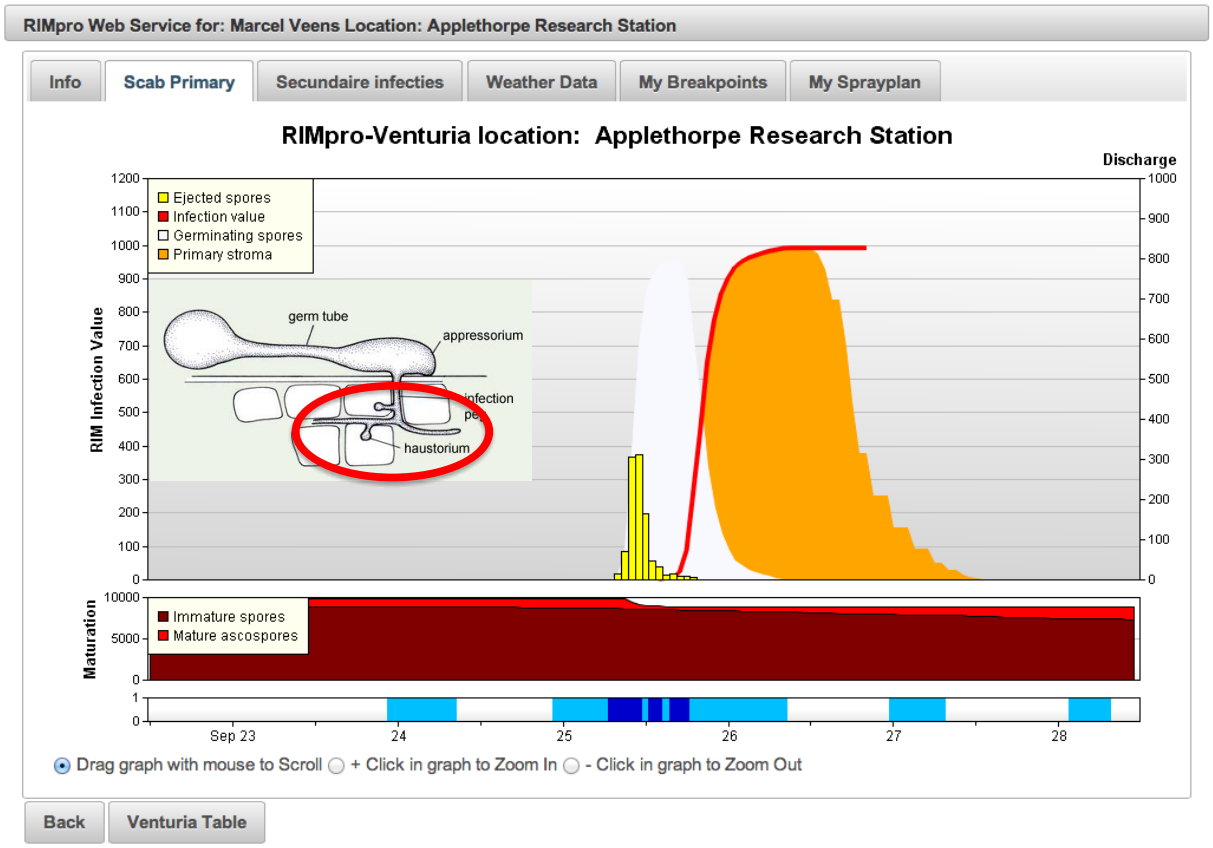
Denmark: only one generation

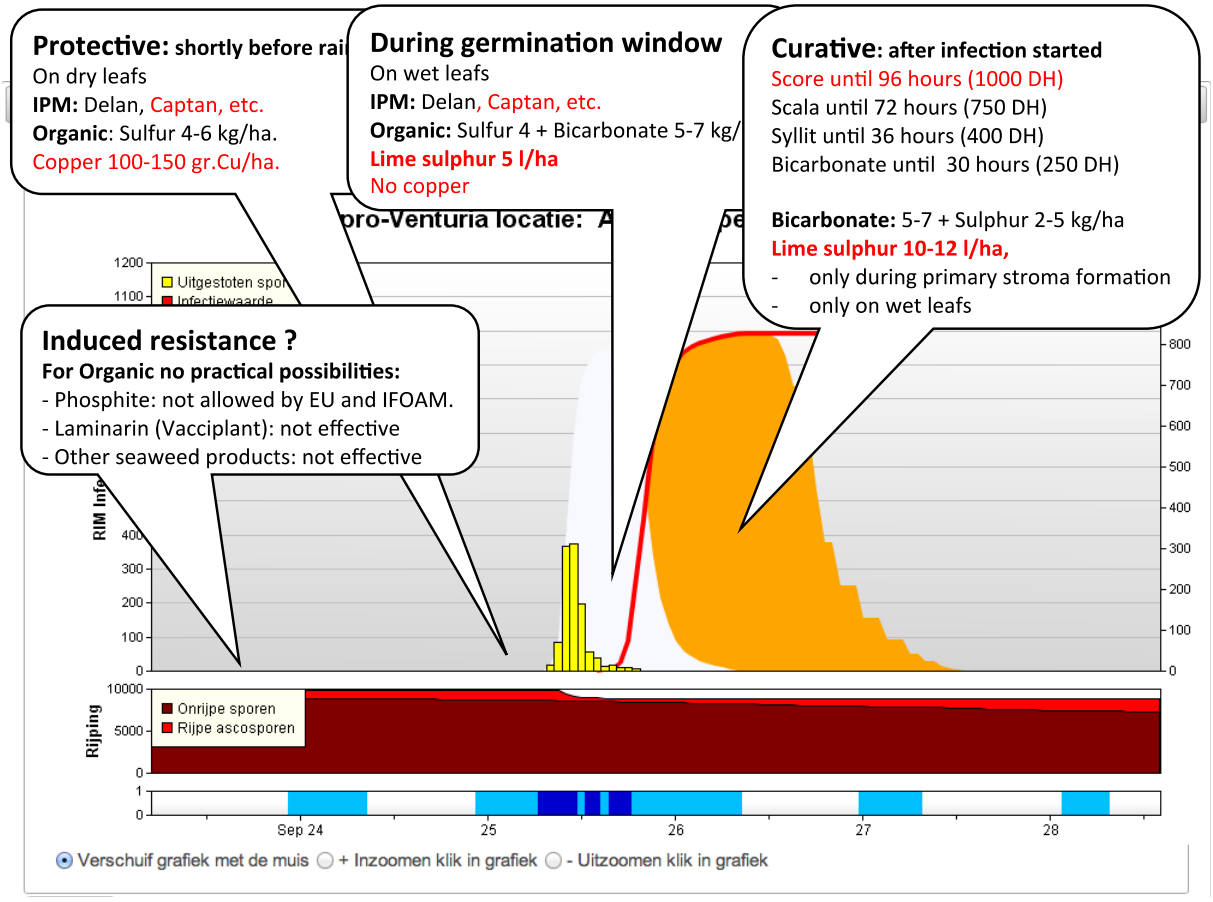


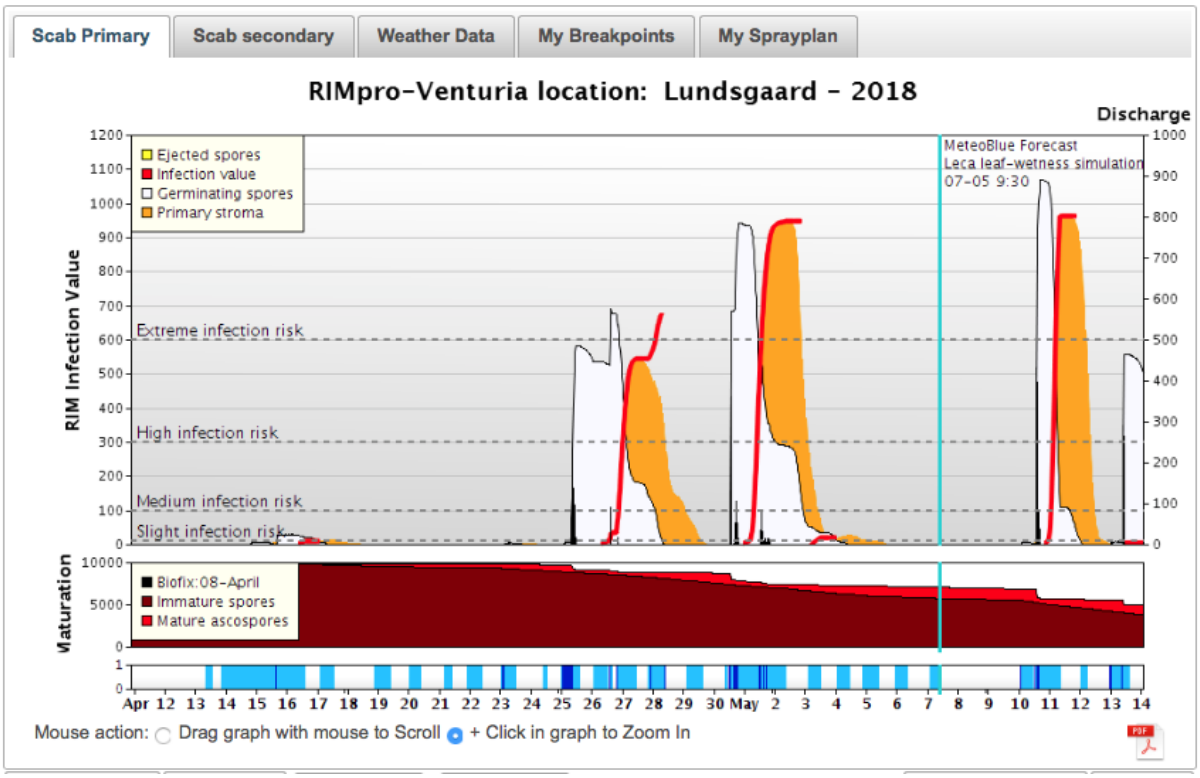
Theoretical possibilities, not an advise to apply all these treatements!!

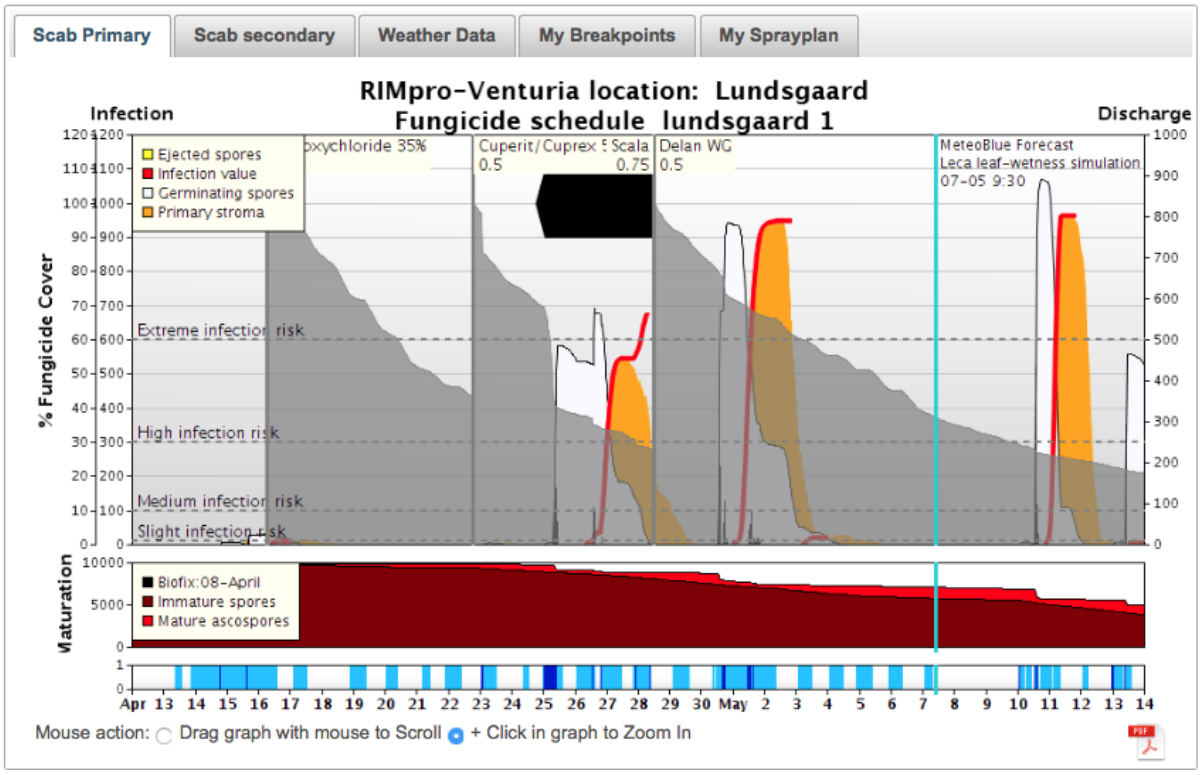
Implement a strategy




RIMpro Web Service for: Marcel Veens Location: Applethorpe Research Station
Info
Scab Primary
Secundaire infecties
Weather Data
My Breakpoints
My Sprayplan
RIMpro-Venturia location: Applethorpe Research Station
Discharge
Ejected spores
Infection value
Germinating spores
Primary stroma
germ tube
appressorium
haustorium
RIM Infection Value
Maturation
Immature spores
Mature ascospores
Sep 23
24
25
26
27
28
Drag graph with mouse to Scroll
+ Click in graph to Zoom In
- Click in graph to Zoom Out
Back
Venturia Table


Protective: shortly before rai
On dry leafs
IPM: Delan, Captan, etc.
Organic: Sulfur 4-6 kg/ha.
Copper 100-150 gr.Cu/ha.
During germination window
On wet leafs
IPM: Delan, Captan, etc.
Organic: Sulfur 4 + Bicarbonate 5-7 kg/
Lime sulphur 5 l/ha
No copper
Curative: after infection started
Score until 96 hours (1000 DH)
Scala until 72 hours (750 DH)
Syllit until 36 hours (400 DH)
Bicarbonate until 30 hours (250 DH)
Bicarbonate: 5-7 + Sulphur 2-5 kg/ha
Lime sulphur 10-12 l/ha,
- only during primary stroma formation
- only on wet leafs
Induced resistance ?
For Organic no practical possibilities:
- Phosphite: not allowed by EU and IFOAM.
- Laminarin (Vacciplant): not effective
- Other seaweed products: not effective
Onrijpe sporen
Rijpe ascosporen
Rijping
Sep 24
25
26
27
28
Verschuif grafiek met de muis
+ Inzoomen klik in grafiek
- Uitzoomen klik in grafiek


Scab Primary
Scab secondary
Weather Data
My Breakpoints
My Sprayplan
RIMpro-Venturia location: Lundsgaard - 2018
Discharge
RIM Infection Value
Ejected spores
Infection value
Germinating spores
Primary stroma
MeteoBlue Forecast
Leca leaf-wetness simulation
07-05 9:30
Extreme infection risk
High infection risk
Medium infection risk
Slight infection risk
Maturation
Biofix:08-April
Immature spores
Mature ascospores
Apr 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 May 2 3 4 5 6 7 8 9 10 11 12 13 14
Mouse action: Drag graph with mouse to Scroll + Click in graph to Zoom In


Scab Primary
Scab secondary
Weather Data
My Breakpoints
My Sprayplan
RIMpro-Venturia location: Lundsgaard
Fungicide schedule lundsgaard 1
Infection
Discharge
% Fungicide Cover
oxychloride 35%
Cuperit/Cuprex 5
0.5
Scala
0.75
Delan WG
0.5
Ejected spores
Infection value
Germinating spores
Primary stroma
MeteoBlue Forecast
Leca leaf-wetness simulation
07-05 9:30
Extreme infection risk
High infection risk
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Maturation
Biofix:08-April
Immature spores
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Mouse action: Drag graph with mouse to Scroll + Click in graph to Zoom In

Fruit thinning: two worlds

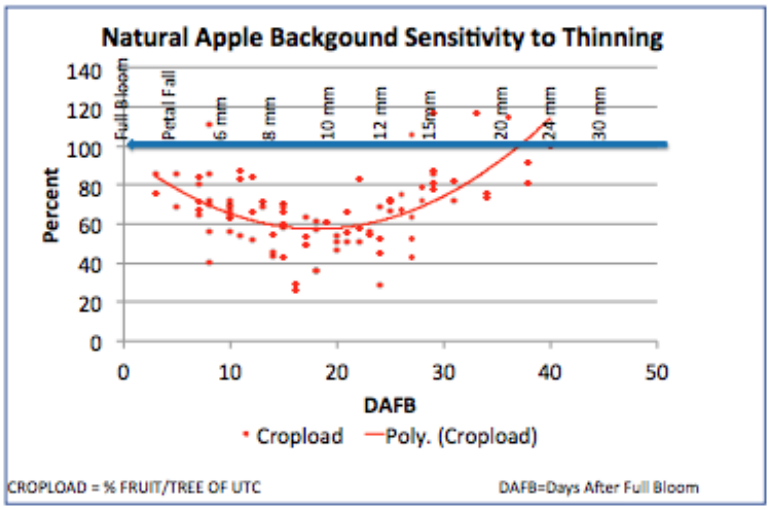
Europe: Fruit size is leading

- 10-12 mm fruits most susceptible for thinning
- Good weather conditions for uptake of thinning product

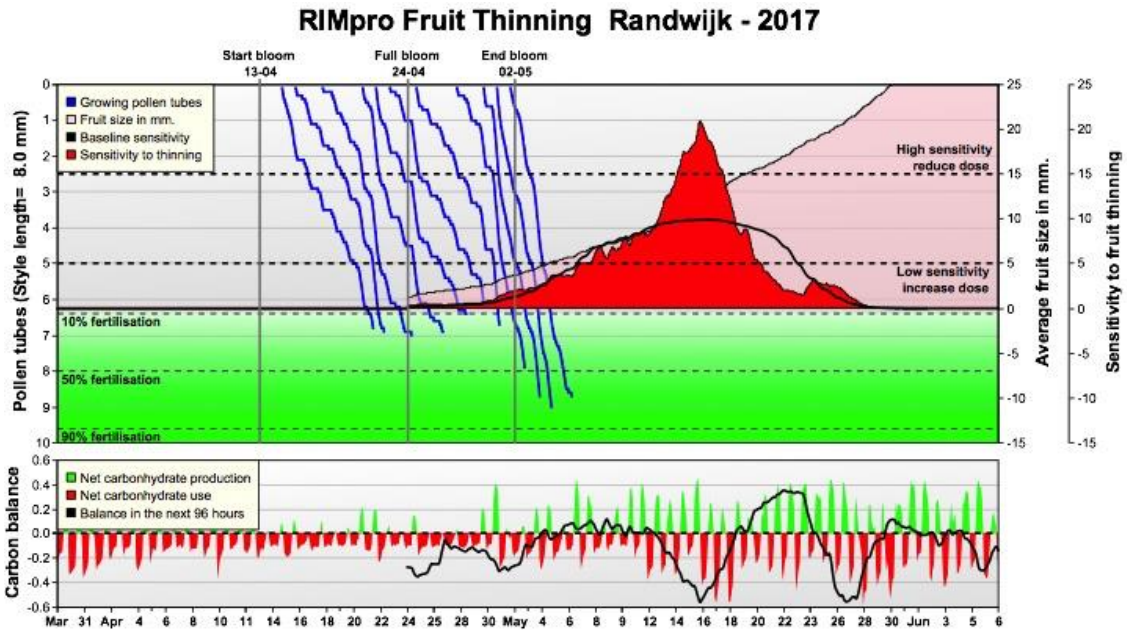
America: Carbon Hydrate balance is leading

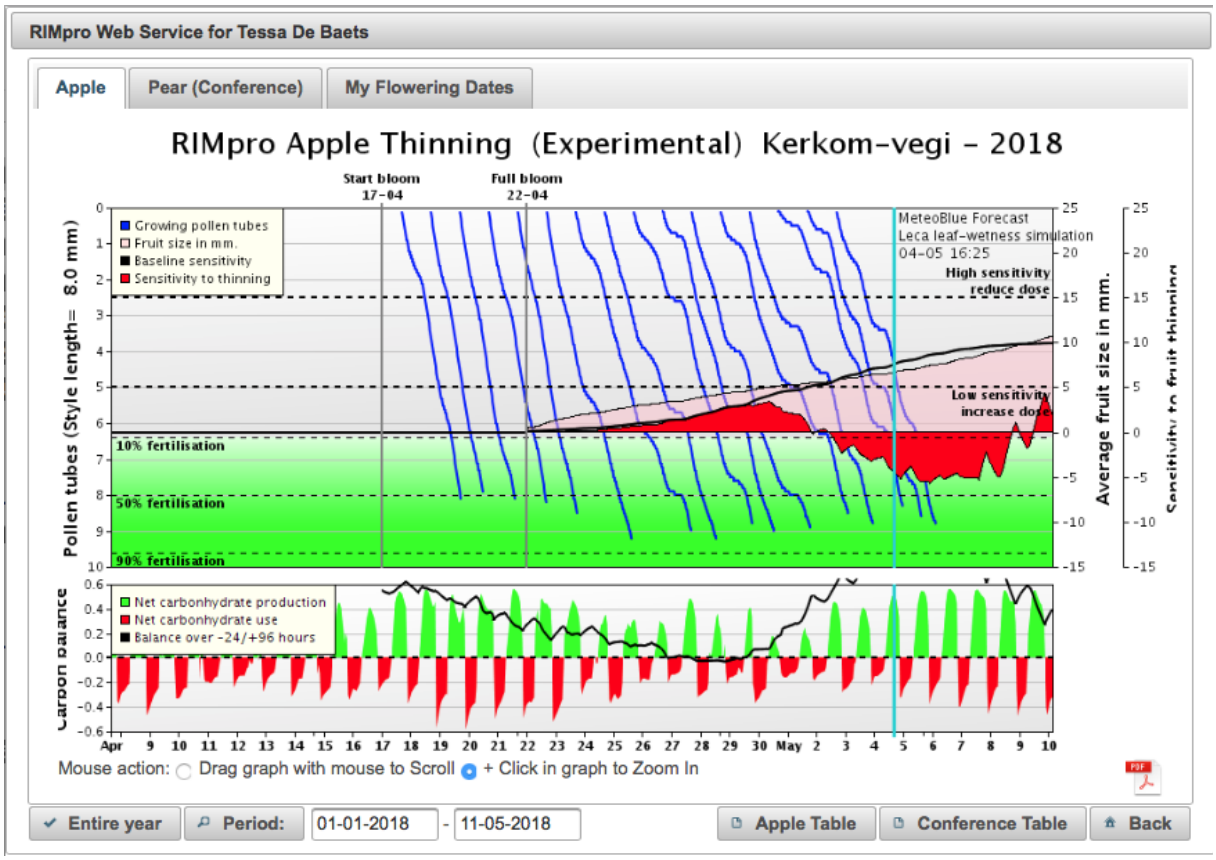
- Shading: 3 to 5 days with low light leads to carbohydrate deficit.
- For the tree shoot growth has priority over fruits
- Carbohydrate deficit induces natural fruit fall and increases effect of chemical fruit thinning materials.

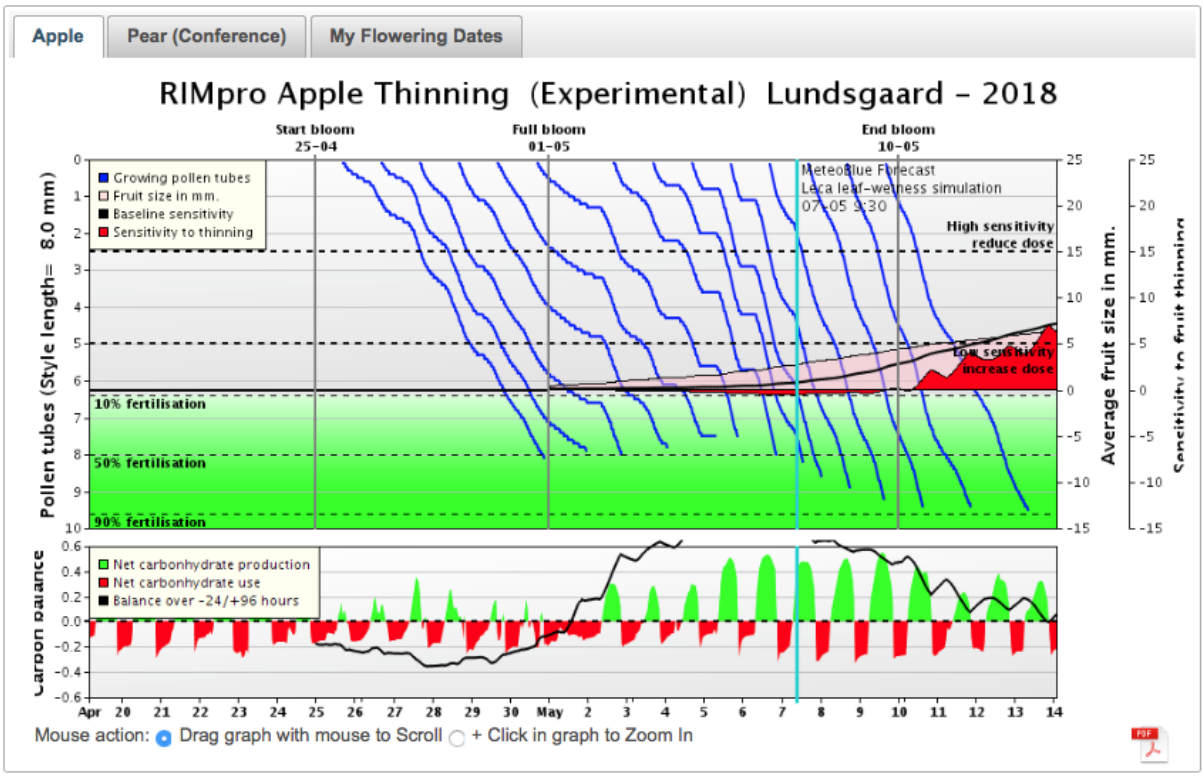
Figure 1. Natural Background Sensitivity of Gala



-Thinning ON AVERAGE most effective at 10 mm.
-Important variation induced by carbon hydrate balance in the days after application.


RIMpro Fruit Thinning Randwijk - 2017
Start bloom 13-04
Full bloom 24-04
End bloom 02-05
Growing pollen tubes
Fruit size in mm.
Baseline sensitivity
Sensitivity to thinning
High sensitivity reduce dose
Low sensitivity increase dose
10% fertilisation
50% fertilisation
90% fertilisation
Pollen tubes (Style length= 8.0 mm)
Average fruit size in mm.
Sensitivity to fruit thinning
Net carbonhydrate production
Net carbonhydrate use
Balance in the next 96 hours
Carbon balance
Mar 31 Apr 4 6 8 10 11 14 16 18 20 22 24 25 28 30 May 4 6 8 9 12 14 16 18 20 22 23 26 28 30 Jun 3 5 6


RIMpro Web Service for Tessa De Baets
Apple
Pear (Conference)
My Flowering Dates
RIMpro Apple Thinning (Experimental) Kerkom-vegi - 2018
Start bloom 17-04
Full bloom 22-04
Growing pollen tubes
Fruit size in mm.
Baseline sensitivity
Sensitivity to thinning
MeteoBlue Forecast
Leca leaf-wetness simulation
04-05 16:25
High sensitivity reduce dose
Low sensitivity increase dose
10% fertilisation
50% fertilisation
90% fertilisation
Pollen tubes (Style length= 8.0 mm)
Average fruit size in mm.
Net carbonhydrate production
Net carbonhydrate use
Balance over -24/+96 hours
Apr 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 May 2 3 4 5 6 7 8 9 10
Mouse action: Drag graph with mouse to Scroll + Click in graph to Zoom In
Entire year
Period:
01-01-2018
11-05-2018
Apple Table
Conference Table
Back



To use the model you need RIMpro + MetoBlue weather forecast. The model reads de Global radiation data from MeteoBlue data and combines this with your weather station data to calculate the CarboHydrate (=sugar) balance.