



## Smart irrigation powered by QMS

Blueberry Conference 2020  
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## Delphy – digitalisation

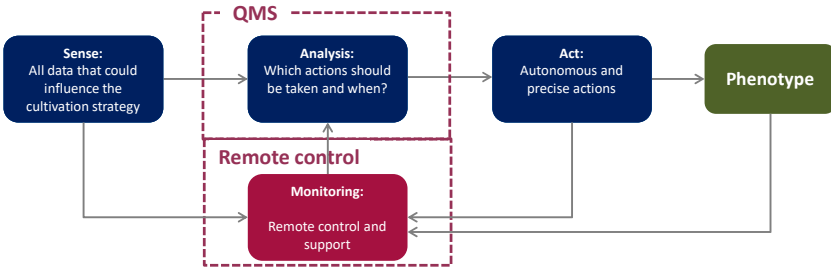

- ✦ Optimisation of crops – by using data
- ✦ Independent data collection
- ✦ Translating data into practical operations
  
- ✦ Building trust with the system
- ✦ More data = more strategic decisions
  
- ✦ Data driven cultivation



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## Digitalising



✦ Phenotype = genotype x environment x management

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## QMS (..)

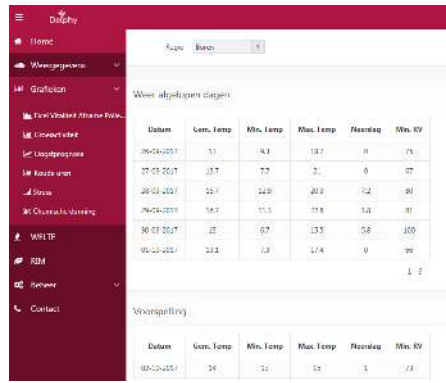
- ✦ Per crop/ crop group
- ✦ Combination of data
  - Climate
    - Live data
    - prediction
  - Crop

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### QMS (Fruit)

- One dashboard
- Combination of data
- Own data or collective
- From harvest forecast until stress indication
- Data driven cultivation



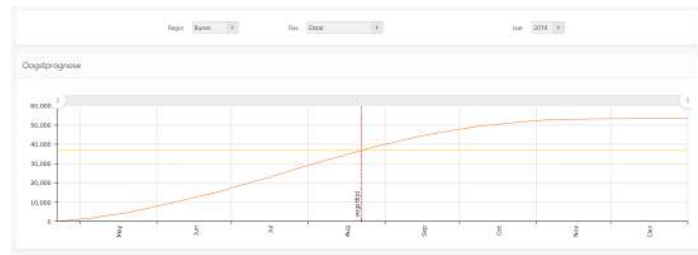
| Wanneer    | Gen. Temp. | Min. Temp. | Max. Temp. | Neerslag | Min. RV |
|------------|------------|------------|------------|----------|---------|
| 06-08-2017 | 13         | -4.1       | 18.1       | 0        | 75      |
| 17-08-2017 | 15.7       | 7.7        | 21         | 0        | 77      |
| 24-08-2017 | 15.7       | 12.8       | 20.2       | 7.2      | 80      |
| 04-09-2017 | 16.7       | 11.1       | 19.8       | 1.8      | 81      |
| 30-09-2017 | 17         | 10.7       | 15.5       | 5.8      | 100     |
| 05-10-2017 | 18.3       | 11.9       | 17.4       | 0        | 99      |

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### QMS (Fruit)

- Harvest forecast

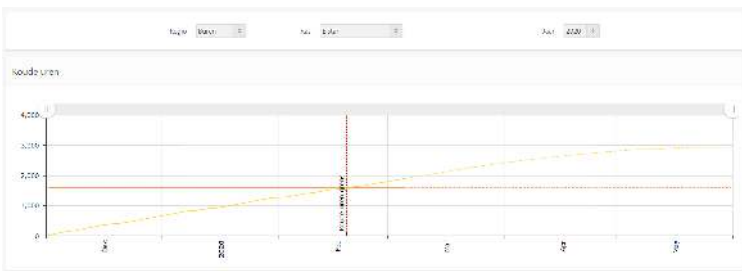


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### QMS (Fruit)

- Cold hours

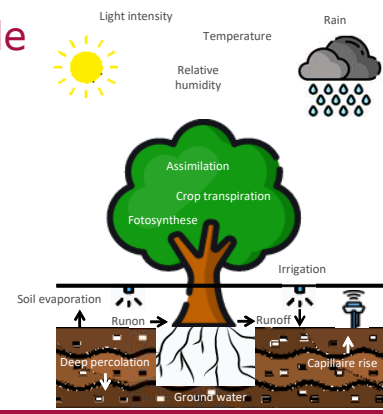


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### QMS(Fruit)-Watermodule

- Combination of factors
  - Soil conditions
  - Type of crop
  - Climate
  - Water need/level



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## Water level - probes

- Which type of probe?
- Reliability

Tested :

- Watermark
- SMEC/SM100



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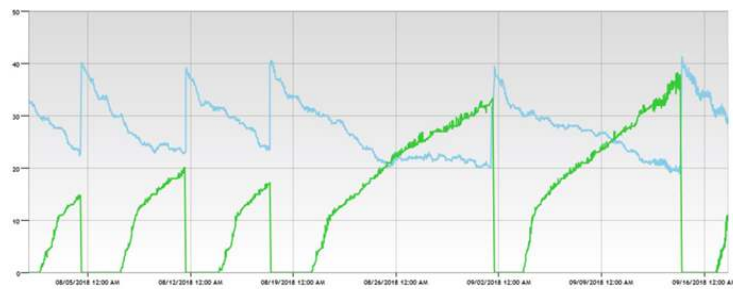
## Location sensors

- Type of soil & ground water level -> decision of placement and type of probe?
- How much variations on farm level?
- Purpose per sensor & budget
- Strategic choice



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## Watermark VS SMEC

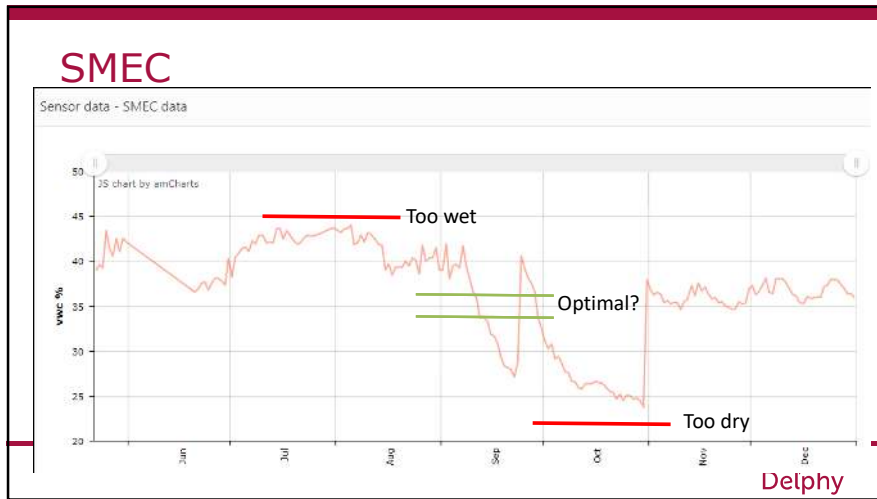


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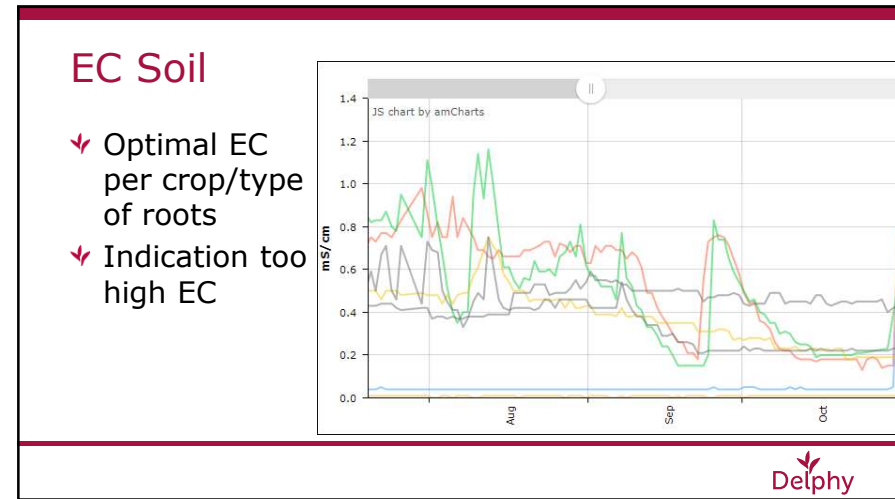
## Watermark



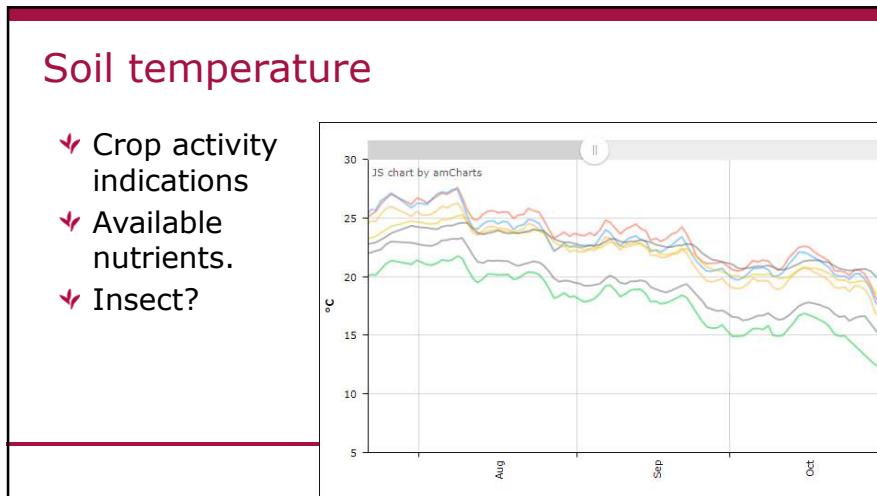
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### Smart irrigation project '18 - '20

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## Irrigation advice

The screenshot shows the Delphy irrigation advice interface with a table of irrigation advice. The table has columns for Sensor, Datum, Totaal advies (mm), and Opmerking. The data is as follows:

| Sensor   | Datum      | Totaal advies (mm) | Opmerking       |
|----------|------------|--------------------|-----------------|
| Sensor 1 | 28-02-2020 | 0                  | te nat          |
| Sensor 1 | 29-02-2020 | 0                  | richting te nat |
| Sensor 1 | 01-03-2020 | 0                  | richting te nat |
| Sensor 1 | 02-03-2020 | 0                  | te nat          |
| Sensor 1 | 03-03-2020 | 1                  | Optimaal        |
| Sensor 1 | 04-03-2020 | 2                  | Optimaal        |
| Sensor 1 | 05-03-2020 | 0                  | richting te nat |

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## Advice values

- ✦ Crop -> evaporation coefficient
- ✦ Crop factor = which target values
  - Crop stages
  - Variety
- ✦ Soil -> determined dehydration
- ✦ Climate = 3 days prediction
- ✦ Physical soil factors

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## Autonomous ?!

- ✦ Optimisation water contents during season
  - Per growth stage
- ✦ Irrigation (by computer)
  - Per watercompartment
  - Per plant
- ✦ Self-learning system
- ✦ Notification when something happens.

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## Future

- ✦ Qualification of the system
- ✦ EC / soil temperature in 2021.
  
- ✦ Crop measurement based on drones, cams, satellite for indication quality of crop.



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# Thank you for your attention!

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