



Remote Sensing of Pests

Practical Applications & Significance in
Contemporary Crop Protection

Colin Carter – Landseer Limited

Context – Changing Landscape for Crop Production

The Key Drivers

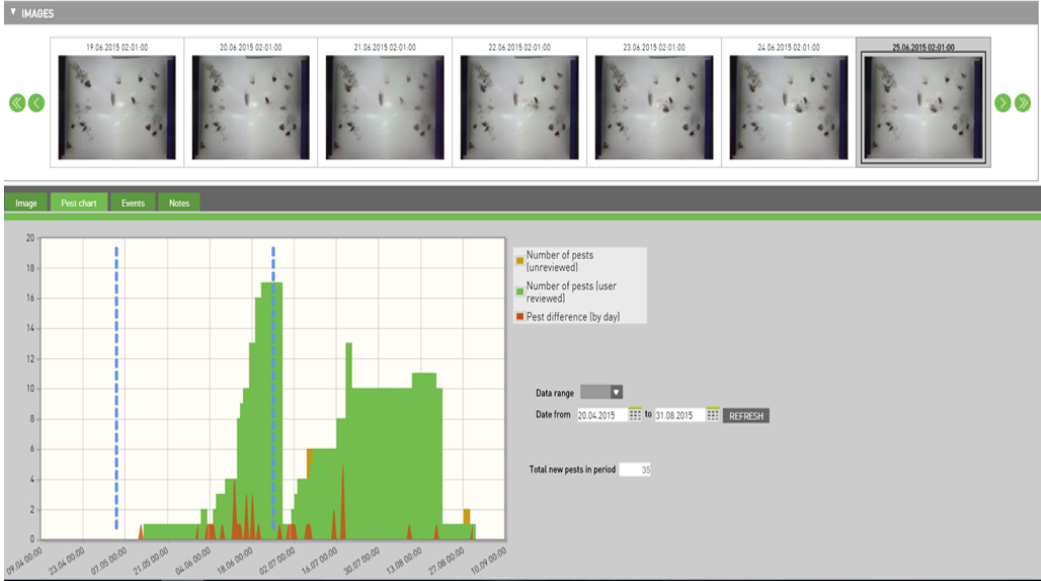
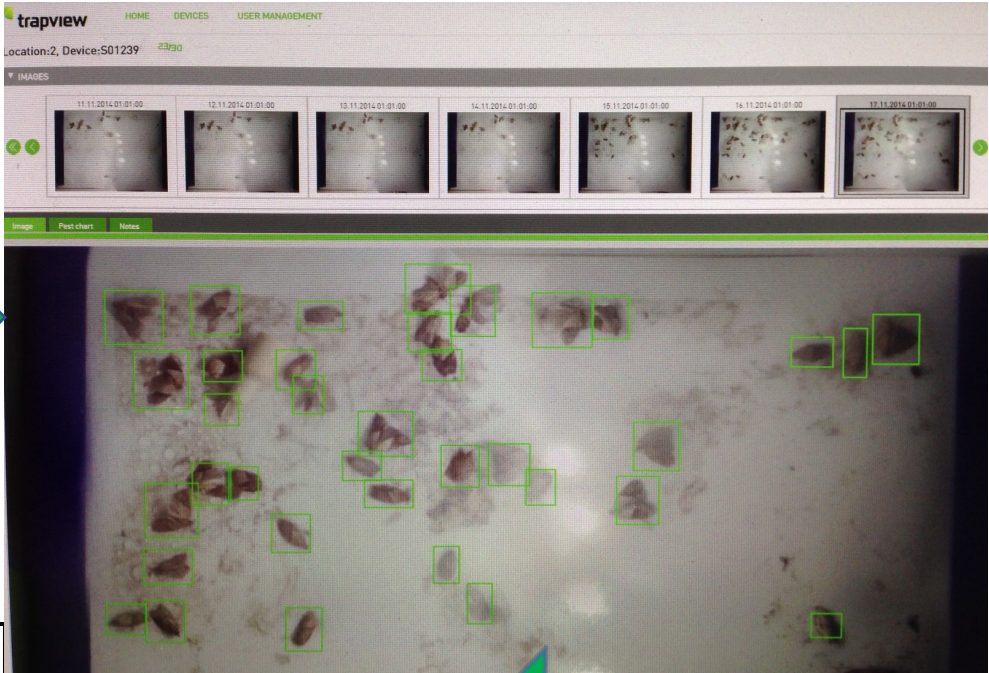
- Landscape for Crop Protection options being redrawn
 - Loss of key actives – especially broad spectrum products
 - New technologies , biopesticides, MD
- New pest complex is evolving
- Dispersal of production areas, increased farm size
- Political , regulatory, media scrutiny
- All of these demand an enhanced IPM approach with increased transparency of operation
- Automated pest monitoring fits well into this

Camera

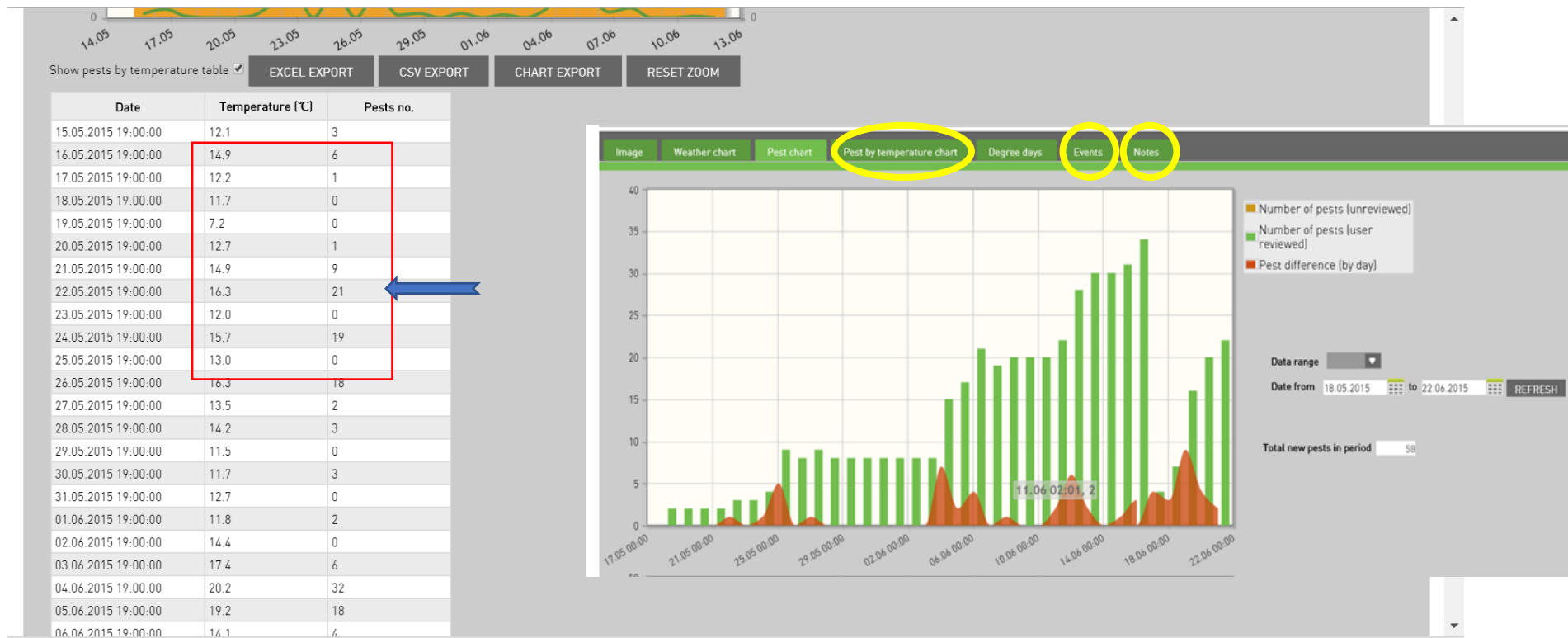


Sticky base

How it works

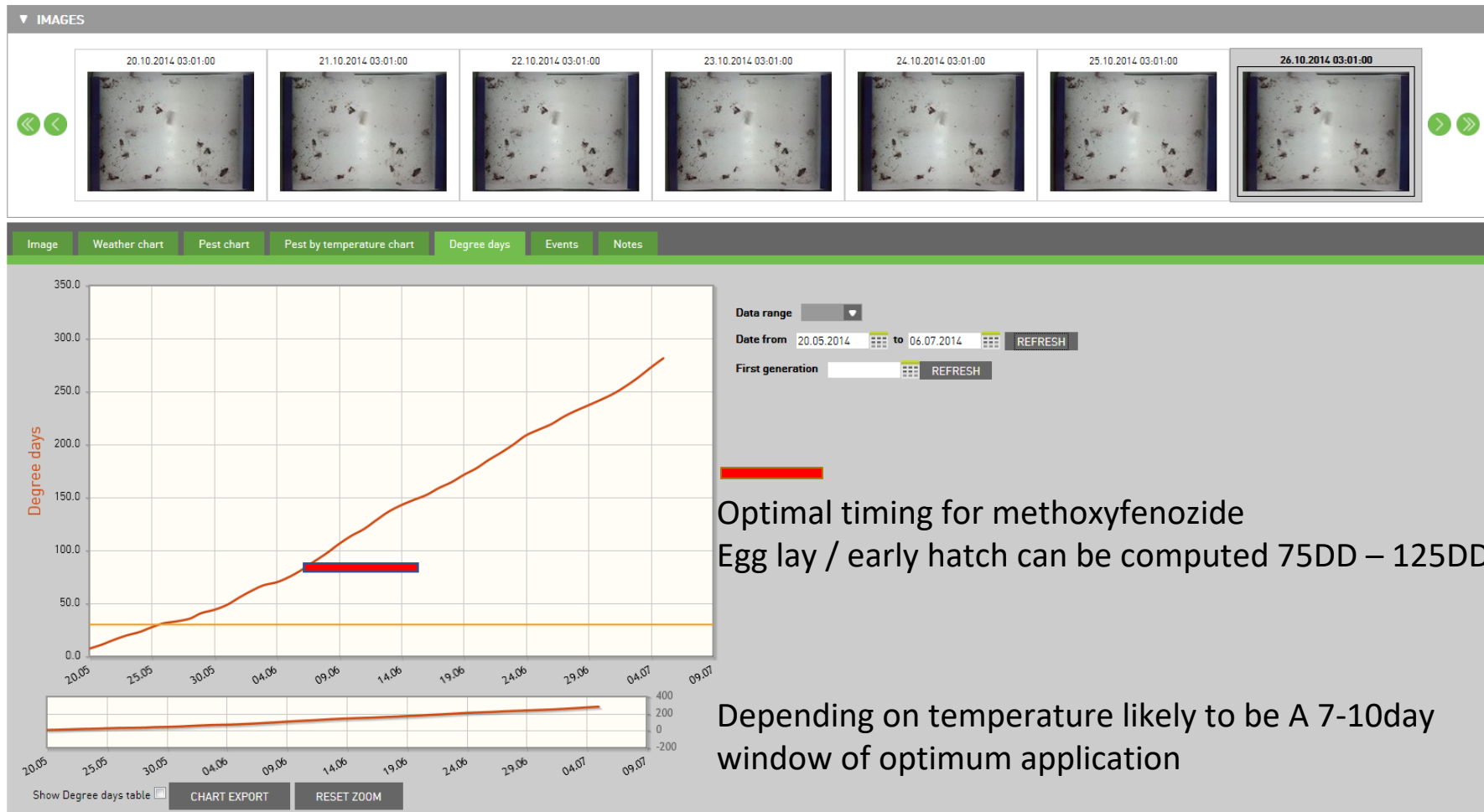


Pest data can be exported as charts or Excel



- Trapview provides a data history for analysis / audit purposes and can archive previous years data

Data Utilisation – Improve outcomes.



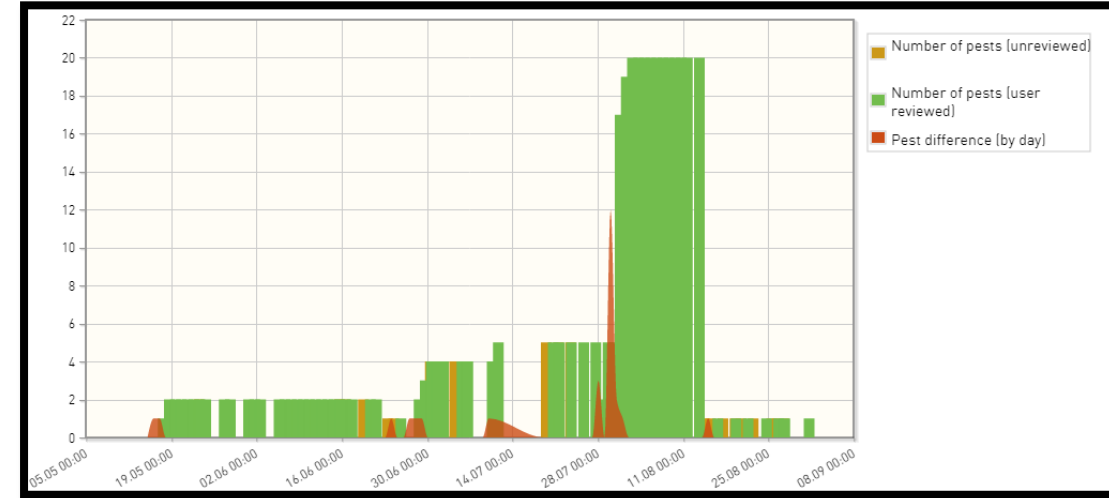
SYM Trap Design

AHDB Project FV 440 Investigation into control measures for Silver Y Moth 2015-16

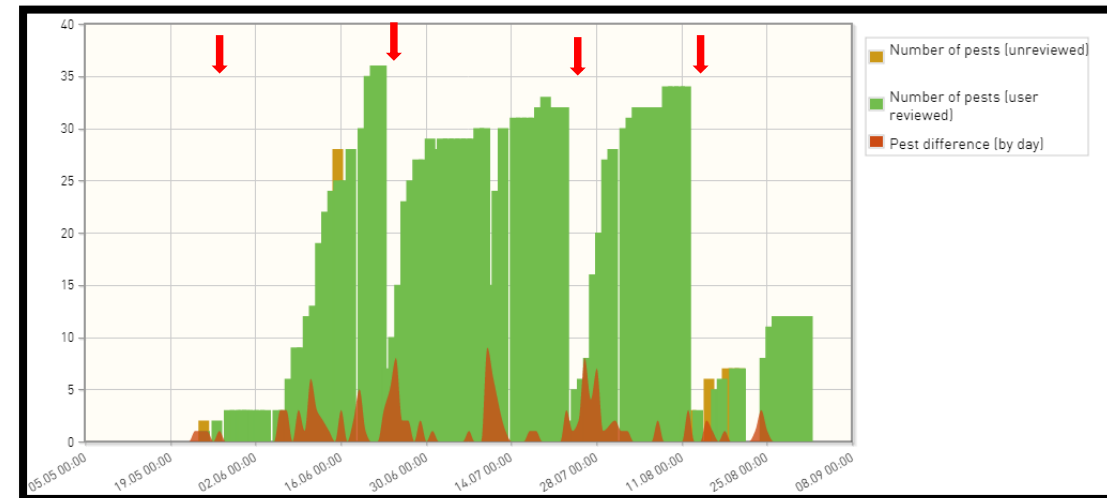


2016 – not self-cleaning

Standard delta trap design



Hybrid trap design



Horizon 2020 Project (2016-2018)

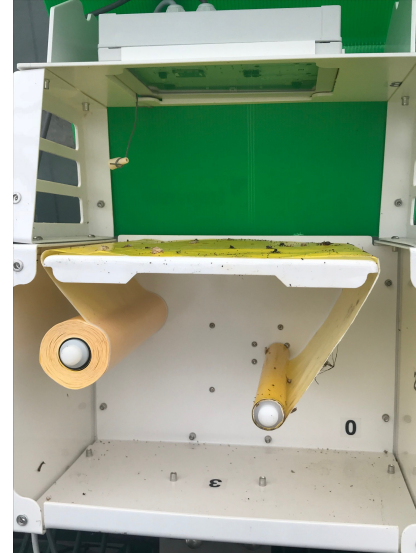
MAP OF DEVICES



- Helped implement new improved trap design (self-cleaning unit)
- Network of 1000 traps to monitor *Helicoverpa Armigera* in tomatoes
- Generate mass data to investigate the potential for machine learning
- Evolved business model away from product-selling to one based upon data generation / forecasting based on real time situations

Trapview – Some of the Current Trap Types

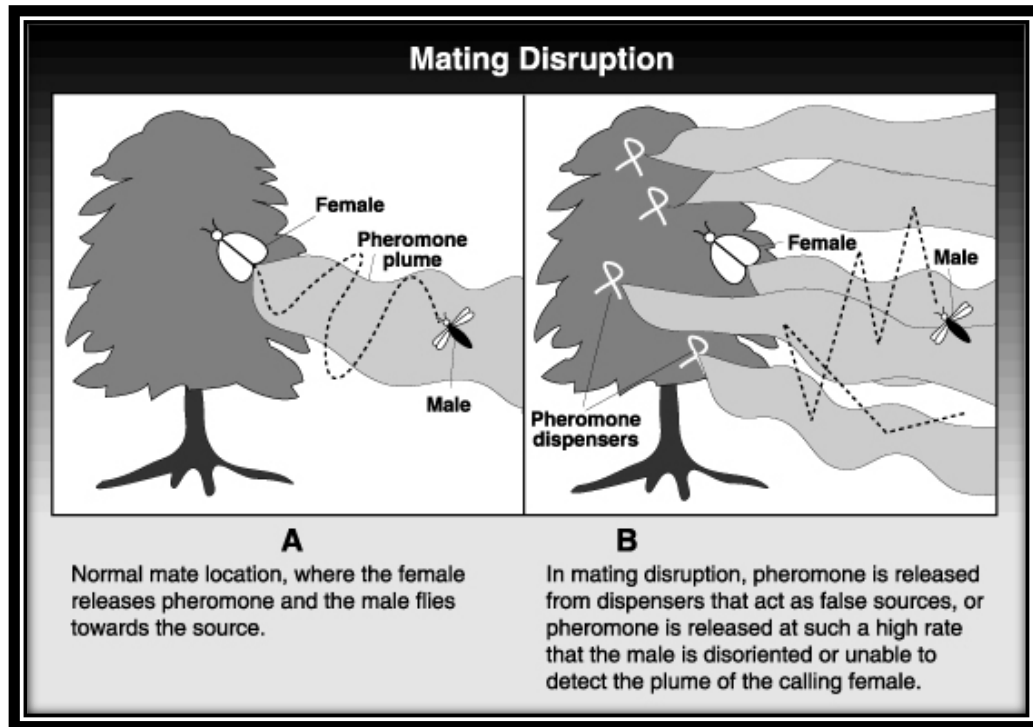
- Essential premise - if you can attract the target pest you can potentially monitor it.



Trapview: The Trap

Trapview significance.

Mating disruption – the importance of accurate monitoring



WSU – Tree Fruit



- If males find females – disruption is NOT working.
- If males find pheromone lures in a trap disruption is NOT working.
- Trapview can confirm this quicker than any other way – steps can be taken to avoid damage
- What about non-target species ?
- **Blastobasis**
- **Light brown apple moth**
- **Winter Moth**

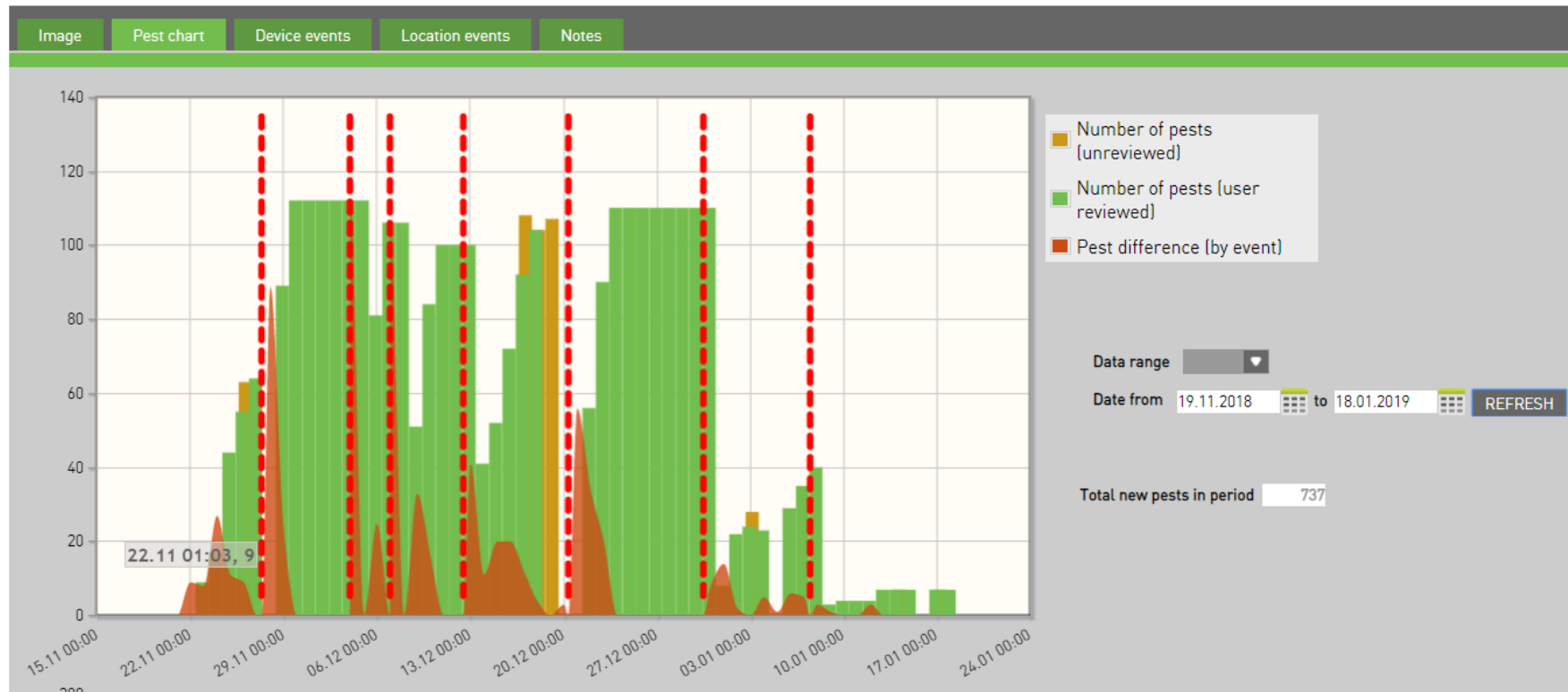
A Cautionary Tale -The Flame (*Axylia putris*)

Changing Pest Complex

Winter Moth 2018-2019 – Resurgence of a historic adversary



Winter Moth - Extreme pressure ?



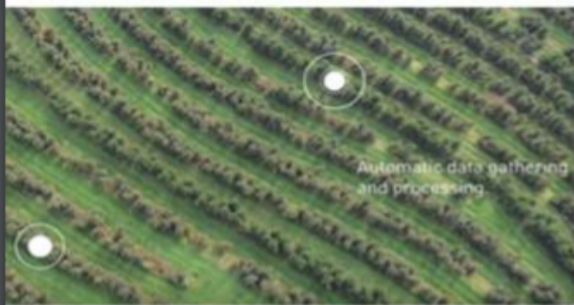
New influx likely to get repeat outcome unless pre-blossom intervention is made but what are the thresholds for action?

Summary - Remote sensing continues to develop

- Powerful tool – but must justify adoption - cost benefit trade off
- Still evolving –
 - Cover wider pest spectrum
 - Algorithm developments
 - Improving accuracy
 - Improving data transfer capacity (resolution of image)
- Data collection and analysis will be king
- Move towards machine learning site specific forecasts
- Not a prosthetic for good ground observation/ agronomy – enhances it

Monitor

Automated traps remotely monitor pest occurrences



Forecast

AI & computer vision predict and inform **where** pest pressure will occur in **next days** for 25+ pest species



Decide better

- Plan and optimize work & costs
- Improve food quality
- Increase consumer trust

