



# The Russell IPM Group

**Russell IPM Ltd.** specialises in the development and manufacturing of pest management solutions for use in agriculture, stored products and horticulture.
We can be found at **www.russellipm.com**

**Russell Bio Solutions Ltd.** is focused on the development and manufacture of biostimulants biopesticides and fertiliser products.
We can be found at **www.russellbio.net**

**Russell IOT Ltd.** is dedicated to the development and manufacture of smart solutions to monitor pests within agriculture and the public sector.
We can be found at **www.russell-iot.com**

**IPM Direct** is an eCommerce business with a wide range of integrated pest management tools sending high quality products to UK homeowners and gardeners.
We can be found at **www.plantpro.uk**

Certificate Number 8428
ISO 9001

**Russell IPM Ltd.** is certified by ISO 9001

**Russell Bio Ltd.** Is certified by Ecocert

Group Managing Director
and Founder,
Dr Al-Zaidi

"My mission is to develop and market technologies that meet the challenge of feeding the world's population, without harming people or their environment. My goal is to expand our successful partnerships, in order to achieve global reach and to share knowledge and benefits with the world."

## Awards and recognitions

- The Queens Award for Enterprise International Trade 2011
- The Queens Award for Enterprise Innovation 2012
- The Queens Award for Enterprise Innovation 2018

# Agenda

1 ) TruePest

SWD, Thrips and Whitefly

2) Push-Pull Techniques for Thrips



13:04
Intelligent insect detection system
TruePEST
E-mail
Password
Login
Remembre me
Forget password ?
Copyright 2024 Russell IOT Ltd
All right reserved

Russell IPM
INTEGRATED PEST MANAGEMENT

# AI-Powered Insect Monitoring for Smart Farms

Empower your farm with AI-driven insect monitoring solutions that enhance efficiency and sustainability

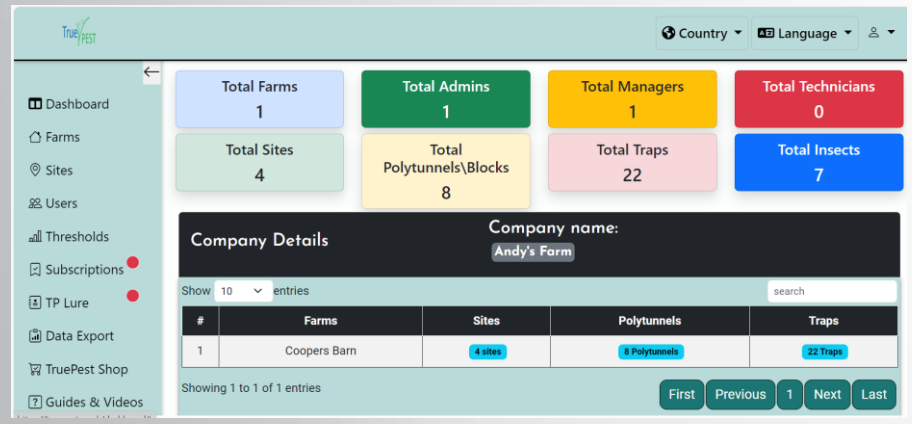
TruePest is an advanced pest-monitoring solution that utilizes AI technology to detect and manage insect populations. It's designed to provide efficient and accurate monitoring for various environments, such as farms, ensuring early detection and effective management of pests.

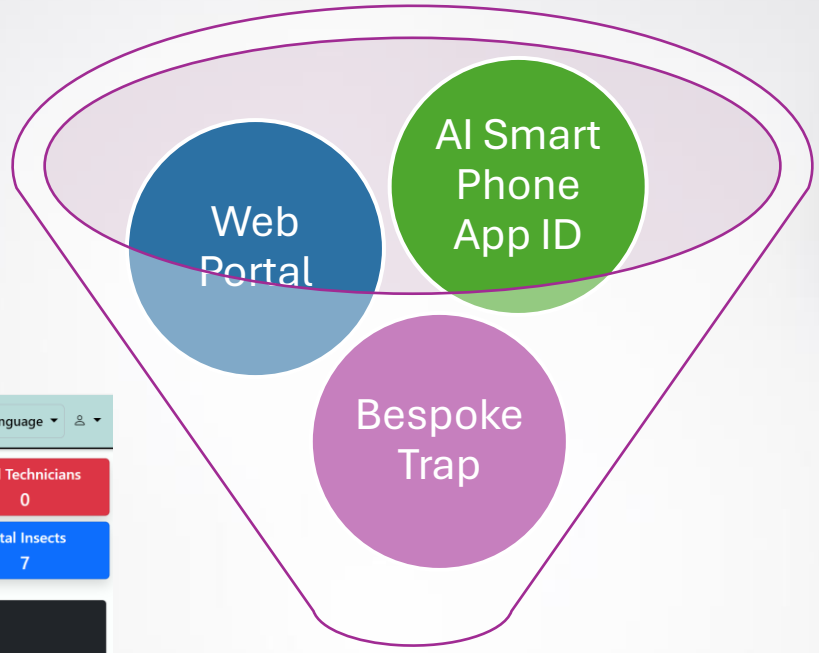
TruePest uses strategically placed monitoring boards that attract and capture pest insects for analysis. It is equipped with AI technology to intelligently identify and categorize pest insects. Once a pest is detected, the system generates alerts and reports for effective pest management.

Russell IPM
INTEGRATED PEST MANAGEMENT

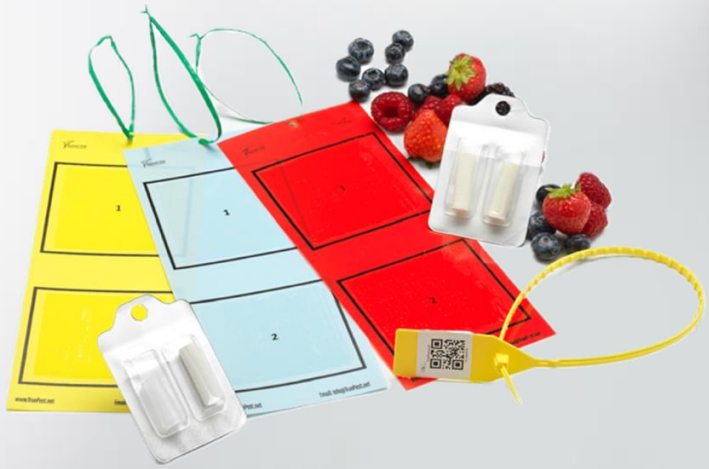
# Monitoring Solution

TruePEST



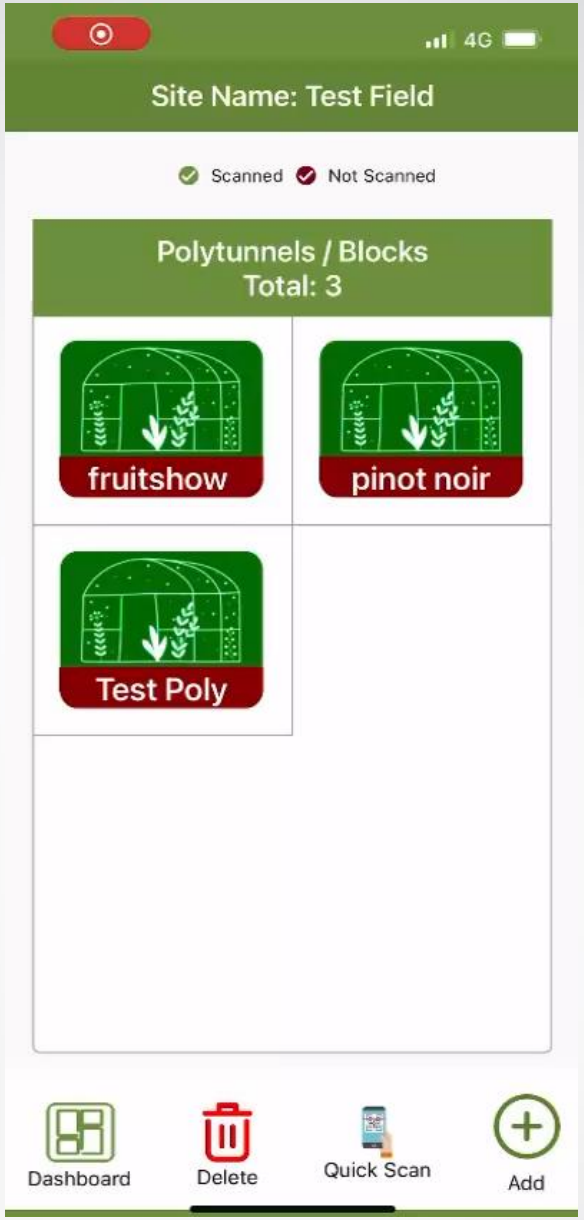

TruePEST

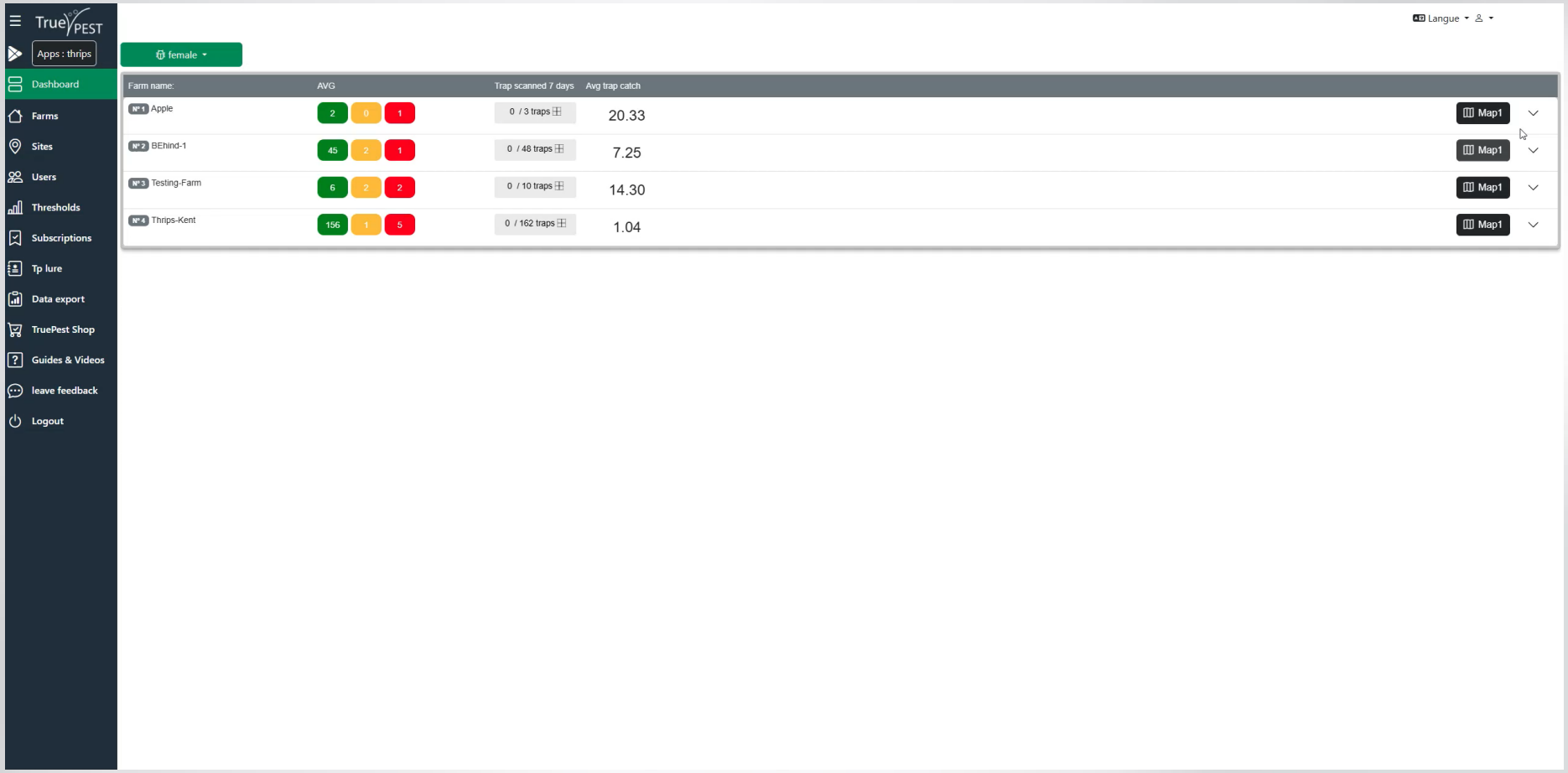
# Why - TruePest  … Solves Key Issues …

- Shortage of skilled agronomists and entomologists / AI driven TruePest App democratises accurate insect identification.
- Speeds up identification and counts of pest species.
- Shares data rapidly amongst the team allows timely interventions.
- Makes data capture, cheaper easier and quicker.
- Can be scaled to give better data granularity.

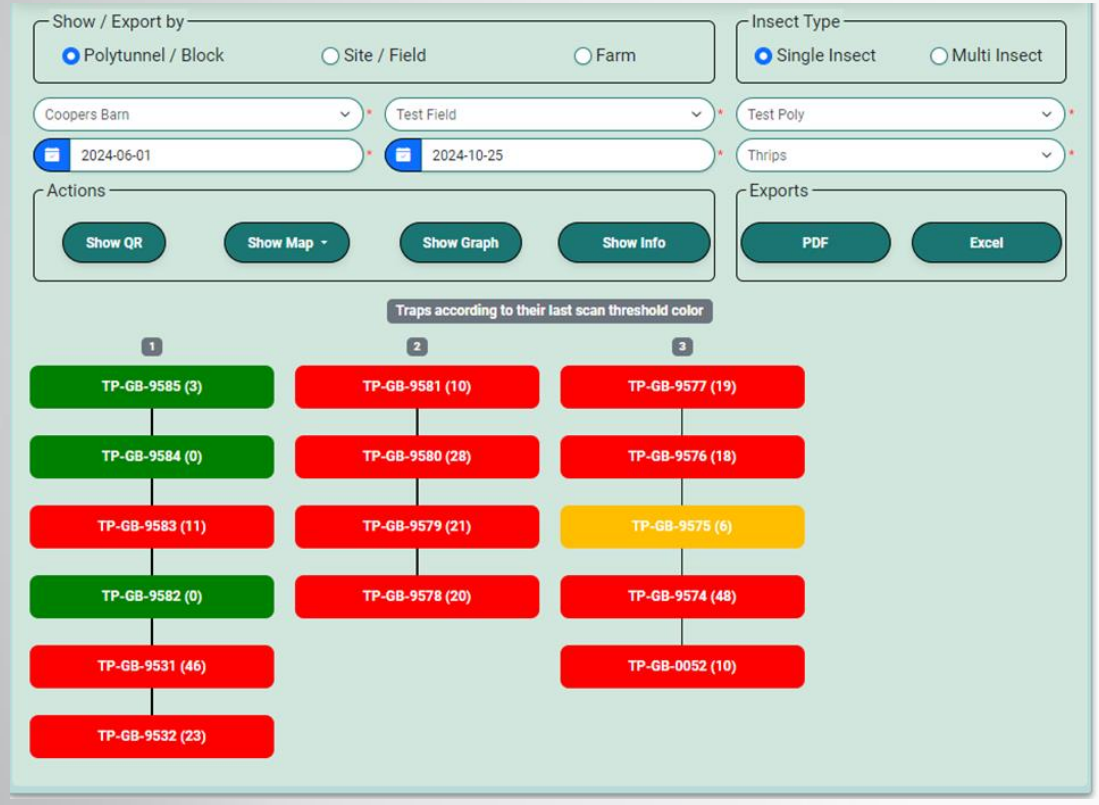
❖ Scanning the trap

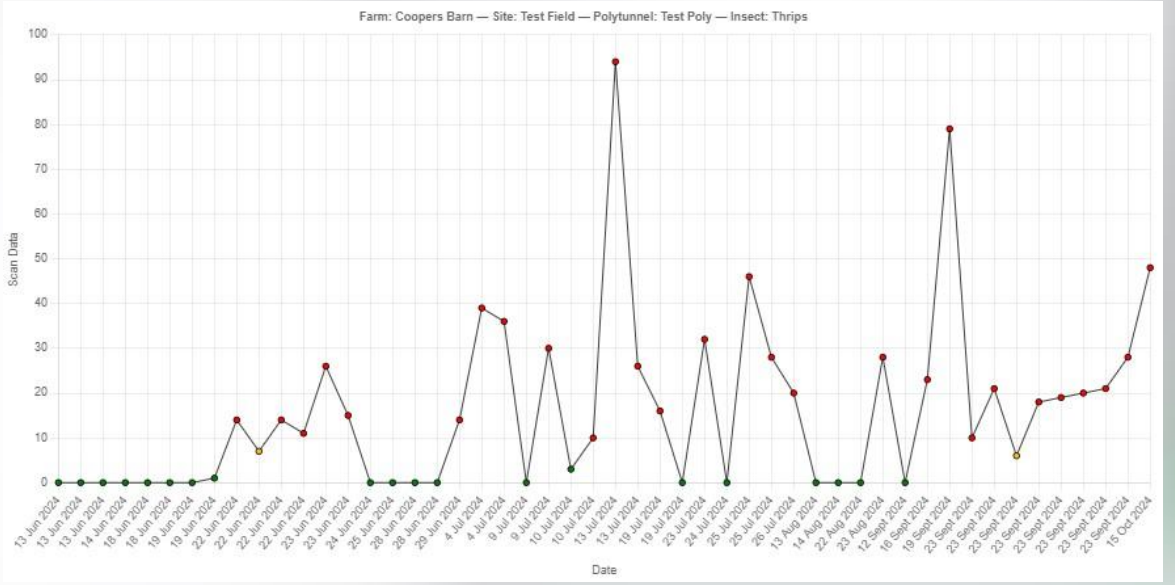


# Outputs

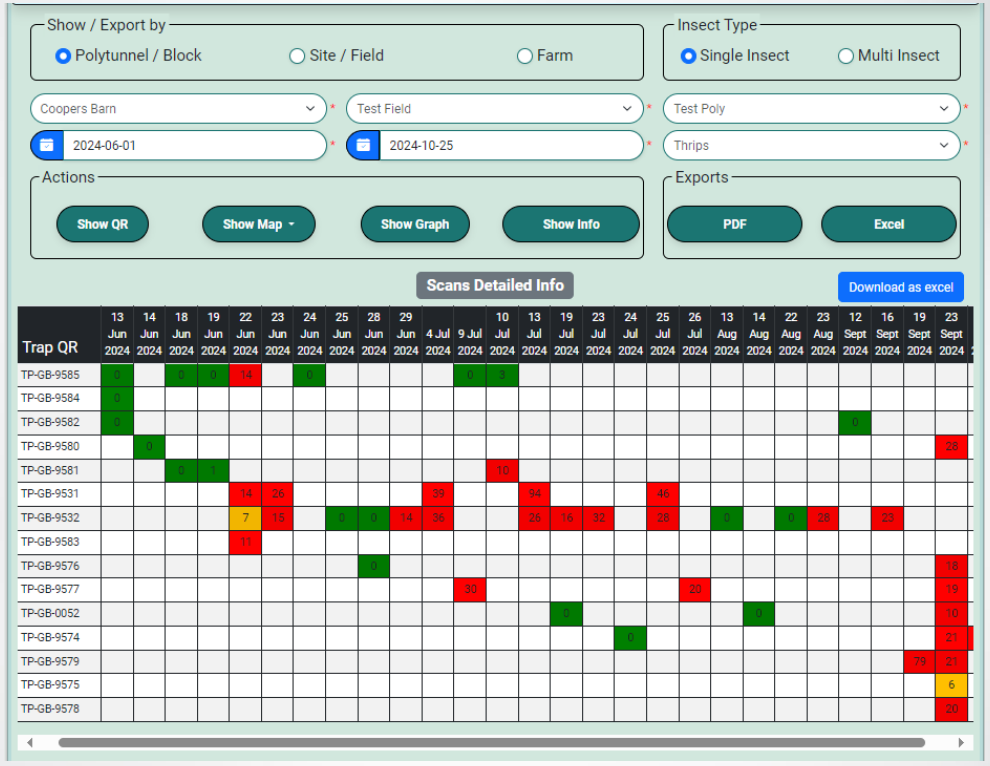

TruePEST
Apps : thrips
Dashboard
Farms
Sites
Users
Thresholds
Subscriptions
Tp lure
Data export
TruePest Shop
Guides & Videos
leave feedback
Logout
Langue
female
Farm name:
AVG
Trap scanned 7 days
Avg trap catch
Nº 1 Apple
2
0
1
0 / 3 traps
20.33
Map1
Nº 2 BEhind-1
45
2
1
0 / 48 traps
7.25
Map1
Nº 3 Testing-Farm
6
2
2
0 / 10 traps
14.30
Map1
Nº 4 Thrips-Kent
156
1
5
0 / 162 traps
1.04
Map1

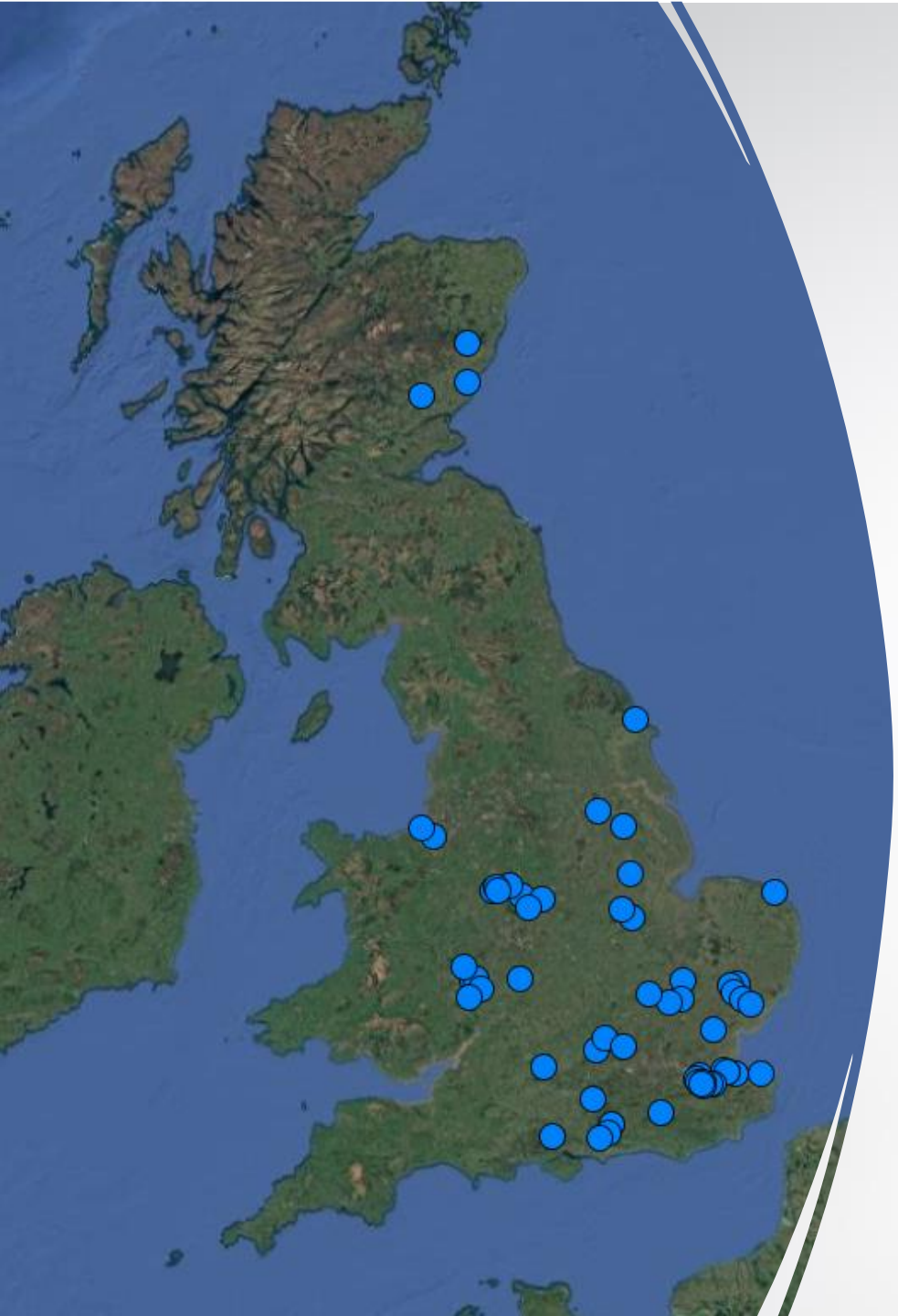
# Outputs


Show / Export by
Polytunnel / Block
Site / Field
Farm
Insect Type
Single Insect
Multi Insect
Coopers Barn
Test Field
Test Poly
2024-06-01
2024-10-25
Thrips
Actions
Show QR
Show Map
Show Graph
Show Info
Exports
PDF
Excel
Traps according to their last scan threshold color
1
2
3
TP-GB-9585 (3)
TP-GB-9584 (0)
TP-GB-9583 (11)
TP-GB-9582 (0)
TP-GB-9531 (46)
TP-GB-9532 (23)
TP-GB-9581 (10)
TP-GB-9580 (28)
TP-GB-9579 (21)
TP-GB-9578 (20)
TP-GB-9577 (19)
TP-GB-9576 (18)
TP-GB-9575 (6)
TP-GB-9574 (48)
TP-GB-0052 (10)


Farm: Coopers Barn — Site: Test Field — Polytunnel: Test Poly — Insect: Thrips
Scan Data
Date

# Outputs


Show / Export by
Polytunnel / Block
Site / Field
Farm
Insect Type
Single Insect
Multi Insect
Coopers Barn
Test Field
Test Poly
2024-06-01
2024-10-25
Thrips
Actions
Show QR
Show Map
Show Graph
Show Info
Exports
PDF
Excel
Scans Detailed Info
Download as excel
Trap QR
13 Jun 2024
14 Jun 2024
18 Jun 2024
19 Jun 2024
22 Jun 2024
23 Jun 2024
24 Jun 2024
25 Jun 2024
28 Jun 2024
29 Jun 2024
4 Jul 2024
9 Jul 2024
10 Jul 2024
13 Jul 2024
19 Jul 2024
23 Jul 2024
24 Jul 2024
25 Jul 2024
26 Jul 2024
13 Aug 2024
14 Aug 2024
22 Aug 2024
23 Aug 2024
12 Sept 2024
16 Sept 2024
19 Sept 2024
23 Sept 2024
TP-GB-9585
TP-GB-9584
TP-GB-9582
TP-GB-9580
TP-GB-9581
TP-GB-9531
TP-GB-9532
TP-GB-9583
TP-GB-9576
TP-GB-9577
TP-GB-0052
TP-GB-9574
TP-GB-9579
TP-GB-9575
TP-GB-9578



# SWD Module 2024 b Trial

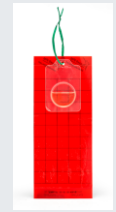
- 75 business’s directly using TruePest.
- Inc. complex businesses, x3 multi-site management companies and numerous multi-site growers.
- Soft fruit / stone fruit and vineyard.
- Average 34 traps per farm.

| Total Companies | Total Admins | Total Managers | Total Technicians |
|---|---|---|---|
| 80 | 134 | 41 | 34 |
| **Total Farms** | **Total Sites** | **Total Polys\Blocks** | **Total Traps** |
| 142 | 539 | 1075 | 2917 |


# Changes for Launch 2025

- New App and AI model.
- Red trap for SWD, blue for thrips, yellow for whitefly.
- Move from x3 to x2 boxes.
  - Even quicker trap monitoring.
  - 1/3 less pictures.
  - Further reduced processing time.
  - Picture stays on portrait.
- Improved web portal / results dashboard.
- Easier / more intuitive data interface on web portal.
- Change to supported phones- iPhone 13 Pro and Samsung S21 and more advanced supported. Older models not sufficiently accurate.

Russell IPM
INTEGRATED PEST MANAGEMENT

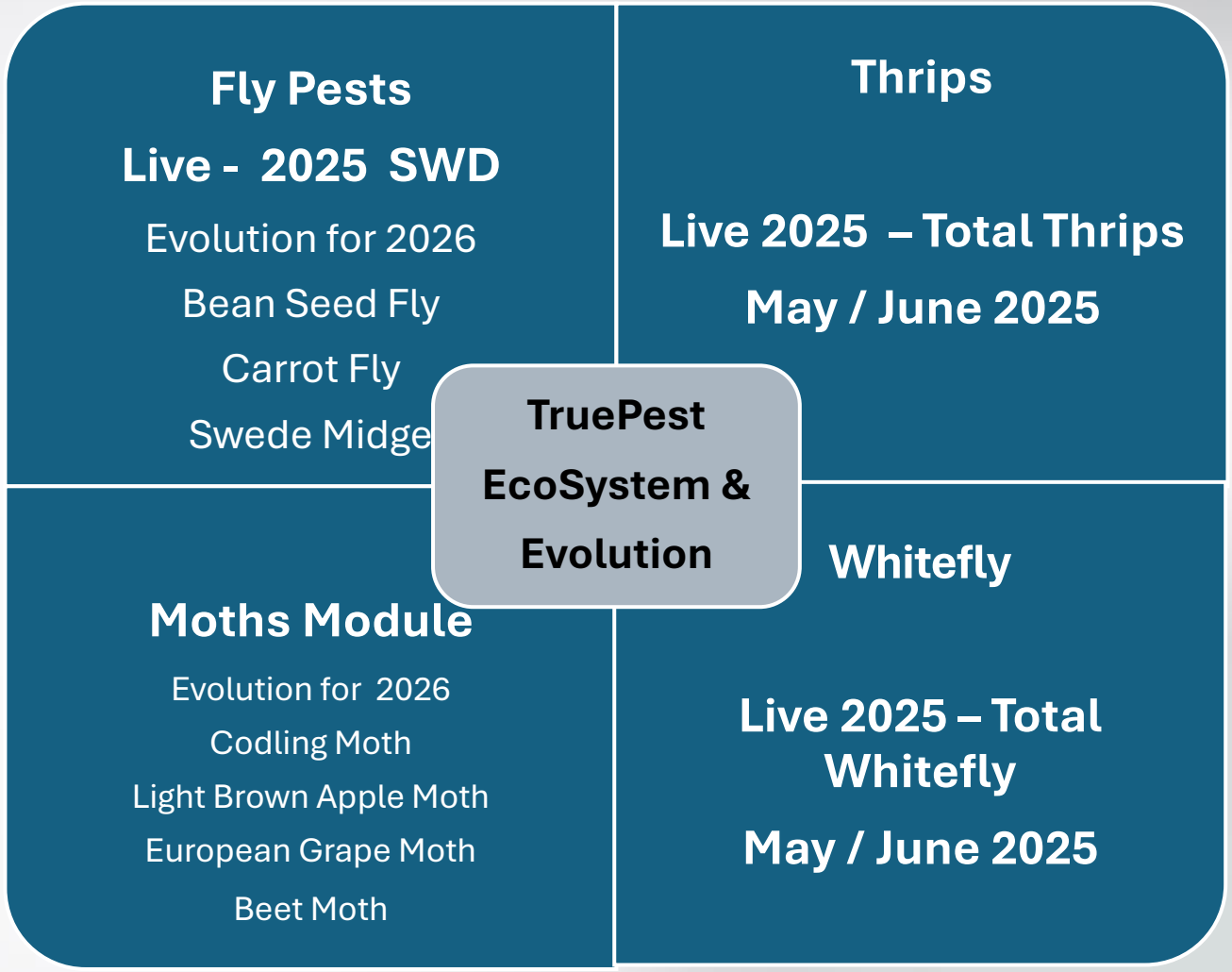
| | Trap Type Comparison – Per Trapping Point | | | |
|---|---|---|---|---|
| | TruePEST |  Std. Sticky Trap |  Traditional Wet Trap |  Insitu Remote / Camera Trap System |
| Up front capital cost | Medium / Low | Low | Medium | Very High |
| Running cost | Low | Low | Medium | High |
| Set up time | Medium | Medium | Medium | High |
| Time to monitor per trap by grower staff / per week | 4 min | 15 – 20 min | 40 – 45 min | |
| Accuracy of counts | AI driven High 95% Accuracy / High Consistency* | Variable by operative | Variable by operative | Variable by operative |
| Operator skill level required to monitor on farm | Low | High | High | Low |
| Est. equipment cost per year | £45.00 | £11.70 | £65.48 | High |
| Est. labour cost per year (£25 p/hr) | £71.50 | £362.50 | £760.00 | Low (in subscription) |
| Est. cost per trap per year | £111.50 | £381.59 | £825.48 | TBC |
| Graularity of sata | Can be deployed at scale as lower cost and less time to monitor. More trapping points – more granular data | Limited as time consuming to monitor | Limited as time consuming to monitor | Low due to high cost |
| Data sharing | Instant Via App, and Cloud based web-portal + reports | N/A | N/A | Alerts / Reports |

* Using I Phone 13 Pro / Samsung S21 and newer.

# Evolving the TruePest Monitoring EcoSystem

## - Future plans

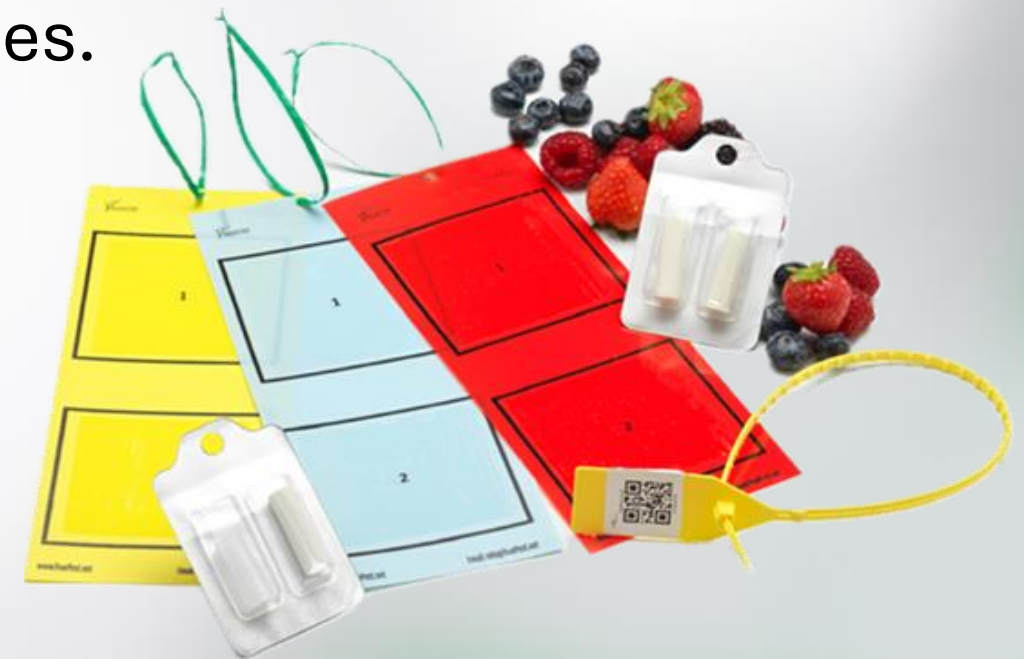
- Using the TruePest architecture we will expand the TruePest Ecosystem of species into:
- Thrips and whitefly / soft fruit, glasshouse, ornamentals: 2025
- Thrips soft fruit, field veg: 2025
- Moths, top fruit, vineyard and sugar beet: 2026
- Other fly species, field veg: 2026



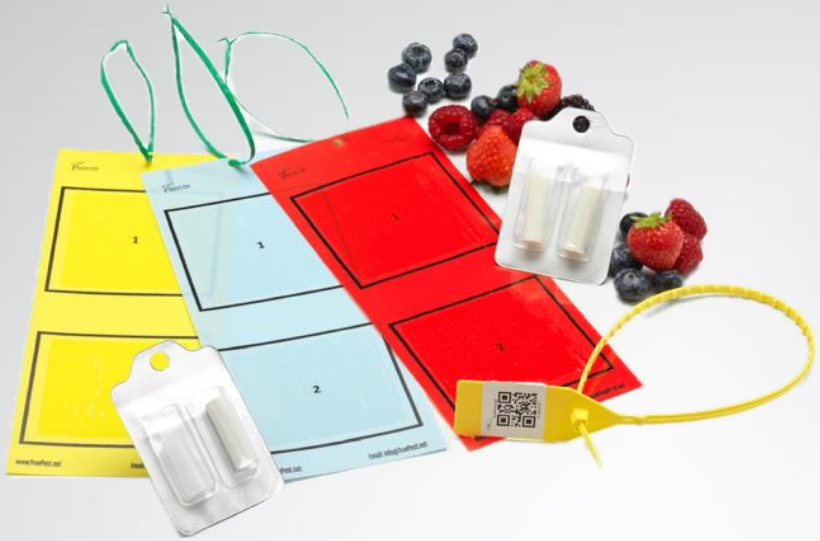
# TruePest Thrips and Whitefly

- Powerful dual thrip lure – kairomone and pheromone combination.
- Blue sticky trap for thrips.
- Yellow sticky trap for whitefly.
- No lure required for whitefly.
- Quicker, easier and cheaper data capture.
- Rapid and real time total thrip and total whitefly counts.
- Instant data access (App) and sharing (web-portal).
- Intuitive data analysis via platform.
- Annual box kits with all equipment and app and system access in the price.
- 1-month free trial kits available. TruePest Thrips / TruePest Whitefly.

- Thrips – 20 -100 TruePest trapping points per ha.
- Large glasshouse 1trap - 500m$^2$.
- Grid pattern + hot spot and high-risk area monitoring.
- More traps per ha in smaller glasshouses.



Russell IPM
INTEGRATED PEST MANAGEMENT





# Thank you ....

# Thrips - Push-Pull Strategies

- Our Product Range – An IPM Tool Kit
- What is a Push – Pull Strategy ?
- Optiroll Range
- MagiPal
- ThripNok
- Push-Pull in Verbena – Case study

# Traps and Lures

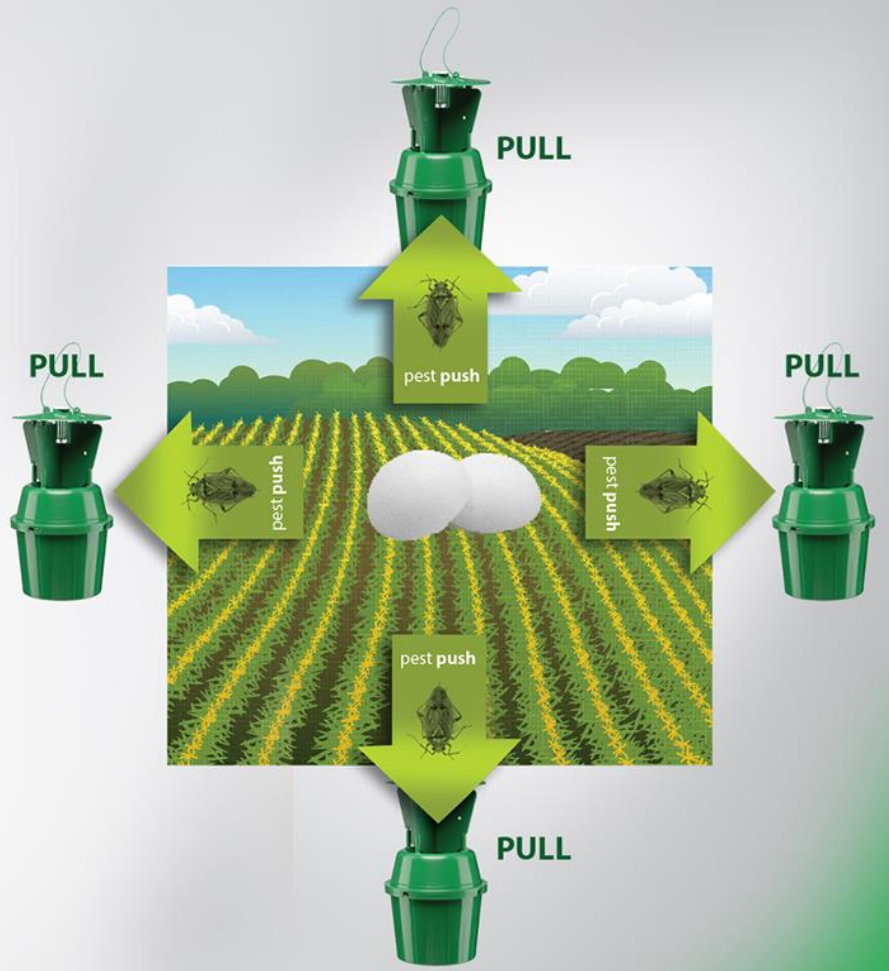
High quality mass trapping at its best with Optiroll, Optiroll Super and Optiroll Super Plus.

More than 150 pheromone and kairomone lure types available.

Long lasting, robust traps, optimised to catch and retain target pests.

# What is push-pull?

- Combine stimuli to:
  - **Push** pest out of crop.
  - **Pull** natural enemies to the crop.
  - **Pull** pest toward a trap.
- Generally nontoxic.
- Compatible with biological control and other methods.

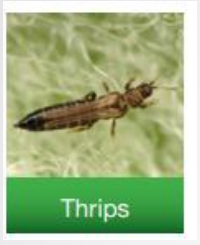


# Commercial Push-Pull Strategies

## Aphids


- Magipal
- Natural Enemy attractant
- Combine with pheromone traps / natural enemies

## Thrips

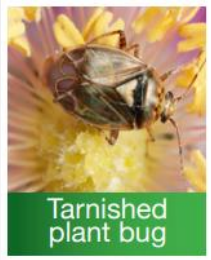



- Magipal and Thripnok
- Natural Enemy attractant
- Pheromone roller trap Optiroll Super Plus

## Midges


- Magipal
- Pheromone Roller trap Optiroll Super Plus

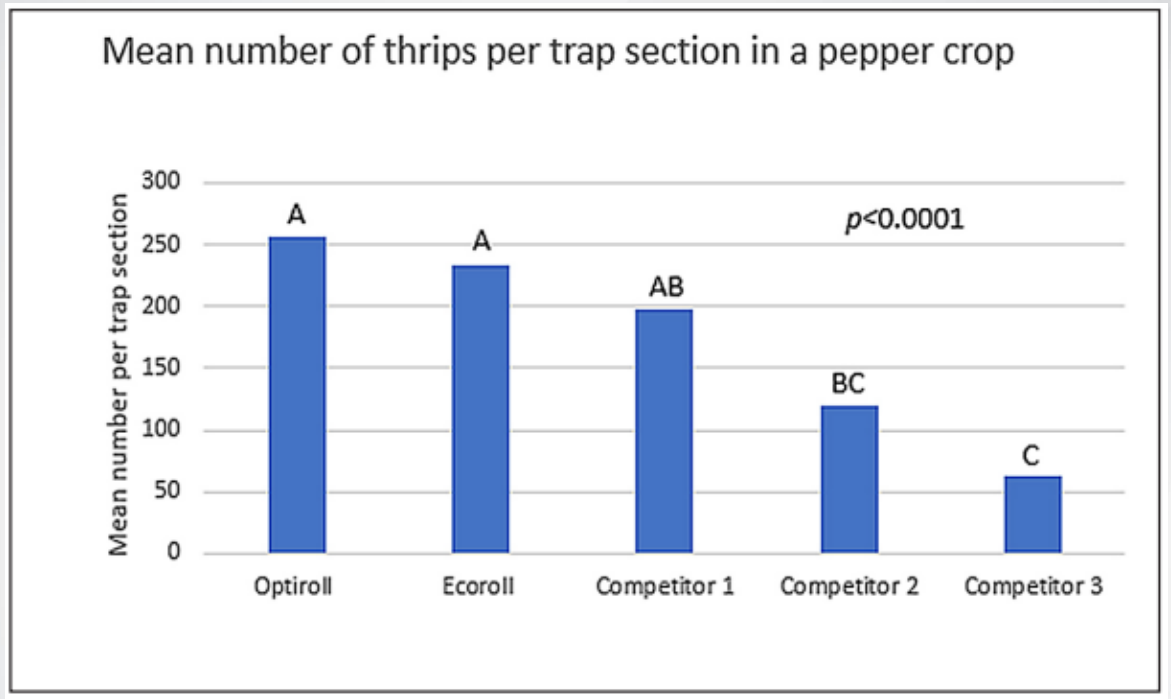
## Capsids





- Lybolty
- Capsid pheromone
- Greenvane traps / Blue Impact sticky traps

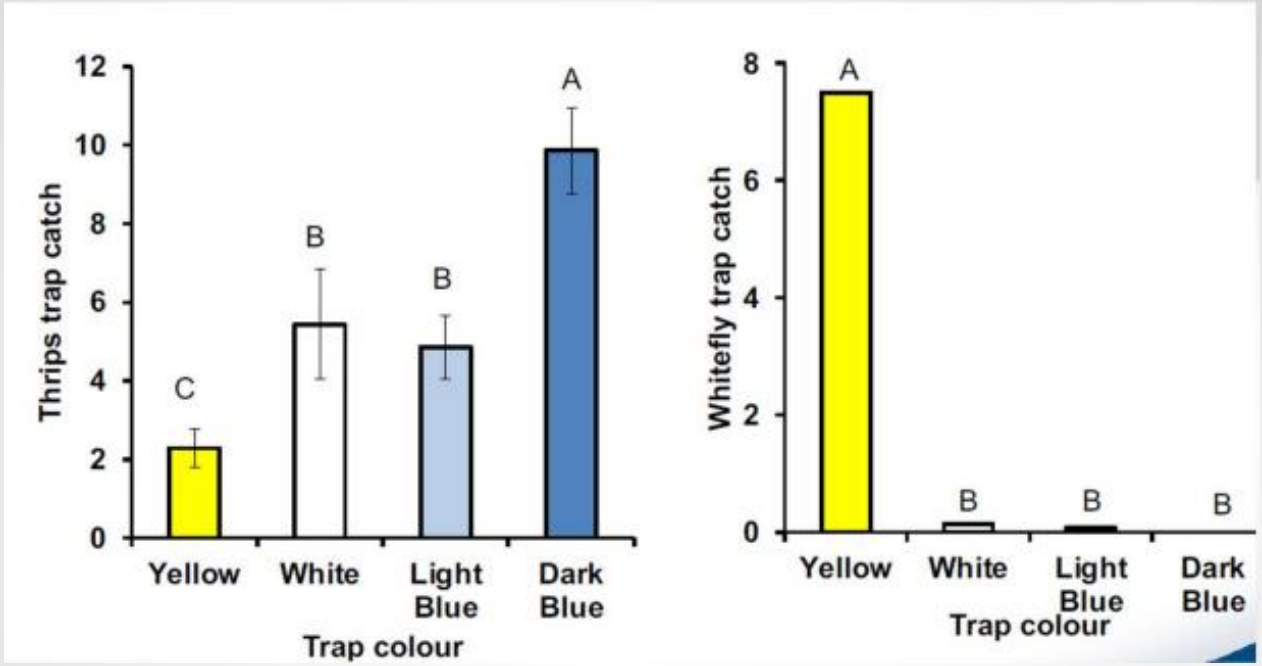
# Optiroll


Mean number of thrips per trap section in a pepper crop
Mean number per trap section
300
250
200
150
100
50
0
A
A
AB
BC
C
p<0.0001
Optiroll
Ecoroll
Competitor 1
Competitor 2
Competitor 3


Impact
Optiroll
Dimension: 30cm x 100m
Impact
Demiroll
Dimension: 10cm x 100m
Impact
Demiroll
Russell IPM


Russell IPM
Impact
Optiroll
OPTIROLL
OPTIROLL
Impact
Demiroll
OPTIROLL

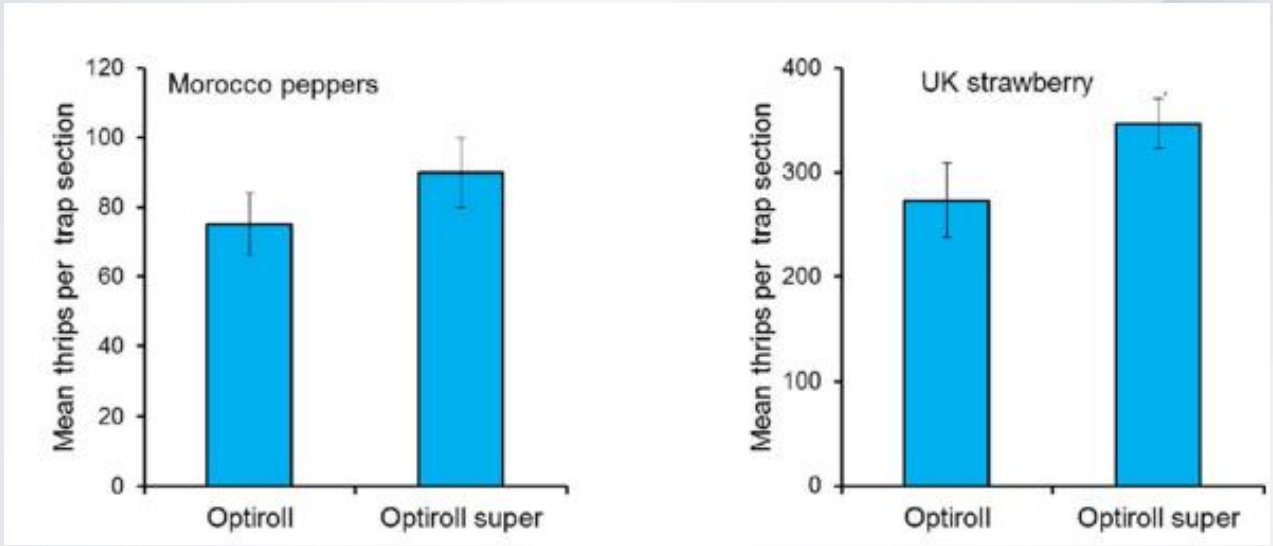
# Optiroll


Thrips trap catch
12
10
8
6
4
2
0
C
B
B
A
Yellow
White
Light Blue
Dark Blue
Trap colour
Whitefly trap catch
8
6
4
2
0
A
B
B
B
Yellow
White
Light Blue
Dark Blue
Trap colour


Impact
Optiroll
Dimension: 30cm x 100m
Impact
Demiroll
Dimension: 10cm x 100m
Impact
Demiroll
Dimension: 15cm x 100m


Optiroll
OPTIROLL
Demiroll
OPTIROLL

# Optiroll

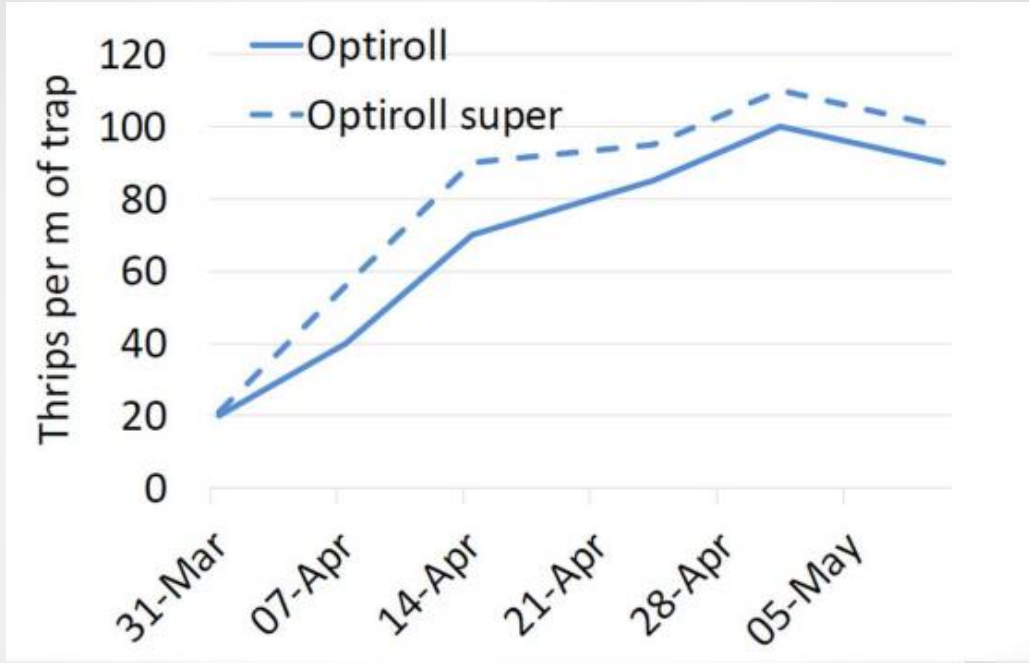

Morocco peppers
Mean thrips per trap section
120
100
80
60
40
20
0
Optiroll
Optiroll super


UK strawberry
Mean thrips per trap section
400
300
200
100
0
Optiroll
Optiroll super


Impact
Optiroll
Dimension: 30cm x 100m
Impact
Demiroll
Dimension: 10cm x 100m
Impact
Demiroll
Russell IPM


Russell IPM
OPTIROLL
Impact
Demiroll

# Optiroll

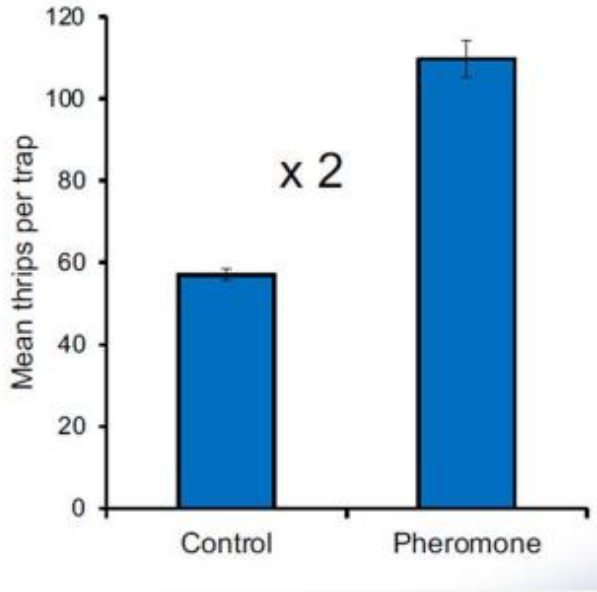




Glass house Strawberry, Spring crop. Pattern (Optiroll Super increases trap catch +17%)

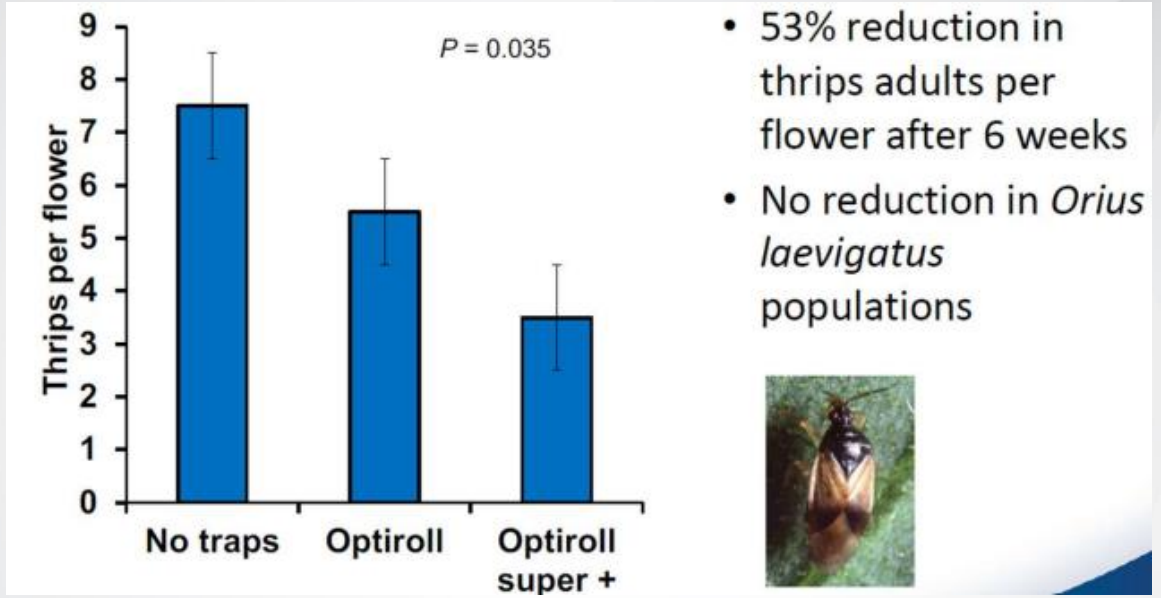
# Optiroll

Western flower thrips pheromone trials





# Optiroll




- 53% reduction in thrips adults per flower after 6 weeks
- No reduction in *Orius laevigatus* populations

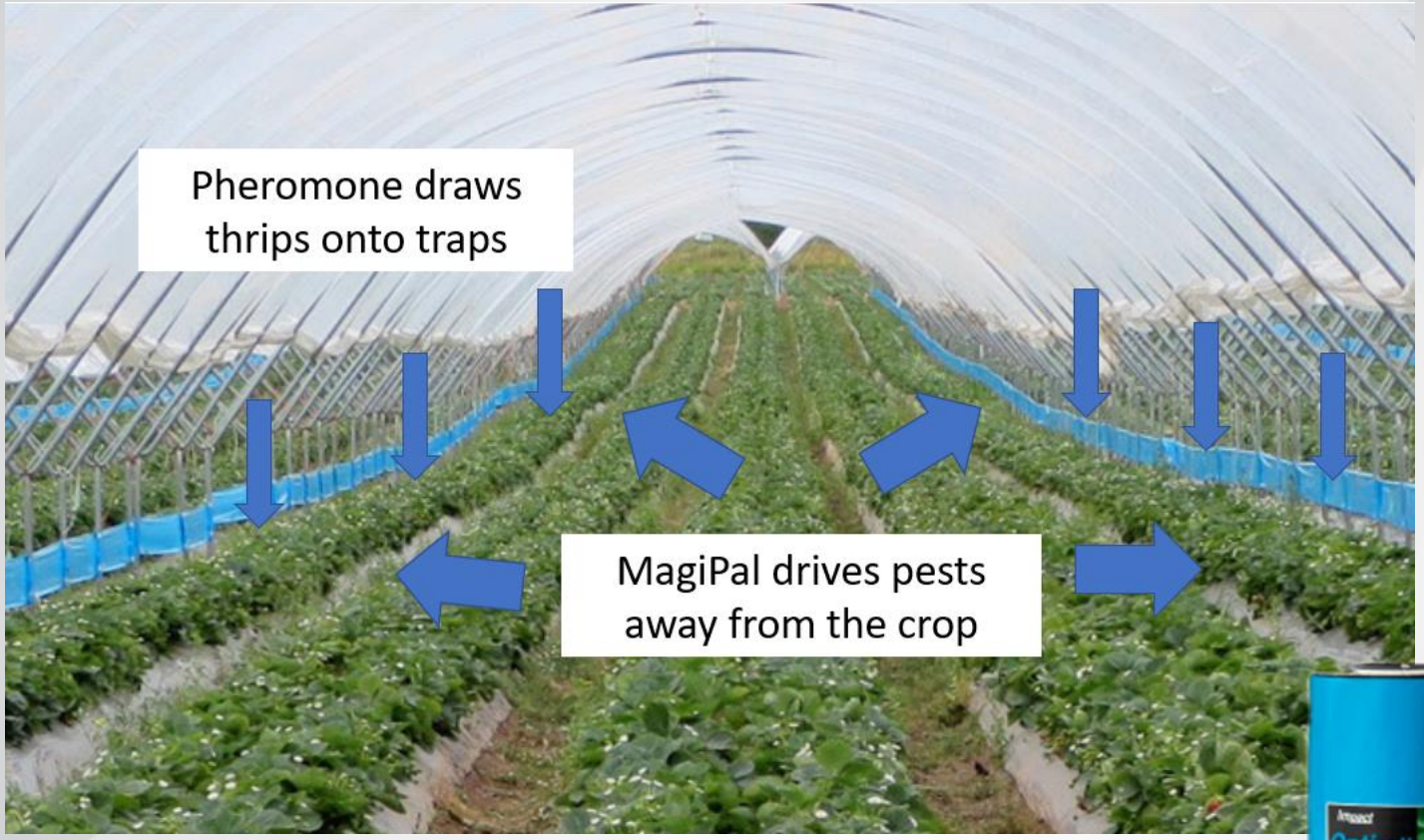



# MagiPal, Natural Enemy Attractant

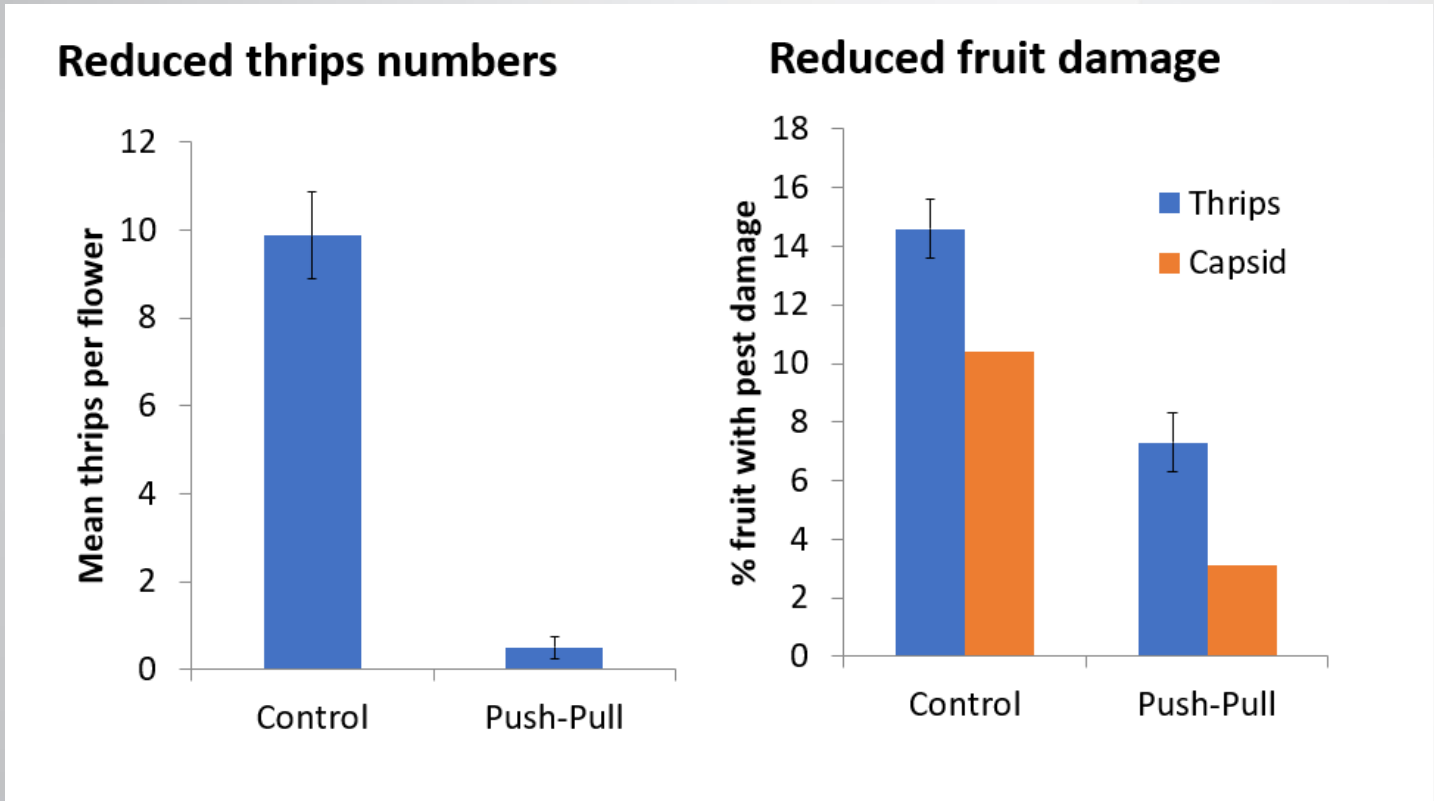
- **Combine with traps and lures for push-pull strategy.**
- **Combine with natural enemies to improve biocontrol.**
- Plant defence compound, protects against disease and pests.
- Attracts natural enemies.
- Insect repellent, repels many species: thrips, capsids, weevils, SWD, midges +.
- Lasts 2-3 months (temperature dependent).

- Rate: 100/120 up to 180/ha
- 10m spacing

# Push-Pull in strawberry – Western flower thrips




# Push-Pull thrips results




Russell IPM
INTEGRATED PEST MANAGEMENT

# Thripnok: A two-component kairomone lure

# Thripnok

## What is Thripnok?

- Kairomone attractant lure of mixed scents
  - *S*-Verbenone (Abdullah, 2015)
  - *P*-Anisaldehyde (Koshier, 2000)



Japanese flower thrips
*Thrips setosus*

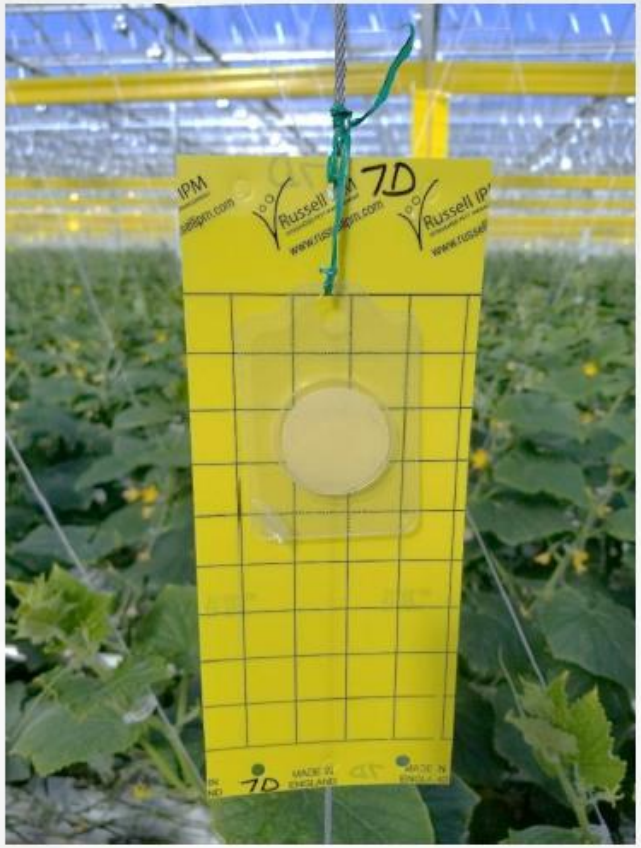


Rose thrips
*Thrips fuscipennis*

## Why Thripnok?

- Increased response of western flower thrips.
- Less specific (attracts more species).
- Increasing pest status of flower-dwelling thrips species.
- Combining two scents may broaden the response:
  - More species attracted.
  - Better competition with floral scents.

# Trial sites, strawberry (UK), cucumber (Canada), basil (Kenya)

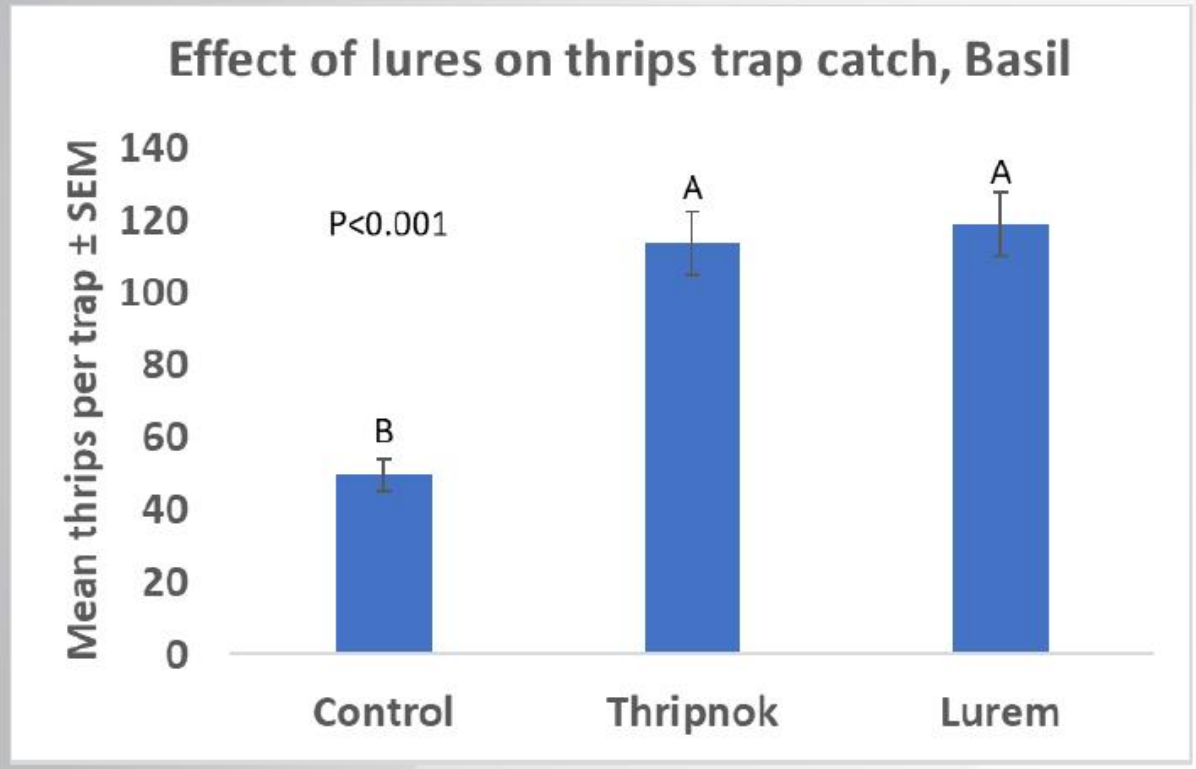


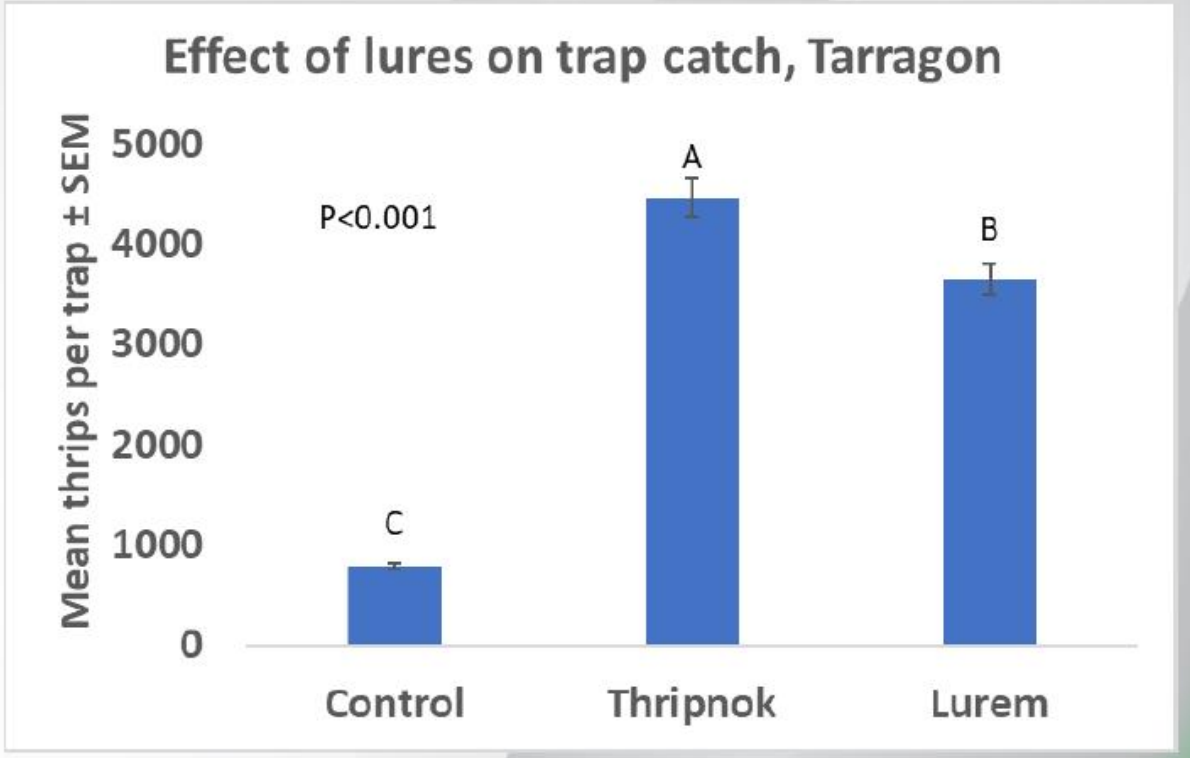

# Factor of increase with Thripnok

| Crop | Thripnok performance | | | |
|---|---|---|---|---|
| | Temp °C | Height above crop | Factor increase | P |
| ***Strawberry**** | 6-15 | 10 cm | x 3.4 | 0.001*** |
| ***Strawberry*** | 14-28 | 10 cm | x 2.3 | 0.001*** |
| ***Cucumber*** | 19-26 | 150 cm | x 1.7 | 0.001*** |
| ***Basil*** | 18-32 | 10 cm | x 2.5 | 0.001*** |
| ***Tarragon*** | 18-32 | 10 cm | x 5.7 | 0.001*** |

* <2 flowers per plant. Comparisons used ANOVA

# Thripnok trial results
# Basil and Tarragon, Kenya 2021




Thipnok increased thrips trap catch by x 2.3 and x 5.7

# How is Thripnok being used?

| **A monitoring tool that can be used in all protected crops:** | **Can be combined with a range of pest management strategies:** |
|---|---|
| Improves early detection of thrips | Mass trapping with sticky traps and Thripnok is used in fruit, vegetable and flower crops |
| Increases trap catch | Push-pull strategies combining Thripnok and traps with natural enemy attractant (Magipal) |
| Attracts a wider range of thrips species | **Synergistic for insecticide and biological treatments, as Thripnok draws thrips out of flowers, making them easier to target** |

INSTITUT DES PROFESSIONNELS DU VÉGÉTAL

ASTREDHOR

PROJECT HEALTHI 2

# USE OF SEMIOCHEMICALS TO CONTROL THRIPS

MINISTÈRE DE L'AGRICULTURE DE LA SOUVERAINETÉ ALIMENTAIRE ET DE LA FORÊT

VALHOR

# Experimental set-up

2023




2024

# 4 trials

## 2023

*F.occidentalis*

M1 : Control

M2 : Push-pull strategy

M3 : push-pull strategy + predatory mites


**Trial 1**
High inoculation

**Trial 2**
Natural contamination and predatory bugs

## 2024

M1 : Control

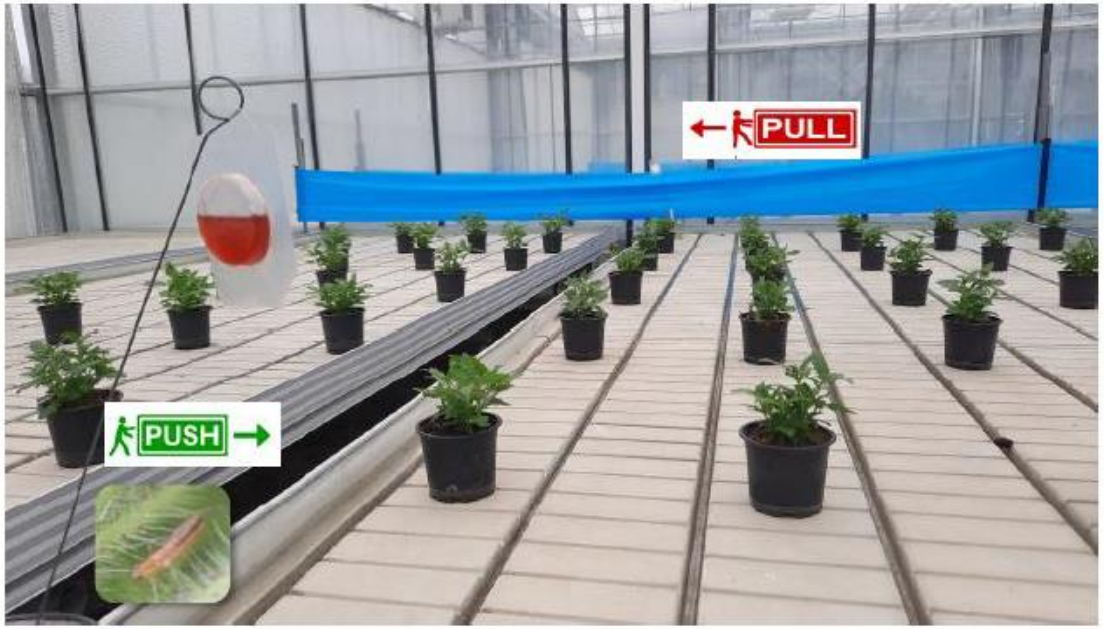
M2 : Push-pull strategy

M3 : predatory mites strategy


**Trial 3**
*T.nigropilosus species*

**Trial 4**
Natural contamination + inoculation

# Push-Pull in Verbena




**Répulsif : Magipal**

. Solution de tannins qui repousse les ravageurs et attirent les auxiliaires
. Durée diffusion : 2-3 mois
. Dose 180 lures/ha at 10 m intervalles - 3 € unité
. Réduction nb de thrips de 95% en fraise UK

**Attractifs**
**Thripnok**

. Combinaison de 2 odeurs de fleurs (anisaldehyde et verbenone) en blister pack
. Dose 120 lures/ha at 10 m intervalles
3,5 € unité
. Attire plusieurs espèces de thrips

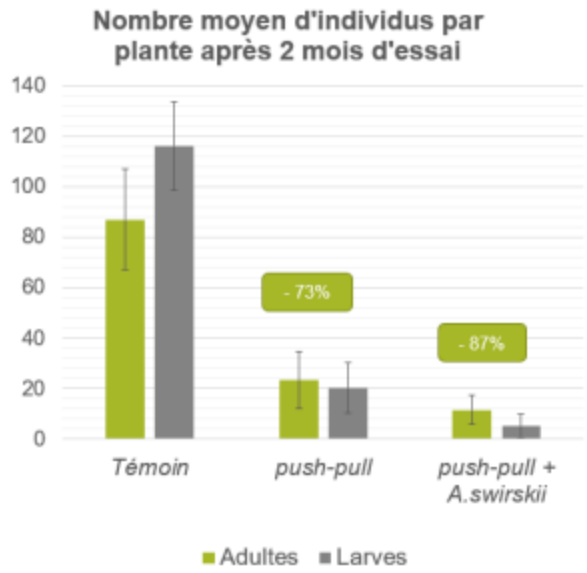
+

**Optiroll Blue**

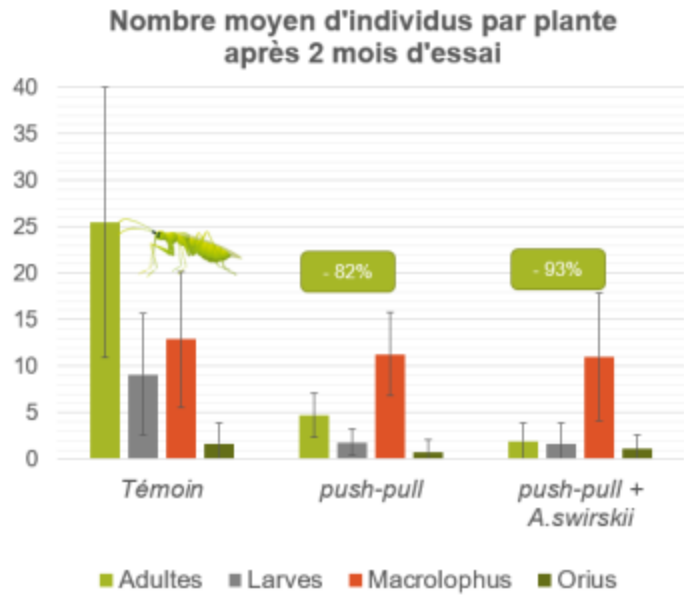
. Bande engluée bleue qui double la capture des thrips
. 10 à 12 unités de 100 m/ha
. 40 €/100 m

# Effect on the number of thrips on the whole plant after 2 months

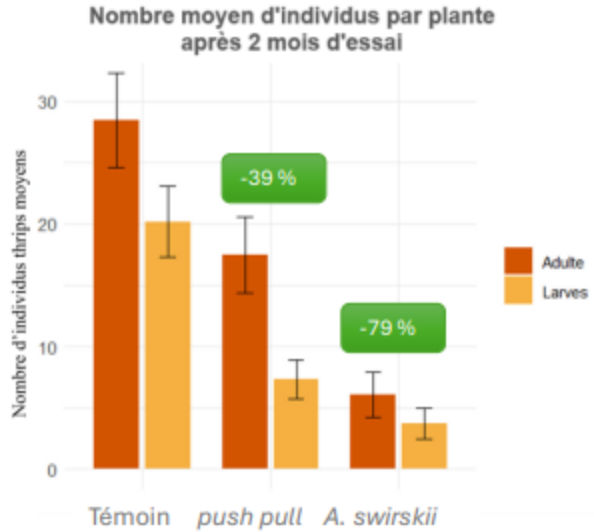
## Trial 1




## Trial 2




## Trial 4




Témoin > Push pull > *A.swirskii* > *A.swirskii* + push-pull

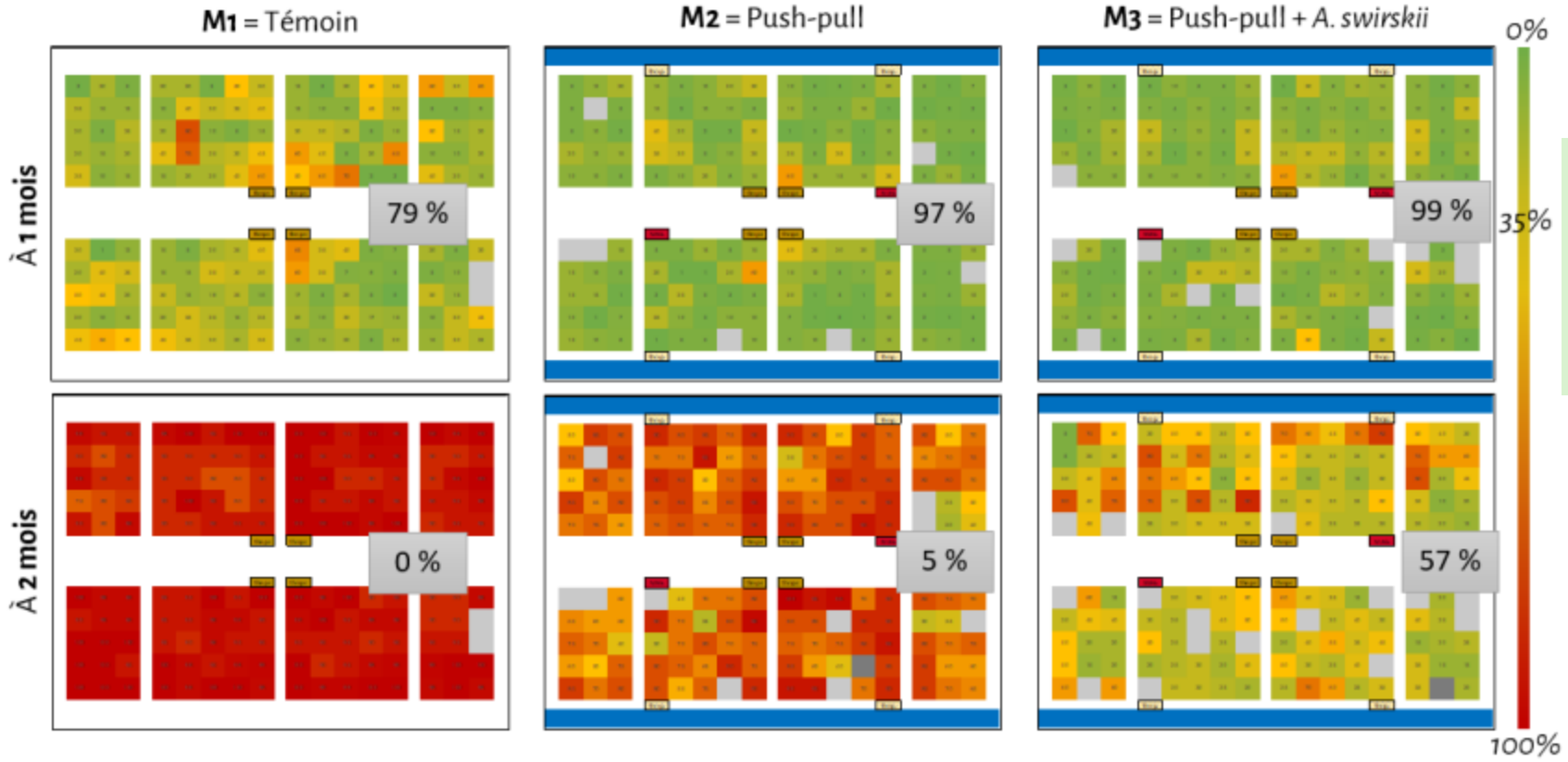
Push-pull strategy compatible with Biocontrol Agents

Competition /flowers

Duration of effectiveness

## Effect on yield: % marketable plant

### Trial 1

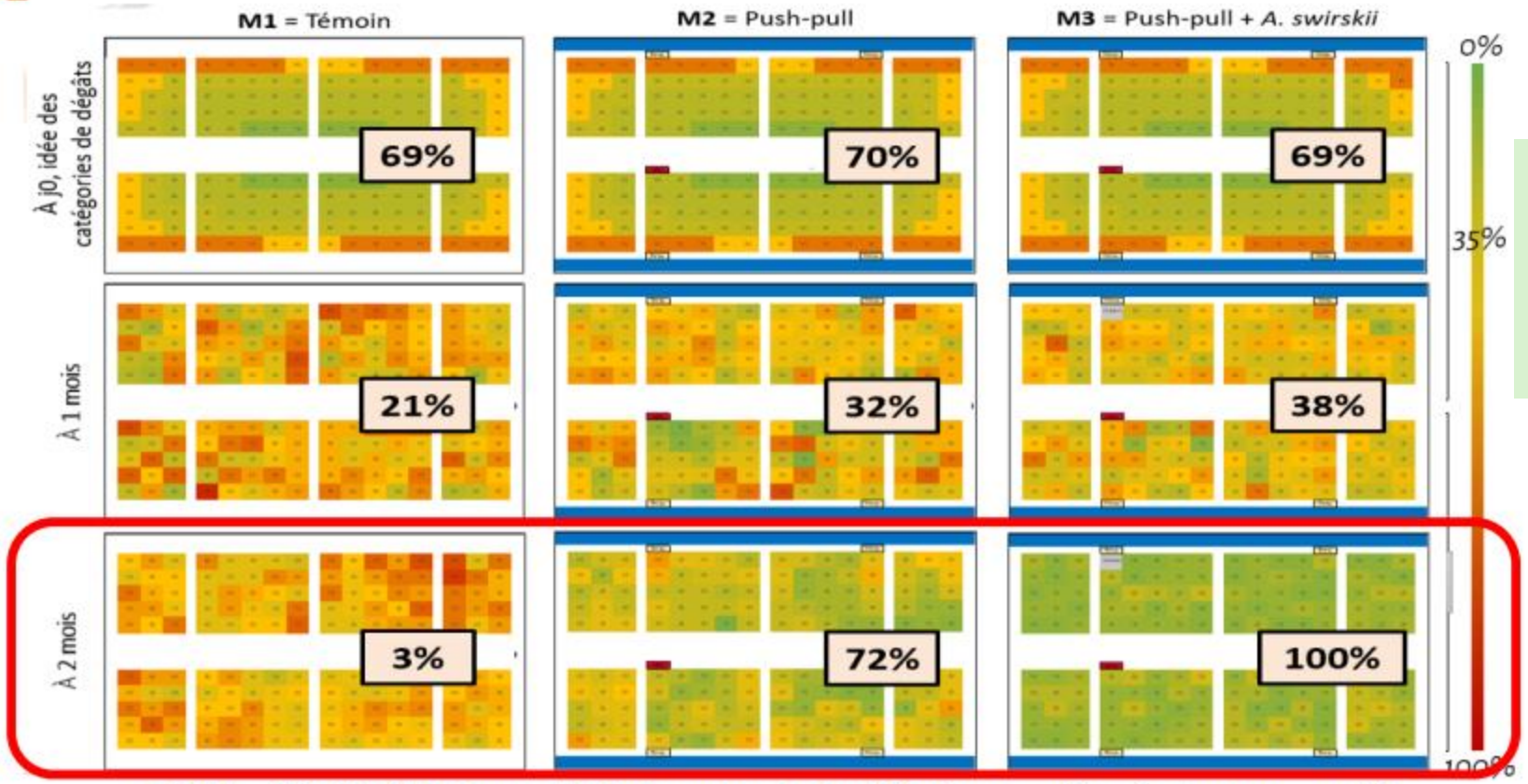



**ESSAI 1 / Sévérité d'attaque de thrips par verveine** (pixel vert = 0% - pixel rouge = 100%) **et pourcentage de plants commercialisables** par modalité au début de l'essai

35 % of damaged leaves is the economic threshold for commercialization of verbena in France

# Effect on yield: % marketable plant

## Trial 2

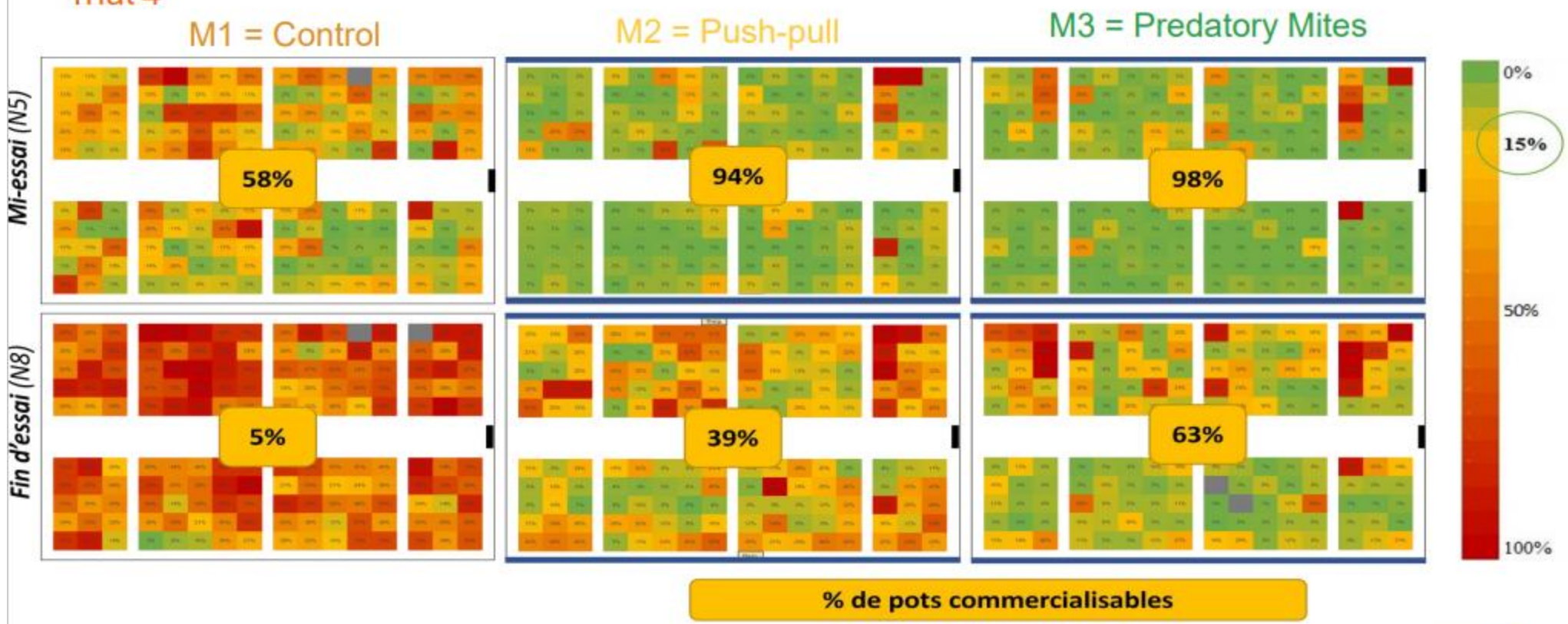



**ESSAI 2 / Sévérité d'attaque de thrips par verveine** (pixel vert = 0% - pixel rouge = 100%) et **pourcentage de plants commercialisables** par modalité au début de l'essai

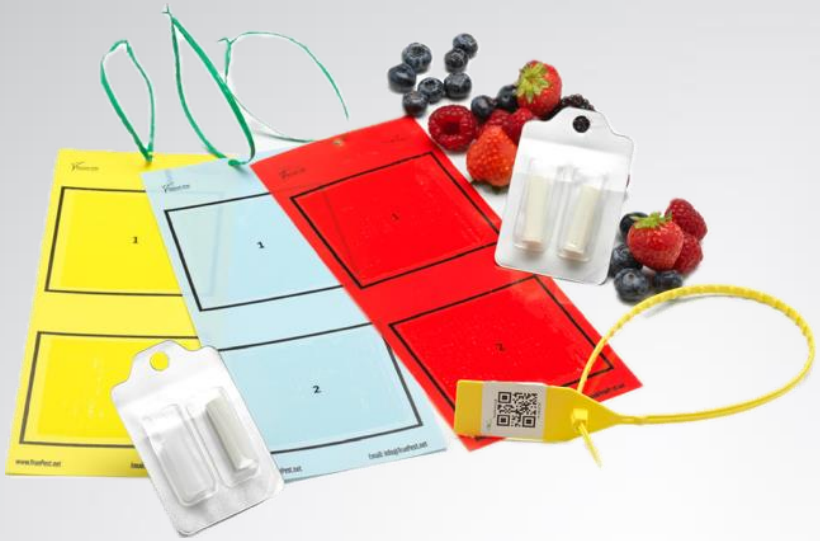
35 % of damaged leaves is the economic threshold for commercialization of verbena in France

# Effect on yield: % marketable plant

Trial 4




**ESSAI 4 / Sévérité d'attaque de thrips par verveine** (pixel vert = 0% - pixel rouge = 100%)
et **pourcentage de plants commercialisables** par modalité au début de l'essai




Contact us:

Andy Russell
andrew.russell@russellipm.com
07798 714948

info@truepest.net

Rachel Turner
Rachelturner@russellipm.com
07741 006219

# Thank you ....