

*Semiochemicals: From
concept to crop protection.
Tracing the product lifecycle
from idea to field application*

Dr Vernon Steyn | Insect Science



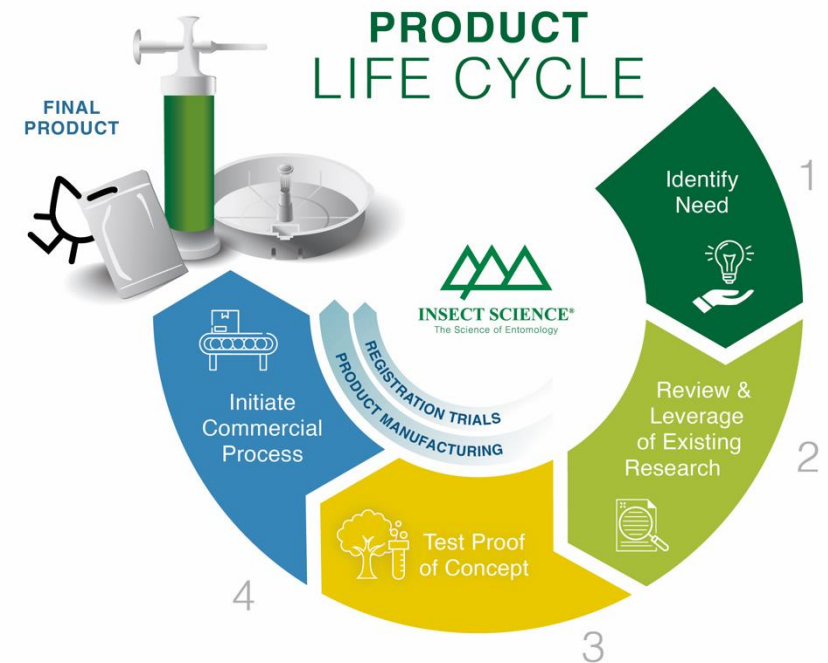


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What does Insect Science do?

USING SEMIOCHEMICALS IN AGRICULTURE FOR PEST MANAGEMENT

SEMIOCHEMICALS

PHEROMONE

ALARM PHEROMONES
TRAIL PHEROMONES
SEX PHEROMONES
AGGREGATION PHEROMONES
HOST MARKING PHEROMONES

ALLELOCHEMICALS

ALLOMONES
(Advantage to sender)
KAIROMONES
(Advantage to receiver)
SYNOMONES
(Advantage to both parties)



PRODUCT LIFE CYCLE

FINAL
PRODUCT



INSECT SCIENCE®
The Science of Entomology

Identify
Need



1

Review &
Leverage
of Existing
Research



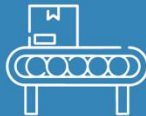
2

Test Proof
of Concept



3

Initiate
Commercial
Process



4

REGISTRATION TRIALS
PRODUCT MANUFACTURING

Product Life cycle: Thrips Case Study

We are frequently asked or requested to work on insect pests by farmers or industry representatives



These requests include;

- Citrus flower moth this led to X-Mate CGO
- Spotted Winged Drosophila leading to SWD PheroLure and Mass Trapping
- Polyphagous shothole borer = PSHB PheroLure

But the insect that we have had the most requests to work on is:

Thrips

Thrips of economic importance

Known to damage plants and fruit

TEREBRANTIA (suborder)

- Forewing with veins & setae
- Forewing surface with microtrichia



terminal
abdominal
segment
not tubular



No known fruit pests

TUBULIFERA (suborder)

- Forewing without veins & setae
- Forewing surface smooth



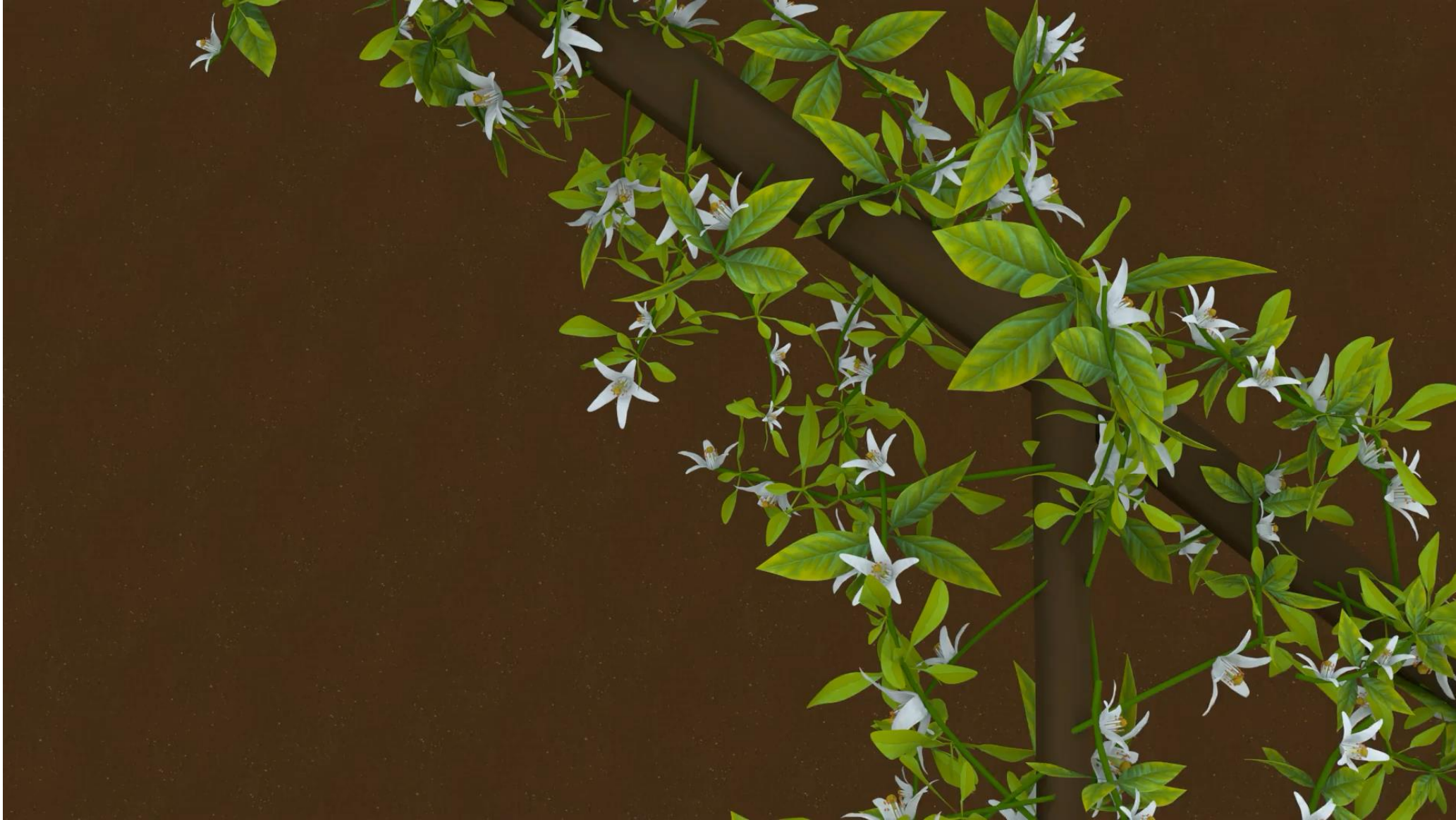
terminal
abdominal
segment
tube-like



VS

(Source: Identification criteria adapted from Allsopp & Knipe [ARC Infruitec-Nietvoorbij]).

Life cycle: Thrips



Article

Factors Impacting the Use of an Allelochemical Lure for *Cydia pomonella* on Apple Fruit

Alan Lee Knight¹, Michele Prevedenti²

Entomological Research

Research Article

Olfactory behavioral responses of two *Drosophila* species and their natural parasitoid to volatiles from bananas

Ng Dang, Linlin Sun, Hongwei Yao, et al.

[VIEW METRICS](#)

Research Paper

Effects of pear fruit-derived volatiles and their concentrations on the responses of oriental fruit moths

[Xuefeng Hu, et al.](#)

First published online 3 May 2023

Entomologia Generalis, Volume 43 (2023), Issue 4, 733–749
Published online 3 May 2023

Open Access Review Article

[VIEW METRICS](#)

Pheromones and semiochemicals with potential use in management of citrus pests

Anat Levi-Zada*

Department of Entomology-Chemistry, Institute of Plant Protection, Agricultural Research Organization, Volcani Institute, Rishon LeZion 7505101, Israel

* Corresponding author: anatzada@volcani.agri.gov.il

With 1 table

International Journal of Tropical Insect Science
<https://doi.org/10.1007/s42690-022-00914-3>

ORIGINAL RESEARCH ARTICLE

Potential attractants from three host plants of *Bactrocera dorsalis* (Hendel) (Diptera: Tephritidae)

Fikira Kimbokota¹, Ahmed Hassanali², Peter George Nganga Njagi³Received: 6 September 2020 / Accepted: 16 October 2022
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Abstract

The fruit fly, *Bactrocera dorsalis*, is a polyphagous pest that damages a wide variety of fruits in the tropics, including East Africa. In this paper, we aimed to evaluate the attraction of kairomones shared by three hosts of *Bactrocera dorsalis* to lay the...e, Eastern Cape
...rthern Cape

Full Article

15 October 2025

Revised: 10 March 2026

Published online in Wiley Online Library:

wileyonlinelibrary.com/doi/10.1002/ps.70770

Host-plant volatile attraction: Development and field evaluation of a multicomponent lure for *Leucoglyphus cucurbitae* based on host-plant volatiles and gut bacterium-derived volatiles

Jinhua Li,^{a,b,c} Guangmei Chen,^{b,c} Yang Yue,^{b,c} Jingjing Wang,^{b,c} Yanan Liu,^{b,c} Zhenya Tian,^{b,c} Jingfang Yang,^{b,c} Bin Zhang^a and Zhongshi Zhou^{b,c*}

Life cycle: Product; Thrips attractant discovered

Review &
Leverage
of Existing
Research



2



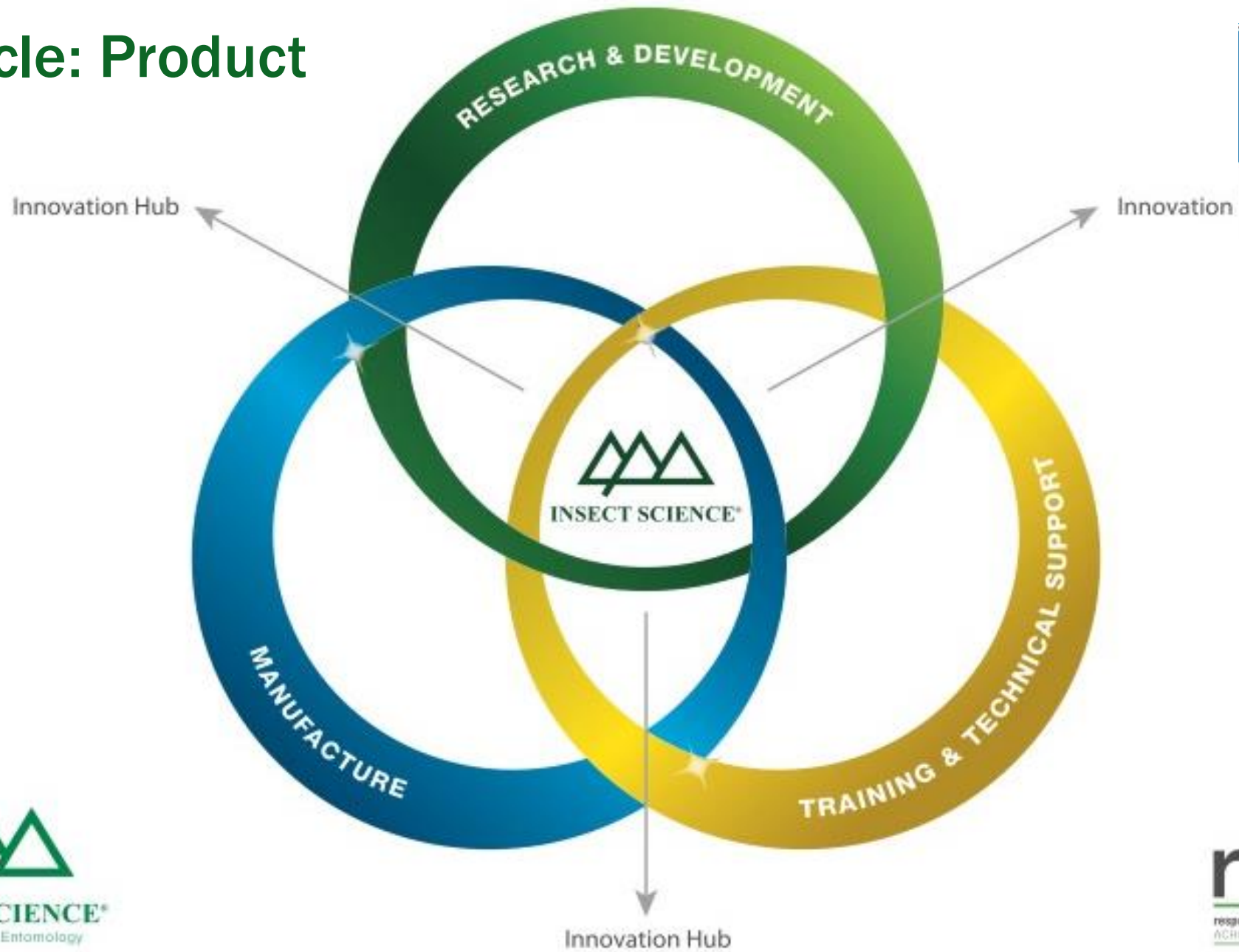
JP VAN NIEKERK

Western Cape, Eastern Cape
and Northern Cape



9

Life cycle: Product



Life cycle: Product



Test Proof
of Concept



INSECT SCIENCE
The Science of Entomology

rpm
responsible pest management
ACHIEVING MORE WITH LESS

USING INSECT SEX PHEROMONES IN AGRICULTURE

The Insect Science PheroLure® range uses insect sex pheromones at two distinct levels.



1 POPULATION MONITORING

PHEROMONE TRAPS



2 PEST CONTROL

DISRUPTION

MATING DISRUPTION



ATTRACTION

MASS TRAPPING



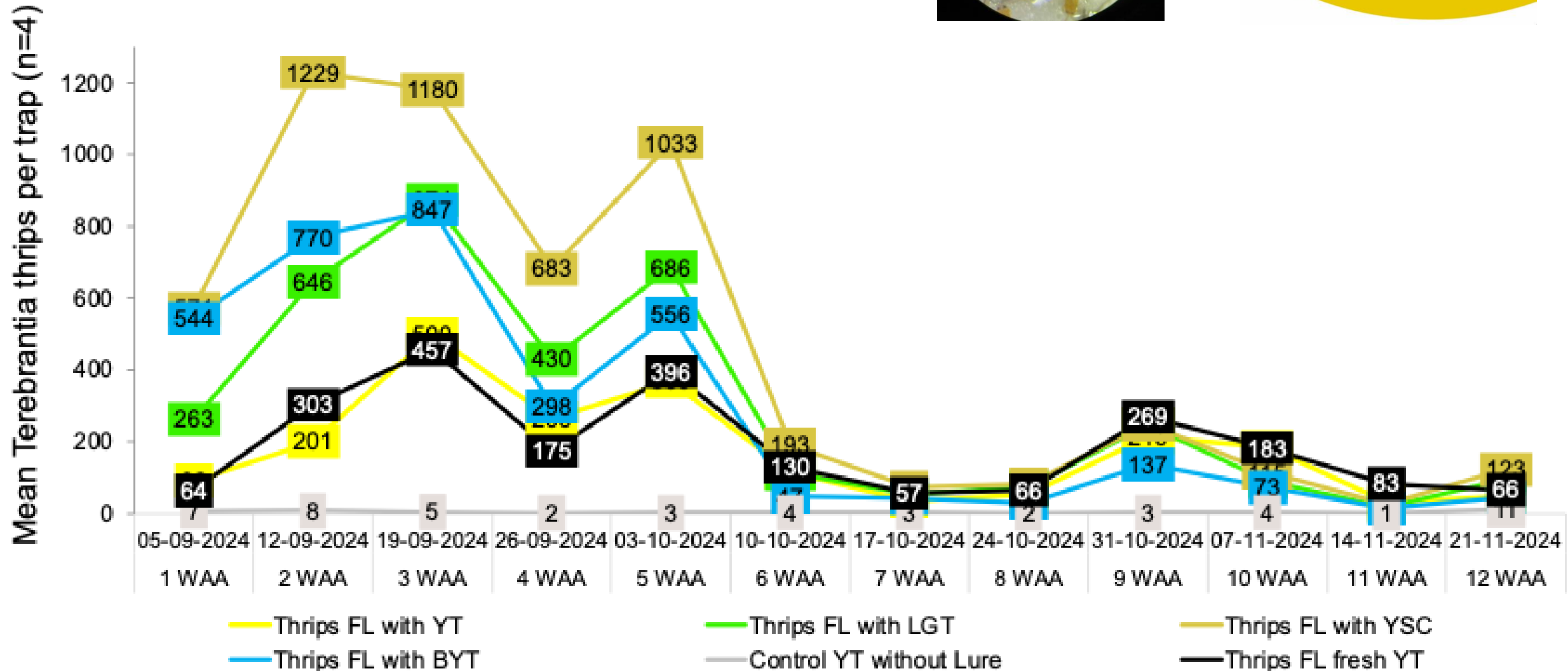
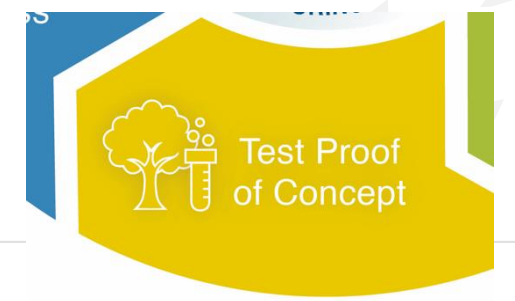
MALE ANNIHILATION



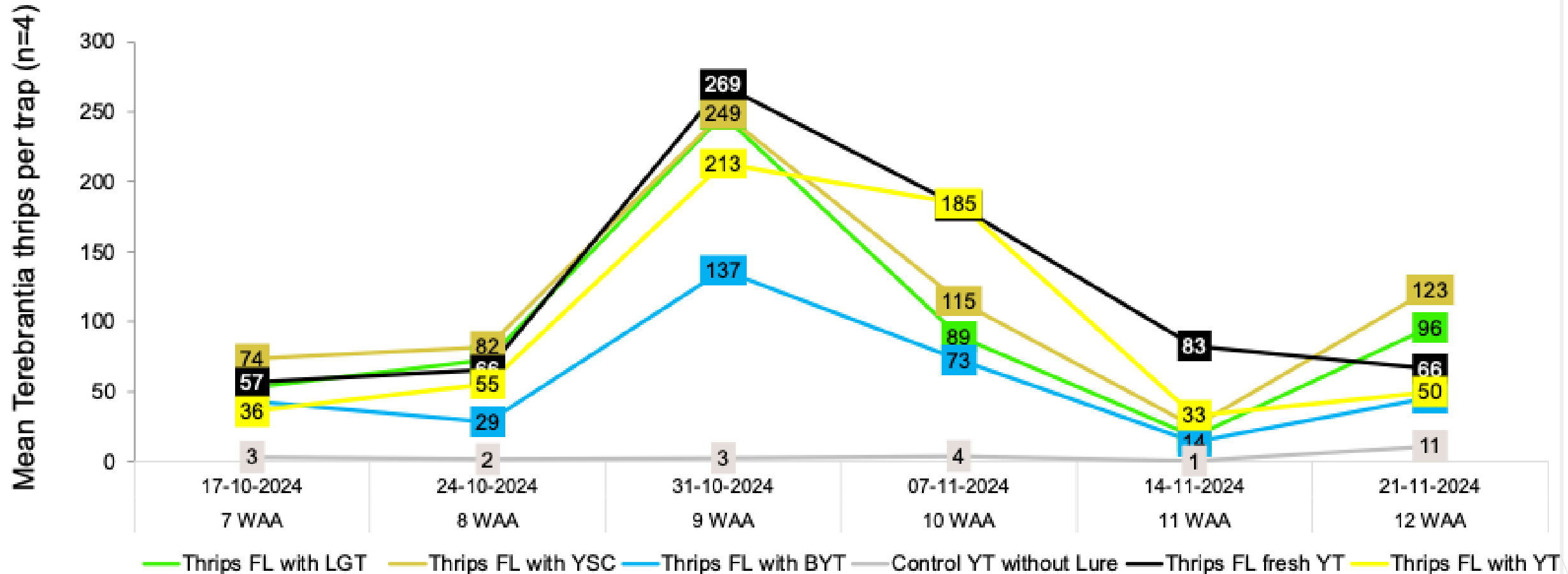
ATTRACT AND KILL



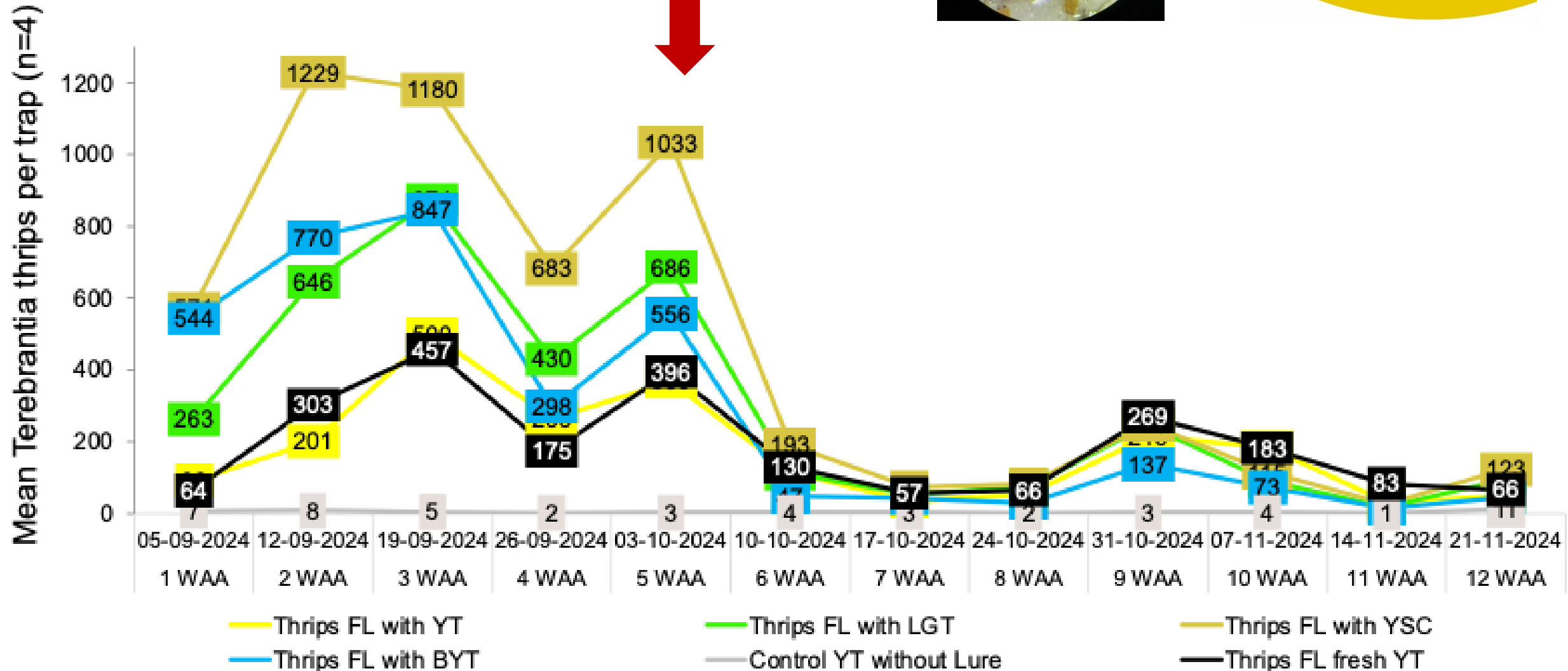
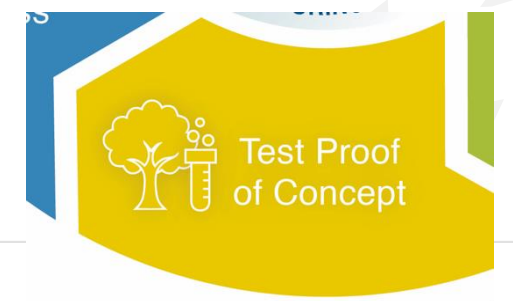
Life cycle: Product



Life cycle: Product



Life cycle: Product



Investment timeline

- 1) Registration trials
- 2) Dossier preparation
- 3) Technical Information booklets
- 4) Initiate Training



GEP Trials

1st Need ID
26 May 2026

Year 1-2
Development

Year 3 Start
Registration
process

Year 4
Registration on
going

Year 5
Submit Reg
Stability etc

Year 7-10
Registered
Control product

Product
Available
2033 earliest

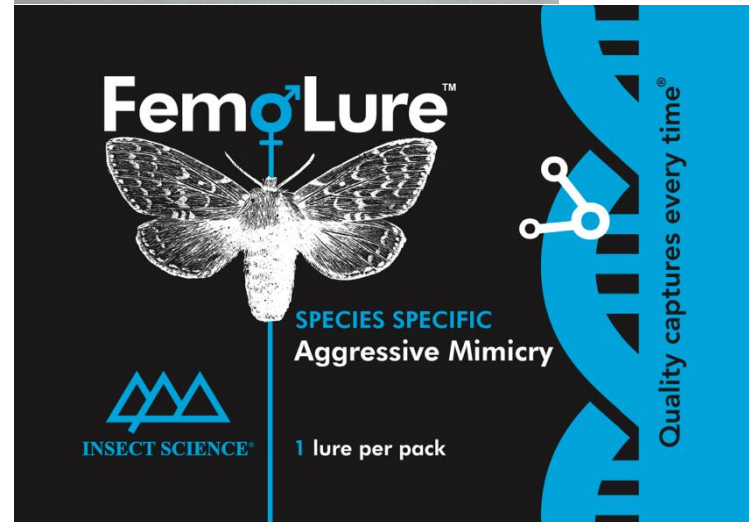
Thrips Lure

Final Product: Thrips Fem[♂]Lure™



1st reliable way to monitor pest Thrips

- Citrus thrips
- Flower thrips
- many more



It's your chance to win!

During the tea time break,
look out for the Insect Science team
in brightly coloured vests.

**Ask them a question or
answer one of theirs
to win a prize.**

