

Bio-Efficacy Of Aerosol-Based Innovative Mass Trapping Technology

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Abstract

False codling moth (*Thaumatotibia leucotreta*, FCM) is a significant pest affecting floriculture worldwide, including Kenya. A new aerosol-based sprayable pheromone, 'aTTraps All Rounder-FCM,' manufactured by Green Vision Life Sciences Pvt Ltd, Pune, India, was evaluated for its effectiveness in mass trapping of FCM in *Hypericum* and *Gypsophila* crops. Compared to traditional FCM lures, 'aTTraps All Rounder-FCM' demonstrated double the trapping efficacy and maintained effectiveness for up to two months, whereas traditional lures lasted only 15 days.

Keywords: False codling moth, FCM, semiochemicals, insect pheromone, FCM mass trapping, IPM

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I. Introduction:

The false codling moth (*Thaumatotibia leucotreta*) is a major pest in various horticultural crops, including floriculture, causing significant economic losses. FCM is highly polyphagous, infesting over 70 plant species such as citrus, cotton, maize, and roses. The larvae penetrate fruits and flowers, leading to internal feeding damage that often goes undetected until harvest, resulting in direct yield losses and reduced marketability.

False Codling Moth (*Thaumatotibia leucotreta*) is an emerging pest in floriculture, causing significant damage to ornamental crops like *Hypericum* and *Gypsophila*, especially in flower-exporting countries such as Kenya. In *Hypericum*, FCM larvae bore into developing berries, causing internal feeding, discoloration, shrivelling, and premature berry drop. This not only reduces marketable yield but also increases the risk of export rejection, as FCM is a quarantine pest in many countries. In *Gypsophila*, the larvae attack flower buds and soft stems. Infested buds fail to bloom or dry up, while stem boring causes wilting and dieback. Damage is often hidden, making detection difficult until after harvest, posing a serious risk to export quality and compliance.

FCM is a quarantine pest with red alert status into Europe therefore detection can lead to destruction of produce in the European markets which may lead to other interlinked complications including restriction of market entry-This is therefore a highly important economic pest in Kenya and most countries accessing the markets in Europe.

Controlling FCM is challenging due to its cryptic feeding habits and rapid life cycle. Traditional chemical insecticides have been employed; however, FCM has developed resistance to several insecticides, and there are stringent chemical residue restrictions imposed by some foreign markets. Additionally, the use of insecticides poses environmental concerns and can disrupt beneficial insect populations.

Pheromone-based mass trapping has emerged as an effective and environmentally friendly alternative for managing FCM populations. But they are considered as scouting and monitoring tool instead of mass trapping tool. This study evaluates the efficacy of an innovative aerosol-based pheromone product, 'aTTraps All Rounder-FCM,' in controlling FCM in a floriculture setting.

II. Materials And Methods:

The study was conducted at Beauty line Flowers, a floriculture farm in Nyahururu, Kenya. Two traditional FCM lures and 'aTTraps All Rounder-FCM' were used for comparison. The traditional lures were placed on sticky traps, while 'aTTraps All Rounder-FCM,' a combination of sticky gum, colour, and FCM attractant consortia, was sprayed onto delta traps. These traps were then deployed in the floriculture farm to monitor FCM trapping efficacy.

Observations

Table-1: Farm-1 Applications in *Hypericum* crop.

SN	Product	Trapped FCM count			
		17.2.25	15.3.25	15.3.25	20.3.25
					Total

1	Traditional Lure-1 + Gum	40	50	14	17	121
2	Traditional Lure-2 + Gum	100	160	25	25	310
3	aTTraps All Rounder-FCM	176	200	63	70	509

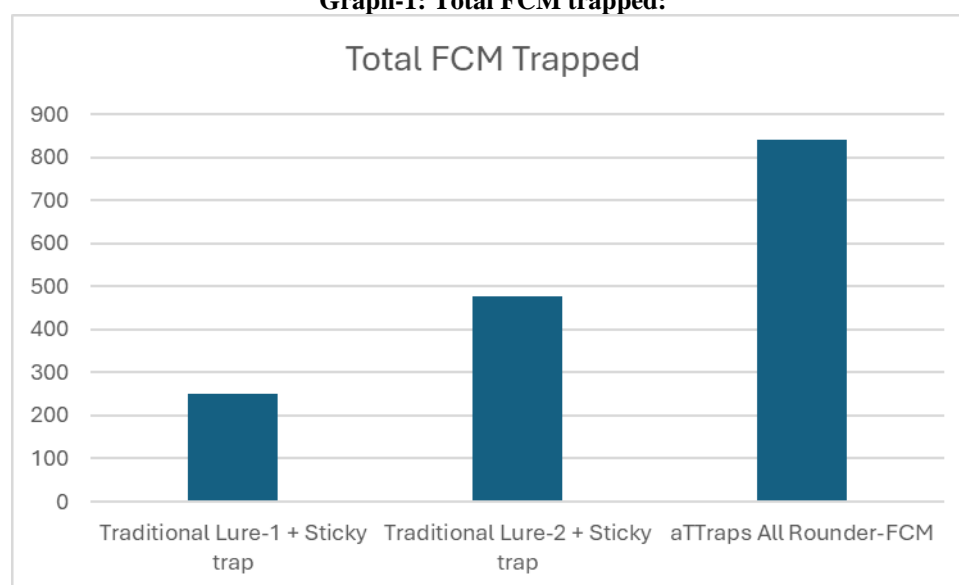
Table-2: Farm-2 Applications in Gypsophila crop.

SN	Product	Trapped FCM count				
		2.2.25	6.3.25	10.3.25	12.3.25	14.3.25
1	Traditional Lure-1 + Sticky trap	6	30	26	30	36
2	Traditional Lure-2 + Sticky trap	12	15	12	58	69
3	aTTraps All Rounder-FCM	36	41	66	80	110

Total Farm-3: total FCM trapped in all applications.

SN	Product	Trapped FCM count		
		Farm-1	Farm-2	Total
1	Traditional Lure-1 + Sticky trap	121	128	249
2	Traditional Lure-2 + Sticky trap	310	166	476
3	aTTraps All Rounder-FCM	509	333	842

Graph-1: Total FCM trapped:



III. Results And Discussion:

‘aTTraps All Rounder-FCM’ was significantly more effective than traditional FCM lures, capturing a higher number of moths.

Traditional lures require multiple components, including a sticky glue trap, lure, and delta trap, whereas ‘aTTraps All Rounder-FCM’ integrates all three, reducing overall costs.

The attraction rate for FCM was much faster with ‘aTTraps All Rounder-FCM’ compared to traditional lures and sticky traps, making it more suitable for mass trapping.

The product eliminates the need for separate sticky traps and FCM lures, making it a cost-effective solution.

The aerosol formulation of ‘aTTraps All Rounder-FCM’ simplifies application, storage, and transportation, making it user-friendly for large-scale deployment. It can be a reliable mass trapping tool for FCM control.

References

- [1] Department For Environment, Food & Rural Affairs (DEFRA). (2016). False Codling Moth (*Thaumatotibia Leucotreta*). Retrieved From .
- [2] University Of Florida, Entomology And Nematology Department. (2015). False Codling Moth. Retrieved From .
- [3] Koppert Biological Systems. (N.D.). False Codling Moth - Biocontrol, Damage And Life Cycle.
- [4] Malan, A. P., Moore, S. D., & Addison, M. F. (2018). Control Of False Codling Moth, *Thaumatotibia Leucotreta* (Lepidoptera: Tortricidae) In Citrus
- [5] Mutyambai, D.M., Bruce, T.J.A., Midega, C.A.O., Et Al., False Codling Moth, *Thaumatotibia Leucotreta* (Meyrick): A New Threat To Horticultural Crops In Kenya, International Journal Of Tropical Insect Science, 2020.
- [6] Mwanzia, L., Onyambu, G.K., Kungu, M., Et Al., Farmers’ Knowledge, Perceptions, And Management Practices Of False Codling Moth In Capsicum In Kenya., Horticulturae, 2024.

- [7] University Of Nairobi Researchers, Managing False Codling Moth (*Thaumatotibia Leucotreta*) In Horticultural Crops: Farmer Perceptions And Evaluation Of Pheromone Traps., University Of Nairobi Repository.
- [8] EPPO Bulletin, Pest Status, Bio-Ecology And Management Of The False Codling Moth, *Thaumatotibia Leucotreta* (Meyrick) (Lepidoptera: Tortricidae), And Its Implication For International Trade., Bulletin Of Entomological Research.