Extension Folder – 03
(2025/03)

Cardamom thrips

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2025

Introduction

Cardamom thrips *Sciothrips cardamomi* (Ramakrishna) (Thysanoptera: Thripidae) is the most destructive insect pest of cardamom in Kerala, Karnataka, and Tamil Nadu in India. The pest was first described as a new species on cardamom from Anaimalai Hills in Tamil Nadu. Also, it has been reported from Costa Rica, Sri Lanka, and Guatemala, on cardamom and on ornamental ginger (Zingiberaceae) in Hawaii.

Nature and symptoms of damage

The adults and nymphs of *Sciothrips cardamomi,* inflict significant damage to various tender parts of the cardamom plant. Thrips lacerate the surface tissues of leaves, shoots, panicles, flowers, and immature capsules and feed on the exuding sap. This feeding activity disrupts normal functioning of plant tissues, leading to the shedding of flowers and immature capsules.The feeding damage on immature capsules results in the formation of corky, scab-like encrustations on the pericarp, causing the capsules to become malformed and shrivelled.

The damage also adversely affects seed development, quality of essential oils, reducing both the aromatic value and marketability of the produce. The preferred feeding sites are leaf sheaths, unopened leaf spindles, panicles, flowers, and tender capsules, where the insects remain concealed, making early detection difficult. Infested panicles often remain stunted, while the damaged capsules exhibit characteristic malformation and deformities.

Thrips damaged capsules have very low market value causing severe economic losses to growers. The extent of capsule damage by thrips is 30–90%, with an estimated crop loss of up to 48% in major cardamom producing country

Host Range

Besides cardamom, *S. cardamomi* has also been recorded on the following alternative host plants. The recorded host plants belong to various families, with a wide representation from the Zingiberaceae, including species such as *Alpinia* sp., *Alpinia galanga, Amomum* sp., *A. Subulatum, A. microstephanum, A. cannicarpum, A. Involucratum, Aframomummelegueta, Curcuma longa, C. pseudomontana, C. zeodaria, Globbaophioglossa, Hedychium flavescens, H. coronarium, Zingiber* sp., *Z. officinale, Z. casumunar, Z. nimmonii, and Z. Wightianum.* Other families represented include Poaceae *(Panicum longipes),* Araceae *(Remusatia vivipara, Colocasia antiquorum)*, Musaceae (*Musa* sp.), Costaceae *(Cheilocostus speciosus)*, and Amaryllidaceae (*Crinum* sp.)

Biology

The adults of S.cardamomi measure approximately 1.5 to 1.75 mm in length and are characterized by a greyish-brown body with distinctive fringed wings. The species reproduces through both sexual and parthenogenetic means. Eggs are laid singly, inserted inside the plant tissue, typically kidney-shaped and dirty white in colour, with an incubation period ranging from 3 to 5 days.

The post-embryonic development includes two nymphal instars, which collectively span 7 to 9 days. This is followed by pre-pupal and pupal stages lasting an additional 4 to 6 days. Under optimal conditions, the complete life cycle from egg to adult is completed within 16 to 22 days. The pest infestation is higher in plants grown in thickly shaded areas in the plantations

Seasonal Abundance

The peak season of cardamom thrips infestation varies across different locations. Location specific peak activity of thrips is presented in Table.

Location	Peak Season (Months)
Karnataka: Appangala	March – May
Mudigere	November – February
Sakleshpur	February – April; September – November
Kerala: Myladumpara	February – March
Tamil Nadu: Thadiyankudisai	February – March

Warm weather favours multiplication of thrips, particularly the population increases during post monsoon period and declines with rainfall. It shows a positive correlation with maximum temperature and sunshine hours, Negative correlation is observed with rainfall, relative humidity, and minimum temperature

Host Plant Resistance

Seventy-three elite clones were screened for tolerance to *S. cardamomi* in the field at Mudigere and three clones, namely, D-14, D-769, and C1-754, were found relatively tolerant with less than 10% infestation on the capsules. Evaluation of six

selections identified to be tolerant to S. *cardamomi* at Sakleshpur indicated that the local Malabar type and SKP-97 were significantly tolerant. The damage caused by thrips to capsules of three cultivar types, namely, Malabar, Vazhukka, and Mysore was studied at Sakleshpur. Malabar types recorded about 50% less damage on the capsules than the other two types. Recently, field screening of 180 cardamom germplasm accessions at Appangala resulted in identification of 8 accessions relatively resistant to *S. Cardamomi.* Multiple regression analysis of different traits indicated that accessions with prostrate panicles having leaf sheath loosely adhered to the pseudostems had significantly less thrips damage.

Management of cardamom thrips

- Regulate shade in the plantation by pruning branches of shade trees.
- Trashing operation should be undertaken thrice a year i.e., during early monsoon, mid-monsoon and late monsoon periods, before spraying insecticides to improve spray coverage and enhance the effectiveness of thrips control.
- It is recommended to avoid spraying insecticides during the peak activity of
- The following insecticides are approved by the Central Insecticides Board and Registration Committee (CIBRC, 2024) for the control of cardamom thrips. Diafenthiuron 50% WP can be applied at a dosage of 800g in 1000 litres of water for the effective management of cardamom thrips.A waiting period of 7 days must be followed, and capsules should only be harvested after this period. Similarly, Lambda-cyhalothrin 4.9% CS is recommended for the control of thrips at a dosage of 400 ml in 1000 litres of water. A waiting period of 34 days is recommended for harvesting from the date of application.
- Under Karnataka conditions, spraying o f fipronil 0.005% or spinosad 0.0135% during Feb - March, March - April, April - May, September and October was found effective.
- Integrated pest management using an entomopathogenic fungus, *Lecanicillium psalliotae* and a low-risk insecticide, Spinosad has been found effective in controlling cardamom thrips. The application involves single spray of Spinosad 45% SC @ 0.3 ml/L followed by 3 rounds of soil application of *L.psalliotae* granules @ 50g (1×108cfu/g) mixed in 1kg of cow manure/plant during March, April, May and August (or) Two sprays of Spinosad 45% SC @ 0.3 ml/L and soil application of *L. psalliotae* granules @ 50g (1×108cfu/g) mixed in 1kg of cow manure/plant twice alternatively during March, April, May and August.

Further details contact
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