Status on thrips infestation in Mango Orchards of Krishnagiri District

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Thilagam, P., S. Srividhya, and M. S. Aneesa Rani

Horticultural College and Research Institute, Jeenur, Tamil Nadu Agricultural University, Coimbatore – 641 003

Introduction

Krishnagiri District is known for its mango cultivation and cultivated in an area of about 40,000 ha. In the recent years, mango cultivation is being threatened by various insect species. Of late, thrips species causes substantial crop losses by feeding on the petals, anthers, pollen and floral nectaries and ovipositing in the panicles which leads to discoloration and reduced vigour of the panicles (Kirk, 1997). They also feed and oviposit on the pericarp of the fruits, which causes bronzing of the fruit surface and severe infestations often result in the cracking of the fruit skin. These cosmetic injuries reduce the economic value of mango fruits and their marketability Recently, thrips insect has created havoc in most of the mango growing areas of northern plains. Approximately, 50 per cent of damaged fruits were recorded in severely affected orchards. There are twenty thrips species reported to be inflicting mangoes. Among them, *Scirtothrips dorsalis*, *Rhipiphorothrips cruentatus* and *Thrips hawaiiensis* are found to be predominant in mango ecosystem. The abundance of thrips was high during the flowering period of the dry season and decreased during the flowering period of the rainy season. The later period coincided with decreased temperature and increased relative humidity. Percent of adult emergence from the soil was lower in the rainy season than recorded in the dry season. Fifteen thrips species were recorded associated with mango trees in South Africa. Thirteen species were identified from the flowers, five from the leaves and three from the fruits (Grove *et al*., 2001). Four species of thrips were collected from mango inflorescence, *Thrips palmi* was observed to be dominant followed by *T. hawaiensis* (Krishnamoorthy and Ganga visalakshi, 2012). The nymphs and adults lacerate epidermis of tender leaves, flower buds, flowers, inflorescence ratches and fruits.

STATUS OF THRIPS INFESTATION IN MANGO IN MAJOR BLOCKS OF KRISHNAGIRI DISTRICT

Survey on thrips infestation in major blocks viz., Kaveripattinam, Mathur and bargur blocks of Krishnagiri district was made during the months of March and April 2023 which coincides with the flowering and initial fruiting phase (Table 1).

Table 1. Survey of mango gardens in major blocks of Krishnagiri district.

Blocks	Varieties grown	Problems identified
Kaveripattinam	Alphonso Neelum Offseason Bangalora	Mango thrips damage (50 %) Severe Hoppers damage with sooty mould growth on the entire leaf Anthracnose Poor nutrition
Kaveripattinam	Bangalora	Thrips damage in fruits (40- 50 %). Farmer sprayed thrice withImidacloprid + lambda cyhalothrin + MN + Wettable sulphur > Thiamethoxam + Fipronil + Sea weed extract + Wettable sulphur > Imidacloprid + Gypcel+ Profenophos + Cyhalothrin
Kaveripattinam	Neelum	Mango thrips damage (50 %) Fruit size small Brownish lesions on fruits
Mathur	Bangalora	Mango thrips damage (30-40 %) Fruit size small Brownish lesions on fruits
Mathur	Bangalora	Mango thrips damage (30-40 %) Fruit size small Brownish lesions on fruits
Mathur	Bangalora	Mango thrips damage (40-60 %) Fruit size small Brownish lesions on fruits
Mathur	Bangalora Neelum	Mango thrips damage (30-50 %) Reduced fruit lesions Brownish lesions on fruits
Bargur	Mango nursery Panchakalasa Kalepad Sendura Bangalora Imampasand Neelum Mallika Chakarakutti	Thrips population: 50 - 65 Nos/leaf Imidacloprid and thiamethoxam were applied

Approximately, 30 - 50 per cent of damaged fruits were recorded in severely affected mango fields. Some of the farmers practiced off-season mango cultivation and followed spraying of combination of insecticides, fungicides and plant growth regulators during December month at 20 days interval. A total of three applications of insecticide combinations were given, even though, the thrips damage was high (60 % damage in fruits) and flowering was affected badly due to thrips and in severe cases, trees were found with minimum fruits per tree. In case of nursery field maintained, severe curling of upper leaves with stunted growth of trees were also recorded with 50 – 65 thrips per leaf. Based on the survey of the affected fields, the farmers were sensitized on the biology of thrips, which is a pre-requisite for management of thrips at an early stage of infestation.

BIOLOGY

The life cycle consists of five stages: egg, larval, prepupal, pupal and adult. Gravid females insert the eggs inside plant tissues including leaves, buds, inflorescence and fruits. The eggs are hatched between two to seven days. The larval stage consists of 2 instars that feed and develop on the leaves, flowers and fruits. The two larval stages completed in eight to ten days and the pupal stage lasts for **2-3 days**. The prepupal and pupal stages often complete their development on the ground, but sometimes pupation can also take place on the plant and plant debris. The adults are weak fliers, usually taking short flights from leaf to leaf or plant to plant. Thrips get spread over large distance by wind. The total lifecycle of thrips on mango varies from **15 to 20** days depending on the environmental conditions. Thrips population are low in winter whereas they reach their peak in summer. On mango, thrips infestation starts with the new flushes and panicle emergence during the 13 to 22nd standard meteorological weeks (last week of March to last week of May). The larval and adults' stages are the damaging stages. They damage the mango young leaves, growing buds, inflorescence, flowers, immature and developing fruits by lacerating and sucking the sap from the tissues. This causes silvery or brown patches on the affected parts where the plant cells are destroyed. As a result of its damage, curling up of leaves and wilting of inflorescence were also recorded. In severe cases affected fruits become rusty in appearance. This pest can damage the entire new growth, if it is not treated properly.

SYMPTOMS OF DAMAGE

The nymphs and adults' lacerate epidermis of tender leaves, flower buds, flowers, inflorescence ratches and fruits They damage the mango young leaves, growing buds, inflorescence, flowers, immature and developing fruits by lacerating and sucking the sap from the tissues. This causes silvery or brown patches on the affected parts where the plant cells are destroyed. As a result of its damage, curling up of leaves and wilting of inflorescence were also recorded. In severe cases affected fruits become rusty in appearance. This pest can damage the entire new growth, if it is not treated properly.

Integrated pest Management

Monitoring the population levels of thrips is important for successful pest management. Commercially available **blue or yellow sticky traps** can be used to monitor the population densities of adult thrips. The traps should be checked at weekly intervals and the average number of thrips per trap be recorded.

Sanitation is the first and most important step in implementing an effective pest management programme. Effective sanitation will reduce or even eliminate thrips as a pest problem. Chemical control of thrips is very difficult. They are resistant to most pesticides and feed deep within the flower or on developing leaves. This makes them a difficult target for insecticides, so

thorough coverage is essential.: Begin applications early, before thrips population grow too much.

Thrips are more easily managed when population levels are low. Although it is important to rotate chemical classes, use only one chemical class for the duration of the thrips' life cycle. Apply pesticides during early morning or late afternoon, when flight activity of thrips is at its peak. This increases exposure of the thrips to the pesticides.

Neem based pesticides control young nymphs effectively, inhibit growth of older nymphs and reduce the egg-laying ability of adults.

Spaying of Neem Seed Kernel Extract (5%) or Neem oil (2%) reduce the initial stages of the thrips effectively.

Promotion of natural enemies *viz*., predatory thrips, predatory mites (e.g. *Amblyseius* spp.) anthocorid bugs or minute pirate bugs (*Orius* spp.), ground beetles, lacewings, hoverflies, lady bird beetle and spiders in the orchard by conserving them in orchard will reduce the pest attack considerably.

If the infestation is severe, spraying of insecticides like thiamethoxam 25% WG (0.3 g / l) or Imidacloprid 17.8% SL (0.3 ml / l) or Spinosad 45%SC (0.4 g/l) or Tolfenpyrad 15 % EC (1.5 ml/l).

REFERENCES

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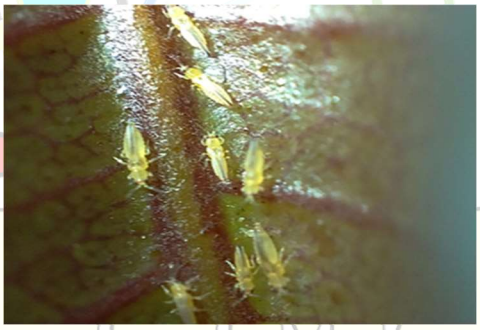
Thrips damage in nursery

Thrips damage in leaves



Thrips movement on undersurface of leaves

Joint inspection