AGRI MAGAZINE
(International E-Magazine for Agricultural Articles)
Volume: 03, Issue: 11 (November, 2026)
Available online at http://www.agrimagazine.in
©Agri Magazine, ISSN: 3048-8656

When Mangoes Set, Thrips Strike: The Emerging Threat to Telangana's Golden Harvest

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Mango orchards across Telangana often transform into spectacular landscapes during flowering, raising hopes of a profitable harvest. Yet the period immediately following flowering and during fruit setting can bring an unexpected challenge: infestation by thrips. These tiny, slender insects, particularly *Scirtothrips dorsalis* (Hood) and other thrips associated with mango inflorescences, feed on tender flowers, newly formed fruits, young leaves and inflorescence tissues. Their feeding can cause browning, drying, flower drop, poor fruit set, scarring and bronzing of developing fruits, ultimately reducing both yield and market quality. The problem has become increasingly important in Telangana, where farmers in Sangareddy and other mango-growing districts have reported serious thrips outbreaks. Long-term Indian studies show that mango thrips commonly reach important population peaks during flowering and fruit-setting stages, while recent multilocation research involving Sangareddy identified *S. dorsalis* as a significant mango pest and found azadirachtin to be particularly effective among evaluated botanicals in Telangana. The emerging challenge calls for timely monitoring, weather-based forecasting, conservation of natural enemies and need-based integrated pest management rather than repeated indiscriminate insecticide applications.

Keywords: Mango, *Scirtothrips dorsalis*, black thrips, flowering, fruit setting, Telangana

Introduction

For a mango grower, flowering is one of the most eagerly awaited stages of the crop. After months of vegetative growth, the appearance of thousands of panicles signals the possibility of a successful harvest. In Telangana, mango orchards covering regions such as Sangareddy, Nizamabad, Nagarkurnool, Wanaparthy, Mahabubnagar and other districts contribute substantially to the state's horticultural economy. Varieties such as Banganapalli, locally known as Beneshan, along with Himayath and several other cultivars, are important in commercial production. The flowering period is therefore not merely a biological event; it represents the beginning of the most economically sensitive phase of mango production. Unfortunately, the appearance of a luxuriant bloom does not always guarantee a good harvest. Once flowering progresses towards fruit setting, mango trees can become vulnerable to a group of extremely small insects known as thrips. These insects are only a few millimetres long, yet their feeding activity can cause disproportionate damage because they attack precisely those tissues that determine reproductive success. Flowers, tender panicles, newly set fruits and young flushes provide favourable feeding sites, allowing thrips populations to increase rapidly when environmental conditions become suitable.

The problem is not entirely new. Indian researchers have documented mango thrips for several decades, but their economic importance has become more apparent in recent years. A long-term study of mango thrips and their natural enemies found two major periods of incidence: one during flowering and fruit setting and another during the emergence of new vegetative flushes. The flowering-to-fruit-setting period is therefore a particularly vulnerable

window in the mango production cycle. The situation has become particularly visible in Telangana. Farmers in Sangareddy and neighbouring mango-growing areas have reported serious outbreaks of thrips, including what has commonly been referred to locally as "black thrips". Reports from Sangareddy have described damage to flowers, leaves and young fruits, accompanied by flower and tender-fruit drop and the development of darkened or blackened surfaces associated with pest and honeydew-related damage. More recent reports from Telangana have similarly highlighted black-thrips attacks and the vulnerability of the flower-to-fruit conversion stage. The challenge, therefore, is not simply to kill thrips after they become abundant. The real challenge is to recognize the pest early, understand why it becomes severe after flowering, and manage it without creating another cycle of pesticide dependence.

When the Flowers Finish, the Risk Begins

The transition from flowering to fruit setting is one of the most critical periods in mango production. During flowering, the tree provides an abundance of soft, nutrient-rich tissues. Once fertilization occurs, tiny developing fruits and young tissues continue to provide suitable feeding sites. Thrips can move between these structures, feeding with their rasping-sucking mouthparts and damaging epidermal tissues. The injury may initially appear insignificant. A grower may notice a few tiny insects moving rapidly when an inflorescence is disturbed, or observe slight browning of flowers. As feeding continues, however, the injured tissues become more conspicuous. Flowers may become desiccated, panicles may weaken and flower retention may decline. On developing fruits, feeding injury can result in superficial scars, russeting, bronzing or greyish patches. Severe attack during the early fruit-setting period can interfere with the transition from flower to retained fruit.

Indian experimental studies have demonstrated that thrips are not restricted to a single stage of mango development. Research on *Scirtothrips dorsalis* indicates that nymphs and adults feed on tender leaves, flower buds, flowers, inflorescence rachis and young fruits. Damage to these tissues can weaken flowers and interfere with fruit setting, while feeding on fruit surfaces can produce conspicuous blemishes that reduce marketability. A study conducted over eight years on Kesar, Alphonso and Amrapali mangoes recorded the first major incidence peak during flowering-cum-fruit-setting and another during new flush production. Such findings are highly relevant to Telangana because they demonstrate that thrips surveillance should not stop when flowering begins to decline. The period immediately following bloom can remain highly vulnerable. This explains an apparently puzzling situation sometimes experienced by farmers: the orchard may look excellent during full bloom, yet the number of retained fruits begins to decline later. The problem may not necessarily be a failure of flowering itself. Pest injury during the flower-to-fruit transition can contribute to poor retention and reduced fruit set.

The Tiny Culprit: Who Are the Mango Thrips?

The term "mango thrips" does not always refer to a single species. Several thrips species can occur on mango, and their relative abundance can vary according to location, season and plant stage. In India, *Scirtothrips dorsalis* has become one of the most important species associated with mango damage, although other thrips have also been recorded from mango inflorescences. An early Indian study on mango documented *Thrips palmi*, *Frankliniella schultzei*, *Thrips hawaiiensis* and *Thrips subnudula* from mango inflorescences, with *T. palmi* being predominant in that particular investigation. More recent molecular and morphological work from Kerala has again confirmed *T. palmi* and *Haplothrips tenuipennis* associated with mango. These observations emphasize an important scientific point: accurate identification is necessary before developing location-specific management recommendations.

For Telangana, however, *S. dorsalis* deserves particular attention. A major multilocation study conducted during 2019-20 to 2021-22 included six important mango-growing locations: Bengaluru, Mohanpur, Paria, Rahuri, Sangareddy and Vengurla. Sangareddy was specifically included as the Telangana location, making the study especially

relevant to local growers and researchers. The study identified *S. dorsalis* as a significant mango pest and evaluated botanical management options under different agroecological conditions. Importantly, the results showed that the most effective botanical treatment varied with location. In Telangana and West Bengal, azadirachtin at 10,000 ppm and 3 g/l was reported as the most effective treatment among the botanicals evaluated, whereas neem soap performed better in Karnataka, Gujarat and Maharashtra. This geographical variation is important. It demonstrates that a management recommendation developed in one mango-growing region should not automatically be assumed to perform identically in another. Local climate, pest pressure, spray timing and orchard conditions can alter treatment performance.

Why Thrips Can Become Severe After Flowering

Weather plays a major role in determining thrips abundance. These insects are strongly influenced by temperature, humidity, rainfall and plant growth. A long-term Indian study found that weather variables explained a substantial proportion of variation in mango-thrips incidence, while minimum temperature and evening relative humidity were among the useful predictors in the statistical models. Telangana's mango-growing environment can therefore create periods in which thrips populations increase rapidly. Temperature fluctuations during late winter and early summer, changes in relative humidity and the availability of tender plant tissues can collectively influence population development. Recent research from Jagtial district also identified sucking pests, particularly hoppers and thrips during flowering, as the most severe production constraint reported by farmers. The same study linked pest pressure with weather variability and highlighted the need for location-specific, climate-resilient pest management. Unseasonal weather can further complicate the situation. Reports from Telangana have described seasons in which promising flowering was followed by pest attack and unseasonal rainfall, resulting in substantial concern over fruit production. Such conditions can disrupt the normal relationship between flowering, pollination, fruit setting and pest development. This is why calendar-based spraying is often a poor substitute for monitoring. A farmer may spray simply because flowering has reached a particular date, even when thrips pressure is low. Conversely, an orchard may require immediate intervention because thrips have increased rapidly, even though the conventional spray calendar suggests waiting. Scientific monitoring provides a better alternative.

How Should Farmers Recognize an Infestation?

The first step in managing mango thrips is learning to detect them before serious damage becomes visible. Adult thrips are tiny, slender insects that can move rapidly when a panicle is disturbed. Their small size makes direct observation difficult, particularly when populations are low. For this reason, panicle-based monitoring is particularly useful during flowering and fruit setting. A simple field approach is to gently tap selected panicles over a clean white sheet or paper and examine the insects that fall onto the surface. This method has been used in Indian mango-thrips research. In the recent multilocation botanical study, researchers assessed thrips by giving mango panicles a standardized tap over plain paper and counting the fallen insects. Monitoring should cover different parts of the orchard rather than focusing only on easily accessible trees. Thrips may show aggregated distribution, and earlier Indian ecological work on *T. palmi* demonstrated that mango thrips populations were not distributed uniformly throughout trees. The lower canopy was particularly useful for sampling because its population was correlated with the total tree population. Visible symptoms should also be recorded. Browning of flowers, drying of panicles, flower drop, poor fruit retention, superficial scarring and bronzing of young fruits should alert the grower to the possibility of thrips. However, symptoms alone should not be used for identification because environmental injury, fungal infection, nutrient problems and other pests can produce similar appearances. The best approach is therefore to combine visual symptoms with direct insect monitoring.

Telangana Needs Timely and Location-Specific Management

The most important lesson emerging from recent Telangana research is that management must begin early. Once a large proportion of flowers and young fruits have been damaged, recovering the lost reproductive potential of the tree becomes difficult. Reports from Sangareddy have emphasized that farmers often notice the infestation only after substantial damage has occurred, whereas early detection provides a better opportunity to limit population buildup. Management should begin with orchard sanitation and regular surveillance. Excessive weed growth and unmanaged alternative host plants around orchards may provide refuge or feeding opportunities for thrips and should be considered during orchard management. Pruning and canopy management should maintain adequate aeration and light penetration without causing excessive vegetative flushes. Nutrient management should also be balanced because excessive vegetative growth can alter the availability of tender tissues attractive to sucking pests.

Biological and botanical approaches deserve greater attention. The multilocation study conducted by Munj and colleagues provides particularly useful evidence because Sangareddy was one of the experimental locations. Among the botanicals tested, azadirachtin at 10,000 ppm and 3 g/l performed best in Telangana. This does not mean that azadirachtin should automatically be sprayed whenever thrips are seen. It means that under the experimental conditions of that study, it showed comparatively strong performance and therefore represents a useful component for further location-specific IPM. Entomopathogenic fungi also offer an alternative to repeated conventional insecticide applications. A multilocation Indian study evaluated formulations of *Beauveria bassiana*, *Metarhizium anisopliae* and *Lecanicillium* against *S. dorsalis* on mango. The study reported *M. anisopliae* in an IIHR oil formulation at 0.5 ml/l as the most effective treatment among the evaluated entomopathogenic formulations.

Chemical insecticides can remain necessary when pest pressure crosses economically important levels, but they should be selected and applied rationally. Indian field experiments have demonstrated efficacy of different insecticides against *S. dorsalis*, including spinosad-based treatments. However, repeated use of the same insecticide group can accelerate resistance development and may negatively affect pollinators and natural enemies associated with mango flowering. Therefore, the objective should be suppression rather than complete eradication. The flowering mango orchard is an ecosystem containing pollinators, predators and parasitoids along with pests. An insecticide programme that kills thrips but simultaneously destroys pollinators can create another problem for fruit production.

Protecting Pollinators and Natural Enemies

Mango flowering is a period of intense biological activity. Bees, flies and other insects visit flowers, while predatory insects such as ladybird beetles and lacewings may occur in the same orchard. Long-term research on mango thrips has demonstrated associations between thrips incidence and natural enemies, particularly coccinellids and chrysopids. This means that indiscriminate spraying during full bloom can have consequences beyond thrips control. If broad-spectrum insecticides are applied repeatedly without considering pollinator activity, beneficial insects may be reduced. The result can be an orchard with fewer natural enemies and greater dependence on chemical control. Monitoring therefore becomes the bridge between effective pest management and ecological protection. Instead of spraying every tree on a fixed schedule, growers can identify hotspots, assess thrips abundance and intervene only when necessary. Such an approach reduces unnecessary chemical exposure and can improve the sustainability of the management programme. The use of colour traps and other monitoring tools may also help detect thrips before visible damage becomes severe. Research in mango agroecosystems has shown that coloured sticky traps can assist in early detection of phytophagous thrips, although trap catches do not always correspond directly with the actual density of thrips inside inflorescences. Consequently, traps are best considered a monitoring aid rather than a standalone measure of population density.

From Flowering to Harvest: A New Way of Thinking About Mango Protection

The Telangana mango season should be viewed as a sequence of pest-sensitive windows rather than as a single crop-protection period. Panicle initiation is an early warning stage. Full bloom is a period of intense biological activity. Fruit setting represents a critical transition in which thrips injury can directly influence the number of fruits retained. Young fruit development is important for preventing scarring and bronzing, while later stages require attention to other pests and diseases. This approach changes the question from "Which pesticide should I spray?" to "What is happening in my orchard right now?" If thrips are absent or present at very low levels, unnecessary spraying may provide little economic benefit. If thrips populations are increasing rapidly during flowering and fruit setting, timely intervention may prevent substantial damage. The scientific literature increasingly supports this monitoring-based philosophy. Indian studies have demonstrated predictable seasonal patterns, relationships with weather parameters, differences among mango-growing regions and variation in treatment performance. The recent Telangana-inclusive multilocation study is particularly valuable because it demonstrates that management recommendations should be tested under local conditions rather than simply transferred from another state.

For Telangana, collaboration among farmers, horticultural officers, agricultural universities and research stations can strengthen this approach. Fruit Research Station, Sangareddy, already has a long history of mango pest research, including screening of mango germplasm for sucking pests. Historical research at the station recorded considerable variation among mango germplasm in thrips incidence, demonstrating the potential importance of host-plant characteristics in pest management. Future research should therefore integrate pest surveillance, weather-based forecasting, varietal response, natural enemies and reduced-risk management options. Such information could eventually support district-level advisories indicating when growers should begin monitoring, when intervention is justified and which management options are most appropriate for the prevailing pest pressure.

Conclusion

The lush flowering of mango trees in Telangana is a symbol of a promising harvest, but it is also the beginning of a critical pest-management period. Thrips, particularly *Scirtothrips dorsalis*, can attack flowers, young fruits and tender tissues and interfere with fruit setting and market quality. Evidence from Indian research confirms that flowering and fruit-setting are important periods of thrips activity, while recent multilocation research involving Sangareddy provides location-specific evidence for botanical management. The best defence is early detection, regular monitoring and need-based integrated management. Protecting natural enemies and pollinators, using botanicals and biopesticides where appropriate, and reserving chemical insecticides for justified situations can help Telangana's mango growers protect both yield and orchard health.

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