

Outbreak of invasive thrips species *Thrips parvispinus* in chilli growing areas of Andhra Pradesh

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Introduction

Chilli is being cultivated as an important commercial crop in Andhra Pradesh in an area of 1.8 lakh hectares with a production of 8.36 lakh tonnes (2020-21). The most important districts cultivating chilli are Guntur, Prakasam, Kurnool, Krishna, Ananthapur and East Godavari. Guntur occupies the first place and contributing major share in production and export of chilli from Andhra Pradesh. During 2021-22, 30% increase in the area of chilli cultivation is being observed in Guntur district due to various reasons like increased incidence of pink boll worm in cotton and increased demand for chilli in the market and being a commercial crop most of the farmers preferred to go for chilli cultivation in Andhra Pradesh, Telangana and Karnataka. Incidence of sucking pests and vector transmitted viral diseases are major threat to chilli cultivation. Though thrips (*Scirtothrips dorsalis*) is a regular pest occurring on chilli and observed throughout the crop growth period no flower thrips incidence was recorded in chilli until last year.

Chilli flower thrips were first noticed in Chilakaluripeta and Pratipadu mandals of Guntur district (16.09 N 80.16E & 16.16 N

80.22E) during January, 2021 and subsequently its spread was noticed in all chilli growing areas of Andhra Pradesh. The samples were collected by Dr. K. Sireesha, Senior Scientist (Entomology), Horticultural Research Station, Lam of Dr. YSR Horticultural University and submitted to NBAIR, Bangalore on 23.02.2021 and ZSI, Kolkata on 23.04.2021. Preliminary identification showed that it is complex of *Thrips florum*, *Thrips hawaiiensis*, *Thrips palmi* and *Frankliniella schulzei*. Later it was communicated that the sample also consisted of *Thrips parvispinus* and it was confirmed that the 90-95% of the thrips species occurring on chilli are *Thrips parvispinus*. This is the first record from India on the occurrence of this species in chilli ecosystem. This species is native to Asian tropics and has been reported from Indonesia, India, Thailand, Malaysia, Singapore, Taiwan, China, Philippines, Australia and the Solomon Islands (Mound and Collins, 2000). Though it was reported from India by Tyagi *et al.*, 2015 and Rachana *et al.*, 2018 on other crops it was not reported from chilli ecosystem anywhere in India. It was reported that it is most damaging to papaya in Hawaii and Indonesia, peppers and Solanaceous crops in Indonesia and ornamentals in Europe and Indonesia.

Sexual dimorphism

Male and female insects differ in size and colour. Females are 1 mm long with brown head and prothorax, yellowish brown meso and metathorax and black abdomen, forewings are dark, with light coloured base (Fig.1). Males are 0.6 mm long and evenly yellow (Fig.2). Larvae are bigger in size having different instars and uniform yellow in colour (Fig.3).

Other hosts

Vegetable crops like bitter gourd and beans are suspected to be the other host crops for this pest at this region.

Nature of Damage and Symptoms:

On Leaves

1. Deep punctures and scratches on under- side of the leaves due to sucking of sap. (Fig 4)
2. Due to scraping of chlorophyll on under side of the leaf and sucking of cell sap corresponding portion on upper side of the leaf looks yellowish. (Fig 5)
3. Under- side of the leaf turns reddish brown. (Fig 6)
4. Distorted leaf lamina with necrotic areas and yellow streaking was also observed. (Fig 7)
5. If the infestation is severe on newly emerging leaves, such leaves are dried/ blighted. (Fig 8)
6. Portions adjacent to veins are preferred.

On floral parts

1. Scraping on petals using mouth parts results in brownish streaks on petals. (Fig 9)
2. Thrips feeds on pollen which may affect pollination.
3. Drying and withering of flower. (Fig 10)
4. Fruit set gets affected.

Probable reasons for flower thrips outbreak in chilli

- *Thrips parvispinus* is already reported as invasive pest on other crops and it is polyphagous in nature.
- Exposure to heavy insecticides use in case of chilli resulted in resurgence of pest.

Present scenario in Andhra Pradesh

Chilli leaf curl incidence is also in increasing trend towards the flowering stage of crop growth coupled with the incidence of flower thrips and continuous rains during the crop growth period resulted in severe flower drop which created panic situation for the farmers. Similar situation was noticed in chilli growing areas of Telangana and Karnataka also.

Measures taken by the Dr.YSR Horticultural University:

Conducting surveys and creating awareness among the farmers on identification and integrated management of the flower thrips and mass campaigning along with the Department of Horticulture (Fig 11 and 12). Organized meeting with AP state senior

entomologists to tackle the problem in effective way.

Immediate recommendations to the farmers: (ad hoc)

1. Application of recommended and balanced use of fertilizers. Recommended fertilizer dose is 120:24:48 NPK/acre.
2. Nitrogen and potash fertilizers need to be applied in five splits during crop growth.
 - a) Organic fertilizers like FYM@10 tones/acre,
 - b) Neemcake @200kg/acre
 - c) Vermicompost @2tonnes/acre
 - d) *Azospirillum* and phosphate solubilizing bacteria each @2kg/acre, in order to maintain proper nutrition to the plants
3. Application of neem cake @ 200 kg /acre even on the standing crop keeping the biology of pest in view.
4. Recommending the installation of blue and yellow sticky traps @ 30 per acre on

community basis to reduce the adult population and also for monitoring (Fig 13,14 & 15)

5. Application of azadirachtin 10,000ppm @1ml/L before flowering either as single application or in combination with recommended chemicals after thorough mixing in order manage the resistance development.
6. Rotation of recommended insecticides.
 - a) Fipronil 80WG @ 40g/acre
 - b) Fipronil 40% + imidacloprid 40% @ 40g/acre
 - c) Cyantraniliprole 10% @ 240ml/acre
 - d) Acetamiprid 20SP @ 40g/acre
 - e) Spirotetramat 150 OD @ 160 ml/acre
7. Growing sunflower as trap crop.
8. Strict quarantine procedures need to be followed.
9. Avoid use of non-descriptive molecules on chilli



Fig. 1: Female *T. parvispinus*



Fig. 2: Male *T. parvispinus*







	
<p>Fig. 3: Nymph</p>	<p>Fig. 4: Deep punctures on under surface of leaf</p>
	
<p>Fig. 5: Yellowing on upper surface of leaf</p>	<p>Fig. 6: Reddening of the leaf due to severe scraping</p>
	
<p>Fig. 7: Distorted leaf lamina</p>	<p>Fig. 8: Drying of new foliage</p>



Fig. 9: Scrapping on petals



Fig. 10: Drying of affected flower



Fig. 11: Visit to farmer's field



Fig. 12: Creating awareness among the farmers



Fig. 13: Efficacy of blue sticky trap under open field



Fig. 14: Efficacy of yellow sticky trap under open field



Fig. 15: Installation of blue and yellow traps in field

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