Pest Alert: Invasive thrips, *Thrips parvispinus* (Karny) threatening chilli cultivation in India

Thrips parvispinus (Karny) is a cosmopolitan species of quarantine importance and has been reported from Thailand to Australia (Mound & Collins 2000). The last two decades witnessed a drastic extension in the geographic distribution of *T. parvispinus* and it is now known to occur in France, Greece, Hawaii, Mauritius, Reunion, Spain, Tanzania and Netherlands, besides India (Tyagi et al. 2015; NPPO 2019). In India, this species was first reported on *Carica papaya* L. (Caricaceae) in Bengaluru (Tyagi et al. 2015) and later on *Brugmansia* sp. (Solanaceae) and *Dahlia rosea* Cav. (Asteraceae) (Rachana et al. 2018; Roselin et al. 2021). It is a polyphagous pest, infesting beans, eggplant, papaya, pepper, potato, shallot and strawberry (NPPO 2019). It causes appreciable damage to different crops and to quote an example of yield loss due to *T. parvispinus*, an appraisal made on pepper reflected the crop loss of 23% under the field conditions of Indonesia (Johari et al. 2014). In addition, it inflicts injury to ornamentals viz. *Anthurium, Chrysanthemum, Dahlia, Dipladenia, Gardenia* and *Ficus*. Authors who have first reported the occurrence of *T. parvispinus* in India expressed concern about this pest on an economically important plant like papaya and also had an apprehension towards quarantine related issues. They emphasized the need for regular monitoring in other parts of India as it is likely to acquire the pest status.

Survey of *T. parvispinus* has been conducted in nine states of India viz. Andhra Pradesh, Assam, Chhattisgarh, Gujarat, Karnataka, Kerala, Maharashtra, Odisha and Tamil Nadu (ICAR-NBAIR 2017-2020). Since 2016, thrips samples have been received by the ICAR-NBAIR, Bengaluru from diverse places of India in order to establish the identity of the species. A total of 1257 specimens were examined from five states viz. Andhra Pradesh (652), Chhattisgarh (94), Karnataka (328), Kerala (27) and Tamil Nadu (156); these figures include personally collected material as well as specimens received for identification.

Since 2015, this species has been collected from nine host plants belonging to seven families from five Indian states viz. Andhra Pradesh, Chhattisgarh, Karnataka, Kerala and Tamil Nadu. Out of nine recorded host plants, four were fruit crops, three were ornamentals, one each of vegetable and field crop, reflecting the adaptability of this thrips to feed and breed in diverse agro-ecosystems. The thrips cause large scale shedding of flowers, malformation of fruits and fruit drop in chillies, leading to severe yield loss. Subsequently, diagnostic field surveys were undertaken in the infested fields which revealed the incidence of thrips on flowers in alarming proportions. About 90 to 95 per cent flowers were badly damaged by the thrips, and on an average, 18.20 thrips were recorded per flower. Serious damage was recorded in Andhra Pradesh, Chhattisgarh and Karnataka on *Capsicum annuum* and in Tamil Nadu on *Mangifera indica*. Multiple samples received from the above states for identification cited the prime reason that farmers

were unable to control this species after repeated application of insecticides. In case of *C. annuum*, farmers were forced to abandon the crop since the species has been found to congregate in large numbers on flowers causing severe flower drop leading to huge crop loss.

In this context, establishment of *T. parvispinus* in different states of India demands a special attention as a major pest inflicting severe crop losses. Although not currently reported to be a vector of Tospoviruses, it may likely acquire viruliferous trait. Therefore, it is imperative that the domestic quarantine mechanisms are to be strengthened further to check the spread of this notorious pest to the rest of India.

Strategies for avoiding spread of the invasive thrips

- The main objective should be to evade further spread of this thrips to other chilli growing areas of India by complete destruction of the infested plants in the specific areas.
- Use healthy and pest free seedlings for planting.
- Constant exhaustive monitoring and inspection for its infestation in new areas through surveys in chilli growing areas.
- Microbial biopesticide based management practices- *Pseudomonas fluorescence*-NBAIR-PFDWD@20g/l or *Bacillus albus*-NBAIR-BATP@20g/l spray focusing on flowers and fruits.
- Use of neem oil, pongamia oil or soap solution in heavily infested sites.
- Judicious use of chemical insecticides as well as fertilizers as per the Package of Practices (POP) recommended by the local regions/Universities/Departments.

Rachana R.R.

Scientist, ICAR-National Bureau of Agricultural Insect Resources, Bengaluru, Karnataka, India.

Rachana.r@icar.gov.in

Shylesha A.N.

Director In-charge, ICAR-National Bureau of Agricultural Insect Resources, Bengaluru, Karnataka, India.

director.nbair@icar.gov.in

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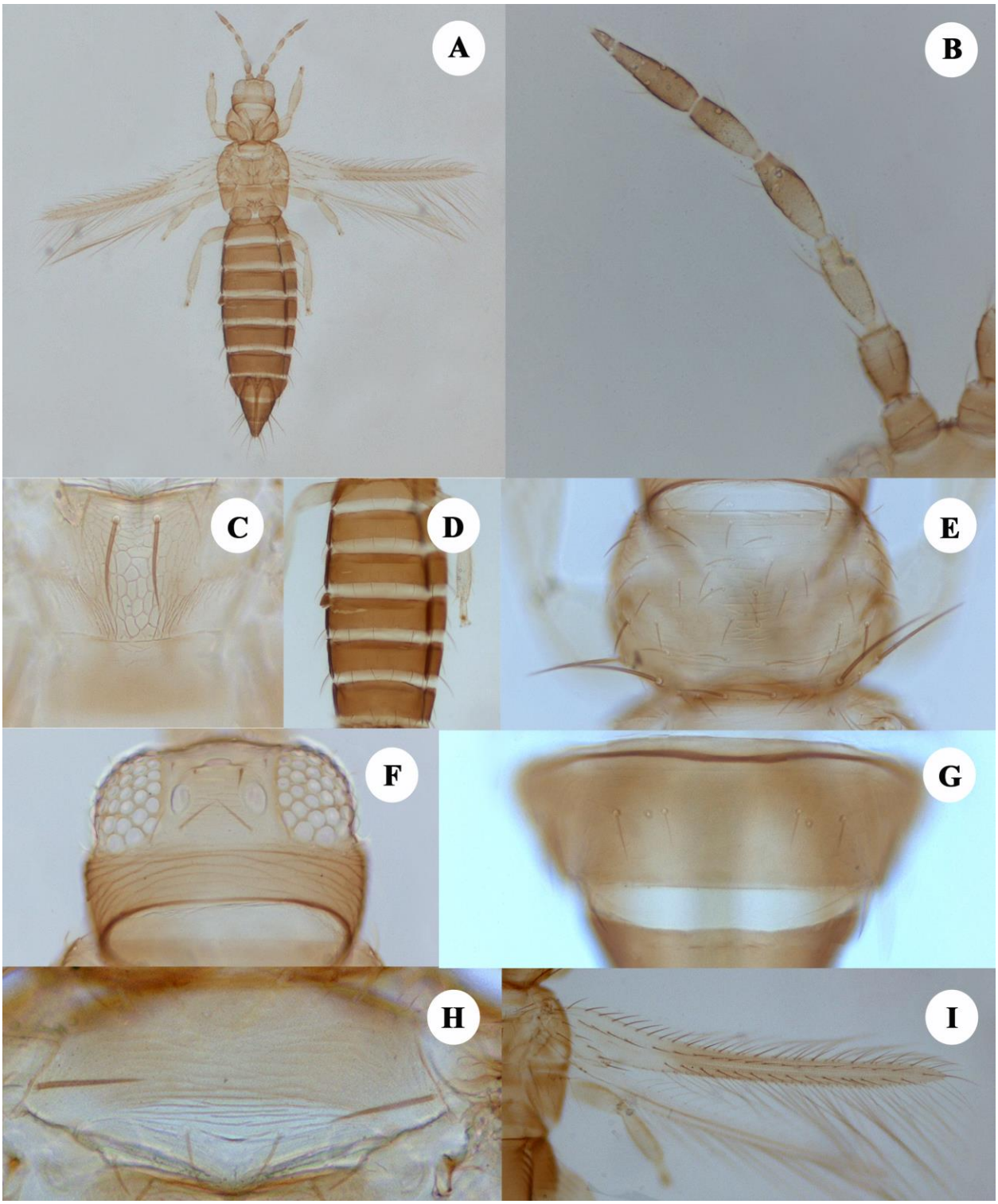

Fig. 1: *Thrips parvispinus*: A. Female; B. Antenna; C. Metanotum ; D. Discal setae on abdominal sternites II-VII; E. Pronotum; F. Head, dorsal; G. Abdominal tergite VIII; H. Mesonotum; I. Forewing.