



RESEARCH NOTE

First report of South American tomato leaf miner, *Tuta absoluta* (Meyrick) from Madhya Pradesh, India

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ABSTRACT: *Tuta absoluta* an invasive pest native to South America is economically serious threat to tomato and other solanaceous crops. This pest was first reported from Karnataka in 2014 and later its spread was recorded across the various states like Maharashtra, Tamil Nadu, Andhra Pradesh, Telangana, Gujarat, Delhi, Chhattisgarh. During regular field survey, this pest was observed for the first time from Jabalpur, Madhya Pradesh during January-April, 2017. Extent of damage and biology of *T. absoluta* are discussed in this paper.

Keywords: Leaf miner, tomato, *Tuta absoluta*

South American tomato leaf miner, *Tuta absoluta* (Meyrick, 1917) (Lepidoptera: Gelechiidae) also known as the tomato moth, tomato borer and South American tomato pinworm is an oligophagous pest (Siqueira *et al.*, 2000) associated with solanaceous crops. The primary host of *T. absoluta* is tomato (*Solanum lycopersicum* L.), but it has been reported on other secondary hosts also belonging to solanaceous family like egg plant (*Solanum melongena* L.), pepper (*Capsicum annuum* L.), potato (*Solanum tuberosum* L.), sweet pepper (*S. muricatum* L.) and tobacco, *Nicotiana tabacum* L. (Pereyra and Sánchez, 2006). Its damage on tomato results in reduction in yield and fruit quality, causing up to 50% to 100% loss in greenhouses or open fields. Plants are damaged by direct feeding on leaves, stems, buds, calyces, young or ripe fruits and by the invasion of secondary pathogens which enter through the damage caused by the pest (EPPO, 2005). Explosive spread and dissemination of *T. absoluta* is mainly correlated with fruit import and further distribution (Potting, 2009). One of the possible pathways for a long distance dissemination of *T. absoluta* could be through packaging materials (boxes) from infested countries (EPPO, 2010). Due to this, the pest may pose a serious threat for tomato production systems worldwide. In India, it was first reported from Karnataka (Sridhar *et al.*, 2014), then its spread was recorded across the states like Maharashtra, Tamil Nadu, Andhra Pradesh, Telangana,

Gujarat, Delhi, Chhattisgarh *etc.* (Shashank *et al.*, 2016; Taram *et al.*, 2016).

T. absoluta has been observed for the first time from Madhya Pradesh state in tomato fields located at Maharajpur village located in Jabalpur during regular surveys for pest incidence carried out during January to April 2017. Weekly observations on per cent incidence of the pest was recorded in the tomato plots and up to three per cent of the observed tomato plants were damaged due to *T. absoluta*.

T. absoluta biology was studied in the laboratory by rearing it from egg to adult emergence. The adults were sent to the Department of Entomology and Nematology, ICAR-IIHR, Bengaluru for identification. The adults were monitored through pheromone traps obtained from ICAR-IIHR, Bengaluru.

Eggs were laid singly on the underside of the leaf, buds, calyces of the green fruits. Early instars are white or cream coloured with a black head and later, they turned greenish to pink with a brown head. They are generally found feeding on leaves, creating wide mines, giving it a papery appearance. The larvae fed on mesophyll tissues and made irregular mines or created blotches on leaf surface and the mines were visible from both sides of the leaf. Several mines were observed on a single leaf. The mines have dark frass (excrement)



Fig 1. *T. absoluta* damage on (a) leaves (b) fruit



Fig 2. *T. absoluta* (a) adult (b) adult on tomato fruit

which are visible inside and the mined areas turned brown and dried over time. Infested fruits had a small hole closer to the stalk (Fig. 1). The pupae were initially greenish in coloration and turned to chestnut brown and changed to dark brown before adult emergence. The emerged adults were brown with black spots on the narrow wings (Fig. 2).

Thus, *T. absoluta* may pose a serious threat to tomato growers if unchecked and further studies on its biology, host range, population dynamics, biodiversity and management needs to be carried out.

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REFERENCES

- EPPO.2005. Data sheets on quarantine pests: *Tuta absoluta*. OEPP/EPPO Bulletin, **35**: 434-435.
- EPPO. 2010. First report of *Tuta absoluta* in Hungary. EPPO Reporting Service, **3**: 2.
- Meyrick, E. 1917. Descriptions of South American Microlepidoptera. Transactions of the Entomological Society London, **1**: 52.
- Pereyra, P. C. and Sánchez, N. E. 2006. Effect of two solanaceous plants on developmental and population parameters of the tomato leaf miner, *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae). Neotropical Entomology, **35**: 671-676.
- Potting, R. 2009. Pest risk analysis, *Tuta absoluta*, tomato leaf miner moth. Plant Protection Service of the Netherlands, 24 pp.
- Shashank, P. R., Suroshe, S. S., Singh, P. K., Chandrashekar, K., Nebapure, S. M. and Meshram, N. M. 2016. Report of invasive tomato leaf miner, *Tuta absoluta* (Lepidoptera: Gelechiidae) from northern India. Indian Journal of Agricultural Sciences, **86**: 1635-1636.
- Siqueira, H. A., Guedes, R. N. and Picanço, M. C. 2000. Insecticide resistance in populations of *Tuta absoluta* (Lepidoptera: Gelechiidae). Agriculture and Forest Entomology, **2**: 147-153.
- Sridhar, V., Chakravarthy, A. K., Asokan, R., Vinesh, L. S., Rebijith, K. B., Vennila, S. 2014. New record of the invasive South American tomato leaf miner, *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) in India. Pest Management in Horticultural Ecosystems **20**: 148-154.
- Taram, S. K., Ganguli, J. L., Ganguli, R. N., and Singh, J. 2016. South American tomato borer, *Tuta absoluta* (Povolny): A new threat on tomato in Raipur, Chhattisgarh. Journal of Applied Zoological Research, **27**: 53-56.

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