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Spatio-temporal distribution of *Tuta absoluta* (Lepidoptera : Gelechiidae) from Pakistan

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ABSTRACT

BACKGROUND: The tomato leaf miner *Tuta absoluta* (Meyrick 1917) (Lepidoptera: Gelechiidae) was reported for the first time in 2018 from Multan, the southern part of Punjab, Pakistan.

METHODS: It is an invasive pest so with the intention to monitor the geographical distribution of this invasive pest, a survey was carried out for three consecutive years from 2019 to 2021 in tomato growing districts of Punjab province including Multan, Muzaffargarh, Lodhran, Rahim Yar Khan, Rawalpindi and Charsadda from the province of Khyber Pakhtunkhwa. Monitoring was done through field surveys and sex pheromone delta traps.

RESULTS: Results showed that 17.62% of samples were found with *Tuta absoluta* attack or life stages i.e., egg, larvae, pupa and adults. Out of the total attacked samples, 15.54% of the samples were reported from Charsadda district, followed by Rawalpindi and Multan in surveyed years with 1.45% and 0.62%, respectively. No larval infestation or adults were captured from Muzaffargarh, Lodhran and Rahim Yar Khan districts throughout the survey. Maximum numbers of adults were captured in 2020 with 132 adults per week. However, no significant difference was observed among moths captured per year. The number of adult moths captured per week increased with the rising temperature and with the maximum capture occurring in temperatures ranging between 25 and 35 °C.

CONCLUSION: The results concluded that the *T. absoluta* has established itself in the Charsadda district, whereas in Rawalpindi, it is in the establishing process. Due to its reproductive rate and high capacity to disseminate, there is a high-level risk that the pest can spread to the whole province of Khyber Pakhtunkhwa. Consequently, an integrated pest management strategy is the utmost need of time to control this invasive insect pest in Pakistan.

Keywords: Tomato leaf miner · South American pinworm · Invasive species · Pheromone trap · Pest monitoring