

**Record of solanum fruit fly, *Bactrocera latifrons* (Hendel) (Diptera: Tephritidae) infesting solanaceous vegetables in Kerala**

*M. U. Akhila\* and T. Jiji*

Department of Agricultural Entomology, College of Agriculture, Vellayani,  
Thiruvananthapuram, Kerala- 695 522, India

\*E-mail: akhilamu09@gmail.com

India is endowed with a remarkably heterogeneous area characterized by a great diversity of agro climatic zones, allowing for production of a variety of horticultural crops such as fruits, vegetables, flowers, spices, plantation crops, root and tuber crops, and medicinal and aromatic crops. Horticulture accounts for 30% of India's agricultural GDP. Several factors constrain fruit production such as fruit flies which cause direct damage to fruits and vegetables which can lead upto 90-100% yield loss depending on fruit fly population, locality, variety and season (Mohamed, 2003). Fruit flies (Diptera: Tephritidae) rank among the world's most serious pests of horticultural crops including fruits and vegetables. Out of 4,400 species of fruit flies distributed throughout the world, 250 species are of economic importance and are distributed widely in temperate and sub-tropical regions of the world, but the greatest diversity of species occurs in the tropical regions. More than 200 species of fruit flies have been reported from India (Kapoor, 1993). Among which important species reported from Kerala are *B. dorsalis* (Hendel), *B. cucurbitae* (Coquillett), *B. tau* (Walker), *B. verbascifoliae* (Drew & Hancock), *B. caryae* (Kapoor), *B. zonata* (Saunders), *B. caudata* (Fabricius), *B. nigrotibialis* (Drew) (David

*et al.*, 2008; Jiji *et al.*, 2010). Here we record the presence of another species of the genus *Bactrocera* from Kerala; the Solanum fruit fly, *Bactrocera latifrons* (Hendel).

This fly was first described from Taiwan by Hendel in 1912 as *Dacus parvulus*. He described another series of Taiwanese specimens as *Chaetodacus latifrons* in 1915 (White and Liquido, 1995). It is native to South and South-East Asia (White and Elson-Harris, 1994). It is primarily of Asian distribution including Pakistan, India, Sri Lanka, Burma, China, Thailand, Laos, Vietnam, Malaysia, Singapore, Brunei and Taiwan (Carroll *et al.*, 2005). Overall, a total of 59 plant species from 14 plant families are identified as hosts of *B. latifrons*. It is considered as a pest of crops such as chilli (*Capsicum annuum* L.), tomato (*Lycopersicon esculentum* Mill.) and brinjal (*Solanum melongena* L.) (Liquido *et al.*, 1994). Other than solanaceous vegetables, it also infests cucurbitaceous plant species as well as a few plant species in other plant families (McQuate and Liquido, 2013). Recent collections have shown its predominance in southern India and its potential threat to the agriculture for other parts of India.

Survey conducted in May 2014, solanaceous vegetables viz., brinjal and tomato were found infested with Solanum fruit fly, *Bactrocera latifrons* (Hendel). The survey was conducted in homesteads of Kalliyoor Panchayath in Thiruvananthapuram district of Kerala. Infested fruits were identified by the brown resinous exudates from the oviposition punctures made by the adult female fruit fly. A brown patch was developed around the oviposition site. The larvae that hatched from the eggs fed on the inner content of the fruit making feeding galleries. The fruit subsequently became rotten and distorted and fell to the ground. The larvae pupate in the soil.

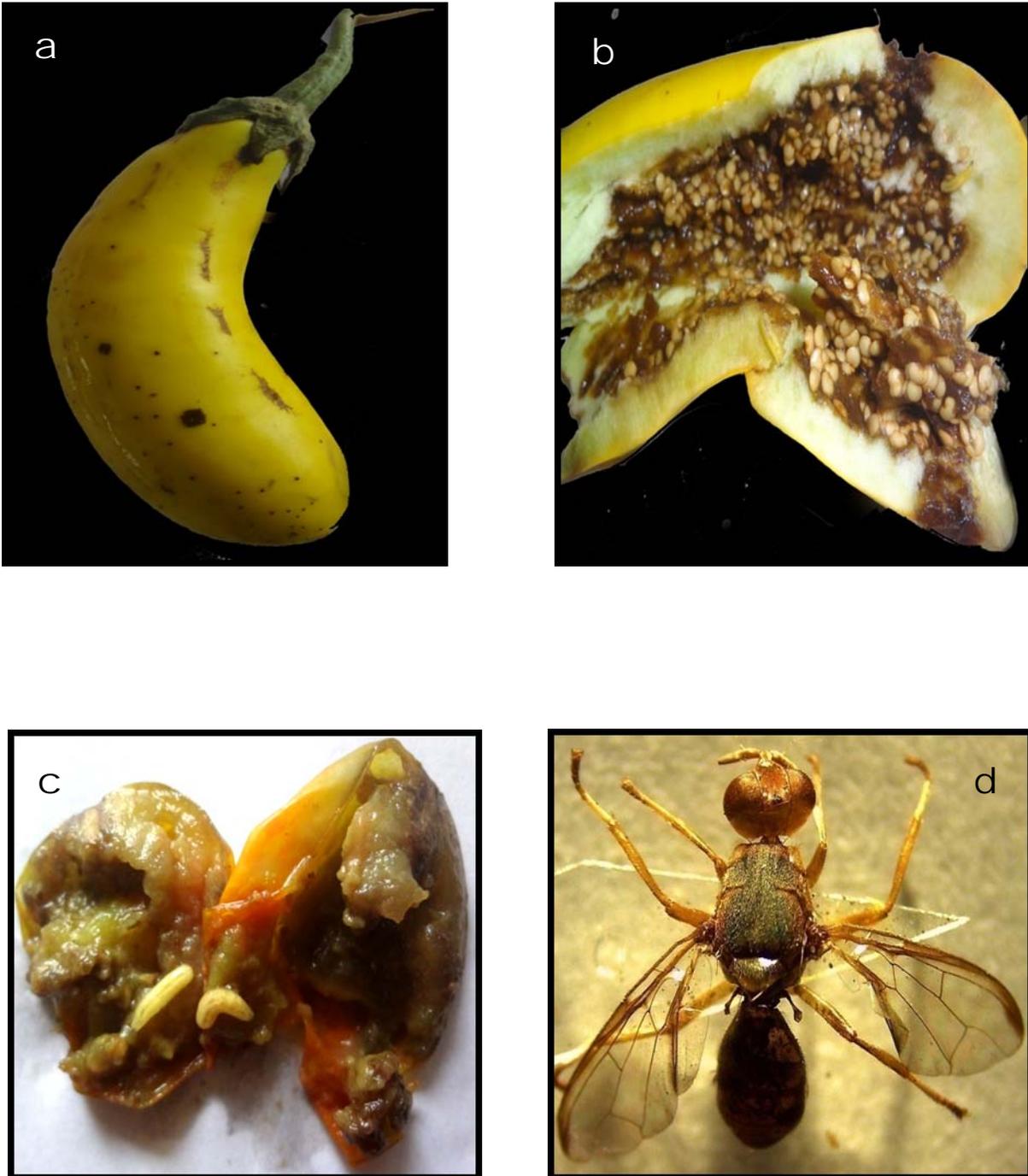
Infested fruits were collected and brought to laboratory for rearing. Five fruits were selected randomly from each plant. Thirty centimeter diameter glass troughs were used for rearing. Rearing troughs were filled with moist soil to a thickness of 4 cm. Infested fruits were cut opened carefully and the number of maggots from each fruits were counted. Number of maggots varied between brinjal and tomato and was found to be about 5-7 in brinjal and 3-5 in tomato. Maggots were slender, elongate, tapering anteriorly with 7-8.5 mm length; entirely whitish to yellowish. Fruits were kept over moist soil in each rearing trough. It was covered with a muslin cloth and fastened. Larval period ranged from 10-14 days and pupal period from 8-10 days. Emerged adult flies were sent for taxonomic identification in NBAIR, Bangalore and were identified as *Bactrocera latifrons*. Adult flies are characterized by predominantly black scutum with lateral yellow stripes, facial

spots, abdomen predominantly red brown rarely with distinct T-shaped mark on tergites 3-5 and clear wings with costal band distinctly expanded near apex of cell r2+3 to form spot extending across vein R4+5. This is the first record of the Solanum fruit fly, *Bactrocera latifrons* on brinjal and tomato from Kerala state.

## CONCLUSION

*Bactrocera latifrons* has got a restricted host range than other species of same genus but are highly invasive species. Population build up can occur in areas where suitable hosts are available. Although, at present, little damage has been attributed to this species but it has the potential to impact production of solanaceous crops such as chillies (*Capsicum annum* L. and *C. frutescens* L.), brinjal (*Solanum melongena* L.) and tomatoes (*Lycopersicon esculentum* Mill.) and some cucurbitaceous crops. *Bactrocera latifrons* were found primarily in homesteads than in field conditions. In homesteads, mature fruits are left in the plant and allowed to become over ripe. This created favourable conditions for reproduction and survival of the fly. At present, it has become essential to conduct further studies on the population dynamics, distribution, host range and infestation level of this pest.

**ACKNOWLEDGEMENTS:** The authors are thankful to Kerala Agricultural University and National Bureau of Agricultural Insect Resources (NBAIR), Bangalore.



**Fig. 1: a: Ovipositional punctures on brinjal fruit, b: Maggots feeding inside brinjal fruit, c: Maggots feeding inside tomato fruit, d: *Bactrocera latifrons* (Adult)**

## REFERENCES

- Carroll, L. E., White, I. M., Freidberg, A., Norrbom, A. L., Dallwitz, M. J. and Thompson, F. C. 2004. Pest fruit flies of the world- *Bactrocera latifrons* (Hendel). Version: 8<sup>th</sup> December 2006; <http://deltaintkey.com/>.
- David, K. J., Kumar, V. and Ramani, S. 2008. Distribution of *Bactrocera Macquart* (Diptera: Tephritidae) in Kerala with special reference to the Western Ghats. *Journal of Entomological Research Society*, 10 (2): 55.
- Jiji, T., Verghese, A., Simna, T., Sreedevi, S. J. and Prasad, P. 2010. Biodiversity of Fruit Flies (Tephritidae: Diptera) in the homesteads of Kerala and their management. Proceedings of 1<sup>st</sup> Kerala Women's Science Congress, Ernakulam, Kerala. pp. 75.
- Kapoor, V.C., 1993. *Indian Fruit flies (Insecta: Diptera: Tephritidae)*. Oxford and IBH Publishing Co Pvt Ltd, New Delhi. pp. 228.
- Liquido, N. J., Harris, E. J. and Dekker, L. A. 1994. Ecology of *Bactrocera latifrons* (Diptera: Tephritidae) populations: Host plants, natural enemies, distribution, and abundance. *Annals of Entomological Society of America*, 87:71 -84.
- McQuate, G. T. and Liquido, N. J. 2013. Annotated World Bibliography of Host Fruits of *Bactrocera latifrons* (Hendel) (Diptera: Tephritidae). *Insecta Mundi*. 0289: 1 - 61. <http://centerforsystematicentomology.org/insectamundi/0289McQuateandLiquido.pdf>.
- Mohamed, A. S. 2003. Biology, host and Host Plant Relationship of two *Psytalia* species (Hymenoptera: Braconidae): Parasitoids for Fruit Flies (Diptera: Tephritidae) in Kenya. Ph.D Thesis, University of Gezira, Sudan, 134p.
- White, I. M. and Harris, E. M. 1994. *Fruit Flies of Economic Significance; Their Identification and Bionomics*. CAB International, Cambridge, pp. 601.
- White, I. M and Liquido, N. J. 1995. *Chaetodacus latifrons* Hendel, 1915 (currently *Bactrocera latifrons*; Insecta: Diptera): proposed precedence of the specific name over that of *Dacus parvulus* Hendel, 1912. *Bulletin of Zoological Nomenclature*, 52: 250-252.

[MS received 28 April 2015;  
MS accepted 22 June 2015]

**Disclaimer:** Statements, information, scientific names, spellings, inferences, products, style, etc. mentioned in *Current Biotica* are attributed to the authors and do in no way imply endorsement/concurrence by *Current Biotica*. Queries related to articles should be directed to authors and not to editorial board.