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Abundance variation of *Bactrocera dorsalis* and the fruiting phenology of *Mangifera indica* in wet and dry zones of Sri Lanka

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Abstract

Bactrocera dorsalis Hendel (Diptera: Tephritidae) is one of the major pests in the mango industry in Southern Asia, whereas there are no documented statistics of the population variation of *B. dorsalis* with mango (*M. indica*) phenology in Sri Lanka. Hence, the present study was conducted to estimate the abundance variation of *B. dorsalis* with the fruiting phenology of two varieties [(Karutha kolumban (Kc) & Willard (Wld)] of *M. indica* in wet and dry zones of Sri Lanka. In dry and wet zones, eight (8) study sites were selected. For the Kc variety, from the wet zone Balangoda and Niyagama, and from the dry zone Udawalawe and Kakirawa were selected. For the Wld variety, Kahawaththe and Hiyare from the wet zone and Barawakubuka and Dambulla from the dry zone were selected. A fruit fly trap (5 cm diameter, 10 cm height, and a methyl-eugenol coated sponge inside) was hung (1.5- 4 m above the ground level) in a mango tree at the center of each site. Trapped flies were collected once a month from January 2021 to January 2022 and new traps were replaced in each sampling round. Captured flies were identified using standard taxonomic keys. Out of the 1059 *B. dorsalis* flies captured from sites in the wet zone, 49.7% were found in Kc cultivated sites while 50.3% were found in Wld sites. Similarly, out of the total 1109 *B. dorsalis* flies recorded from sites in the dry zone, 47.5% were caught from Kc sites and 52.5% were from Wld sites. Study shows that *B. dorsalis* abundance increases about five folds during the main mango season (March to July) of the wet zone ($P < 0.05$) and about three folds increase in the main mango season of the dry zone (October to January) ($P > 0.05$) compared to their lowest abundance recorded in the year. In short mango seasons of both zones, *B. dorsalis* showed a slight increase of the abundance ($P > 0.05$). The both *B. dorsalis* high abundance and the main mango season exist in the distinct wet season of both dry and wet zones. In both zones, the variation of *B. dorsalis* abundance was non-significant between Kc and Wld varieties ($P > 0.05$). Crop phonological studies in relation to the population ecology of *B. dorsalis* are vital to implementing effective pest management methods.

Key words: *B. dorsalis*, Climatic zones, Mango phenology, Sri Lanka

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