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EVALUATION OF METHODS FOR CULTIVAR SCREENING AGAINST SHOT-HOLE BORER (*Xyleborus fornicatus* Eichhoff.) IN TEA

P. A. I. U. Hemachandra¹, K. M. Mohotti², D. Ahangama¹

¹*Department of Agricultural Biology,*

Faculty of Agriculture, University of Peradeniya

²*Entomology and Nematology Division, Tea Research Institute of Sri Lanka, Talawakelle*

Shot-hole borer (SHB) (*Xyleborus fornicatus* Eichhoff.) in tea is the most important pest causing economic damage at nursery, young and mature stages resulting in poor establishment, direct yield loss and long term bush debilitation. The existing cultivar screening method against SHB using the conventional tray method possesses several limitations with inconsistent results. Therefore, this study compared four cultivar screening methods with the conventional tray method to determine the differential susceptibility of tea cultivars to SHB. The screening methods compared were: (a) bioassay using glass jars; (b) bioassay using olfactometric principles; (c) development of borer populations in artificial diet media prepared using tea bark extractions and (d) using nursery tea plants under natural borer infestations in the field. Seventeen TRI cultivars (TRI 4078, 4071, 4053, 4052, 4046, 4042, 4014, 4006, 3072, 3063, 3025, 3019, 3018, 2043, 2025, 2023 and 777) and six estate selections (DN, DG39, DG7, CY9, DT1 and PK2) with known tolerance or susceptibility to the pest were evaluated.

The tested cultivars behaved in a similar manner with respect to the mean number of galleries with a correlation coefficient of 0.24 ($p=0.0008$) between the conventional method and glass jar bioassay, whereas it was 0.056 ($p=0.4523$) between the conventional method and the olfactometric method. The mean number of Shot-hole borers was not significantly different ($p < 0.0001$) among the tested cultivars in artificial diet media. The results of cluster analysis comparing mean number of galleries of the tested cultivars with known standard tolerant and susceptible cultivars, TRI 2023 and TRI 2025 too supported the above findings except those from the olfactometric method.

Based on an overall comparison of the tested methods in terms of cultivar behavior, easiness, efficiency and time taken, *in vitro* testing of stem pieces using glass jars bioassay was found to be the most appropriate method for cultivar screening against the SHB. As screening under natural infestation in the field gave differential ratings of tolerance against the pest, further studies with additional physiological measurements are proposed.

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