TESTING, EVALUATION, AND IMPLEMENTATION OF BRUSH WEEDER FOR TEA PLANTATIONS IN SRI LANKA

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Weeding is a crucial management practice essential to performs periodically to maintain an optimum harvest from tea plantations. Chemical methods and mechanical weeding with *Soradiya* have been banned due to adverse environmental and soil erosion effects. Therefore, hand weeding is the recommended weeding method for tea plantations. However, it consumes more labour and time, ultimately affects higher production costs. Slashing weeds by brush weeder is the upcoming economical weed management method in tea plantations in Sri Lanka. Nevertheless, naked blade or thread caused to damage tea trunks, later it causes trunk cancers. Therefore, this study aimed to modify the brush cutter and evaluate its performance. A half-circular metal guard 40 cm in diameter was attached to the gear head just above the cutting thread. Well-pruned, matured, and young (less than two-year-old) tea plantations were selected for evaluation. Hand weeding (control), normal brush cutter and modified brush weeder were used as treatments, and three replicates were used. The effective field capacity, field efficiency, weeding efficiency and damage plant percentage were 0.013 hah^{-1}, 74.98%, 93.37%, & 0% for the matured tea plantations and 0.010 hah^{-1}, 66.47%, 86.47% & 34.52% for young tea plantations. Statistical analysis revealed that the modified weeder showed the significantly highest field performance in effective field capacity, moderately higher performance in the field efficiency, plant damage percentage and weeding efficiency ($p \leq 0.05$), and break-event point of modified brush weeder was 2.27 $hayr^{-1}$. Therefore, it can be recommended for small tea estate holders as a convenient weeding method.

Keywords: Weeding, Effective capacity, Weeding efficiency, Damage plant percentage