

**EFFECT OF ECO-FRIENDLY NURSERY MANAGEMENT MEASURES
ON GROWTH PERFORMANCES AND INDUCTION OF HOST PLANT
RESISTANCE OF *Camellia sinensis***

S.S.N. Samarasinghe¹, D.M.De Costa², and T.D.C. Priyadarshani¹

¹*Department of Plant Sciences, Faculty of Agriculture, Rajarata University of
Sri Lanka, Anuradhapura, Sri Lanka.*

²*Department of Agricultural Biology, Faculty of Agriculture, University of
Peradeniya, Sri Lanka.*

Heavy dependency on chemical applications for the control of pest and diseases of tea poses threats to the quality standards of made tea. The present study was conducted in *Kataboola* estate, *Nawalapitiya*, to determine the effects of eco-friendly nursery management measures, which were introduced in the present study, on growth performances, incidence and severity of blister blight and induction of host plant resistance due to synthesis of defense enzymes, in comparison to the existing nursery management practices. Eco-friendly measures introduced by the present study included application of sodium bicarbonate, salicylic acid, sodium hypochlorite and a talc-based formulation of *Bacillus megaterium*. Shoot height, number of leaves, number of casualties, plants having active buds, plants with necrotic leaves and incidence and severity of blister blight were recorded in bi weekly intervals in three types of plant sets maintained after re-stacking. Defense enzymes namely, peroxidase, phenylalanine ammonia lyase (PAL), β -1, 3- glucanase, chitinase and total phenol content of the tender tea leaves were quantified by standard spectrophotometric methods. Findings revealed that number of casualties and necrotic lesions on leaves varied significantly due to interaction effect (type of nursery management methods x type of plant set). However, the other growth parameters varied significantly among the type of plant set but not by the type of management measures. Incidence and severity of blister blight did not differ significantly among the plant sets under two types of management. Tea leaves of the plants treated with eco-friendly measures resulted in significantly higher levels of peroxidase ($p < 0.0006$), PAL ($p < 0.0012$), β -1, 3- glucanase ($p < 0.0003$) and chitinase ($p < 0.034$). Total phenol content in tea leaves had no significant difference at $p = 0.05$. Eco-friendly measures introduced in the present study are successful in inducing host plant resistance in nursery plants of tea through activation of defense enzymes.

Keywords: Defense enzymes, Growth performance, Induced host plant resistance