

Performance of three Agarwood Producing Species with Rubber in Different Intercropping Systems

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Abstract

Rubber growers in Sri Lanka face financial losses due to certain diseases affecting the latex yield and low price in international market. Use of a short rotation intercrop could be more effective to compensate such financial losses. Agarwood is an extremely valuable resin produced in *Aquilaria* and *Gyrinops* species of family Thymalaeaceae which is used in incense and perfume industries. Therefore it was decided to establish a field trial to investigate the growth performance of three agarwood producing species; *Aquilaria crassna*, *A. subintegra* and *G. walla* under two rubber planting systems, viz., single row with 12 m distance apart and double row with 18 m apart. Seeds were imported from Vietnam and Thailand for *A. crassna* and *A. subintegra* respectively and *G. walla* is native to Sri Lanka. The experiment site was established in May 2015, in 2 ha land of Dartonfield Estate of Rubber Research Institute, Agalawatte. One row of agarwood species were planted in the middle of single row system and three rows of those species were planted in double row system. Tree height and diameter measurements were collected from all (153) agarwood producing species at monthly intervals and leaf area and leaf chlorophyll content data were collected at three month intervals. Data were statistically analysed after four years of age by one-way ANOVA. According to the results, both *Aquilaria* species recorded significantly higher height ($F=88.06$, $p=0.000$) and diameter ($F=3.92$, $p=0.000$) than *G. walla* in both single and double row systems. Though diameter of two *Aquilaria* species were not significantly different some variations were observed for height. Leaf area of both *Aquilaria* species was significantly higher than that of *G. walla* ($F=34.64$, $p=0.000$) though there were no such differences observed for each species when grown in two intercropping systems. Chlorophyll content was significantly different only between *A. crassna* in both systems and *G. walla* in double row system ($F=3.44$, $p=0.012$). The analysis confirmed that both *Aquilaria* species are growing faster than *G. walla* though resin quality analysis is required for a proper conclusion.

Keywords: *Aquilaria*, *Gyrinops walla*, Rubber, Intercropping, Agarwood

Acknowledgement: University of Sri Jayewardenepura Research Grant ASP/01/RE/SCI/2016/34, ASP/01/RE/SCI/2017/79