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CAN *PINUS* PLANTATIONS NURSE RAIN FOREST SPECIES? A FIELD TRIAL FROM SINHARAJA BUFFER ZONE

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Pinus caribaea has been introduced from the new world tropics to Sri Lanka as a forest plantation species. It has received both adulation for its ability to establish successfully in impoverished habitats and criticism for its ostensible environmental perils including biological impoverishment of habitats. In deforested areas around Sinharaja World Heritage site, *Pinus* plantations were established as a buffer zone between the forest and the surrounding villages.

Conversion of *Pinus* monocultures into mixed species plantations using indegenous (both endemics and nonendemics) rain forest species, Hora (*Dipterocarpus zeylanicus*), Nawada (*Shorea stipularis*), Kitul (*Caryota urens*) and Nedun (*Pericopsis mooniana*), as well as the exotic Mohogany (*Swietenia macrophylla*) was attempted in a field trial initiated in 1991, based on their ecology. The trial, set up near the northwestern boundary of the Sinharaja forest, examined the performance of these species under five different light regimes created by thinning rows of *Pinus*. The experimental design used was a two-factor factorial with three replicates.

In the thinned treatments, plant height, root collar diameter and dry mass (where relevant) sampled were significantly greater than each of their respective controls, with a few exceptions. Among treatments, although some showed better height and root collar diameter growth, the differences were not significant except for the dry mass of some species. Of the five species examined, *S. macrophylla* performed best and *S. stipularis* the least for all parameters. *Dipterocarpus zeylanicus*, *P. mooniana* and *C. urens* showed similar height growth, but root collar diameter of the last was 3 – 4 times greater than that of the first two species.

Based on these results, the most desired light regime/s for optimum growth of the test species were 19 – 25 moles/sq.m./day for both *D. zeylanicus* and *S. stipularis*, 6 – 25 moles/sq.m./day for *C. urens* and 11 moles/sq.m./day for both *P. mooniana* and *S. macrophylla*.

This trial shows for the first time in Sri Lanka that *Pinus* monocultures can be enriched successfully with local indegenous forest species with judicious environmental manipulation, provided that they are not subjected to fire.