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BIOLOGY OF *SANTALUM ALBUM*L. - A POTENTIAL HIGH VALUE TREE SPECIES FOR THE SRI LANKAN TREE FARMERS

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Santalum album Linn. (Sandalwood/Suduhandun) is characterised by special biological and physiological features due to its obligate xylem-tapping, woody, root hemiparasitic nature. The economic potential of the scented *Santalum* heartwood and its products has generated much interest in both overseas and local markets. This preliminary study was carried out to investigate the biology of *S. album* and its current status in Sri Lanka.

Comparisons between the authentic herbarium specimens and the isolated genomic DNA showed that there is no phenotypic and genetic variability between the Indian and Sri Lankan Sandalwood varieties. Germination studies proved that soaking the seeds in 0.05% gibberellic acid is the best method to enhance the germination rate of Sandalwood seeds. Vesicular arbuscular mycorrhizal associations were found to be less common in parasitized *Santalum* seedlings compared to the unparasitized seedlings. *Santalum* showed preference in establishing haustoria on legumes than non-leguminous hosts. The swollen, bell-shaped haustoria of *Santalum* showed penetration to the xylem tissue of the host roots, thus enabling it to abstract host-derived xylem sap. Being an obligate root hemiparasite, this species showed a significantly low chlorophyll content in the leaves (2.30 mg g^{-1}) than one of its common host, *Caesalpinia pulcherima* (3.85 mg g^{-1}). This investigation further showed that *S. album* maintains a significantly low (-0.87 MPa) water potential than one of its hosts, *Caesalpinia pulcherima* (-0.69 MPa) examined in this study to maintain a favourable water potential gradient to abstract host-derived xylem sap.

The survey carried out during this study showed that natural stands of *Santalum* are present in the wet and intermediate climatic zones of Sri Lanka, especially in the districts of Kandy, Kurunegala, Ratnapura and Badulla. *S. album* is widely used in Sri Lanka as a medicinal plant where the manufacturers of ayurvedic medicinal products are the principal users. At present the *S. album* requirement for ayurvedic products is met exclusively by the suppliers from Badulla, Welimada and Balangoda areas and imports from India. Only a few individuals/organizations extract Sandalwood oil from the scented heartwood for the perfume and cosmetic industry, which gives the highest return for the wood (about Rs. 30,000.00 for a well grown tree).

This preliminary study shows the ability of Sandalwood in tolerating a wide range of environmental conditions and to grow in many parts of Sri Lanka. The ever increasing worldwide demand for Sandalwood and the promising adaptability characters of Sri Lankan Sandalwood carry all the hallmarks that this species can be introduced as an income generating tree species in the future land restoration programs in Sri Lanka.