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## AN INVESTIGATION ON THE EFFECT OF HOST PLANTS ON THE INITIAL GROWTH OF THE MEDICINAL PLANT Santalum album L.

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Santalum album L. (Santalaceae), the Indian Sandalwood, is a xylem tapping obligate woody root hemi-parasite, which produces a highly valued aromatic heartwood that contains santalol. As it is an obligate hemi-parasite, it depends on host plants for absorption of water and nutrients required for growth. Consequently, the selection of suitable host species is imperative to ensure its optimal growth. In this study we assess the growth performance, foliar nutrient content and the above and below ground biomass production of Sandalwood seedlings grown with five potential host species (N-fixing Crotalaria juncea L., Mimosa pudica L., Phaseolus aureus L., the non N-fixing Alternanthera sessilis (L.) DC, and Tithonia diversifolia (Hemsl.) A. Gray) and without a host as a control.

The Sandalwood:host associations were grown in a shade house at 50 % shade (maximum instantaneous light level of 850  $\mu$ mol m<sup>-2</sup> s<sup>-2</sup>). The five pot host species (n = 15) were introduced to one month old uniformly grown Sandalwood seedlings, raised from the same mother stock and planted in black polythene bags (30 cm x 20 cm) filled with a mixture of sand, soil and farm yard manure mixed in the ratio of 1:1:1. The growth performance, in terms of leaf number, branch number, root collar diameter and plant height, was recorded at two-week intervals for a period of 10 months. For dry weight assessment, five seedlings from each treatment and the control were harvested. After allometric measurements were made, the component dry mass was determined by oven drying the samples at 80 °C for 48 h. To determine the nutrient content, pooled samples of Sandalwood and host plants were analyzed for N, P, K, Ca, Mg, Na, Mn, Cu and Zn using standard methods.

Root collar diameter and plant height of Sandalwood seedlings increased over time, irrespective of the pot host species. Seedlings grown with *C. juncea* were taller, had a larger root collar diameter, more branches and higher component and total dry mass compared to those grown with the other host species. The leaf number of seedlings grown with *C. juncea* and *T. diversifolia* was almost twice that of seedlings grown either with *P. aureus* or without a host (control). Seedlings grown with *P. aureus* showed the lowest root collar diameter, leaf number and total biomass. The root:shoot ratio of seedlings grown with all host species remained relatively constant, except in those grown with *M. pudica*, while it was highest in those grown without a host. The foliar nutrient levels were lowest in the autotrophic Sandalwood plants compared to the values of those grown with all the host species.

This study confirms that Sandalwood cannot be successfully grown without the association of a host species and shows that *C. juncia* was the preferred pot host, among those tested, for optimal growth of Sandalwood prior to field planting.