

was applied to Cinnamon. At early stage, the mortality rate was significantly increased with increasing salinity level. From 2nd month onwards mortality rate was increased even with lower salinity level (2 mmhos/cm). However, plants treated with sea water (40 mmhos/cm) were totally destroyed at 45 days after treatment.

Therefore, Cinnamon could be identified as less salt tolerant tree species. Further investigations are required to evaluate growth performances under field conditions.

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Effect of different mulches on physical and chemical properties of cocoa (*Theobroma cacao*) and black pepper (*Piper nigrum* L.) growing soils

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A green manure is a plant material incorporated into soil while green, for soil improvement. The objective of this study is to investigate the effect of *Gliricidia* green manure and cocoa pod husk mulching on physical and chemical properties of pepper and cocoa growing soils.

This experiment was conducted at the Export Agriculture Research station, Matale in the wet zone mid country (WM3). Soil samples were collected at a depth of 0–20 cm from two on-going experiments. Treatments were:- no mulch, *Gliricidia* mulch (10 kg/plant/year) and dried cocoa pod husk mulch (10 kg/plant/year) in cocoa growing soils and no mulch and *Gliricidia* mulch (10 kg/plant/year) in pepper growing soils. Treatments were arranged in a RCBD in three replicates. Samples were analyzed for pH, organic matter, total nitrogen, available phosphorous, exchangeable Mg and K. Physical properties such as aggregate stability, bulk density and porosity were determined.

Gliricidia mulching on cocoa growing soils showed the highest organic matter contents of 3.35% while lower values were found under no mulch i.e. 1.47% and 1.38% in cocoa and pepper growing soils, respectively. The highest total N% was observed with *Gliricidia* mulch treatment in cocoa field (0.22%) and cocoa husk mulch treatment in cocoa field (0.14%) and no mulch pepper (0.11%). Mulching improved the soil structure by aggregate formation. The highest Mean Weight Diameter (MWD) of aggregates was found in *Gliricidia* mulching on cocoa growing soils (2.43) and the lowest was found under no mulching pepper field (1.47). The lowest bulk density was found under cocoa husk mulching cocoa field (1.23 g/cm³) compared with no mulch cocoa field (1.53 g/cm³) and no mulch pepper field (1.65 g/cm³). According to the results Cocoa pod husk 10 kg/plant/year and *Gliricidia* 10 kg/plant/year is sufficient to improve chemical properties as well as physical properties of soil.

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An assessment on Rath handun (*Pterocarpus santalinus* Linn.f.) population in some areas in the Matara district

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Rath handun (*Pterocarpus santalinus* Linn.f.) of family *Fabaceae* is a highly valued medicinal plant, endemic to India. The natural habitats of Rath handun in India are extensively exploited to the point of near extinction and now the species is considered globally endangered, with illegal harvest being a key threat. It is believed that a handful of plants are available in Sri Lanka, where the local demand is met partly by Indian suppliers while some substitute with similar medicinal properties are also been used. Since the shortage of skills on ethnobotany and lack of authentic information, have hindered effective conservation strategies of this threatened species, the recent study was carried out to assess the Rath handun population in the Matara district, Southern Sri Lanka.

An extensive survey was carried out in five selected areas (i.e. Kamburupitiya, Devinuwara, Hakmana, Akkuressa and Deniyaya) in the Matara district. After authenticity was confirmed by the Royal Botanical Gardens, observations were made on each individual plant concerning their morphology and other characteristics. Results show that the total number of Rath handun plants in the area of investigation is 28, of which the highest number (13) in Kamburupitiya, followed by Devinuwara (5), Hakmana (4), Akuressa (4) and Deniyaya (2). Results further reveal that 82 % of the total plants are more than 40 years old and most of them are profusely bearing amounting to thousands of seeds in a season. However, a young generation of Rath handun in the area is hard to find indicating a possible practical difficulty either in seed germination or in early seedling growth. According to the growth measurements, 13 plants (46 %) are less than 10 m in height while 20 plants (71 %) are of GBH (girth at breast height) less than 100 cm indicating a very tardy growth.

It could be concluded that much emphasis needs to be drawn to conserve such existing trees of Rath handun and the human interventions are needed to facilitate and catalyze the regeneration by which the conservation of this valuable species would be ensured.

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Studies on *in-vitro* establishment of Red Sandalwood (*Pterocarpus santalinus* L) as affected by seed size, maturity stage, storage period and surface sterilization procedure

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Red sandalwood (*Pterocarpus santalinus* L) is an evergreen tree species grown under semi dry climates in well-drained lateric soils. It is a hard woody species and valuable medicinal plant, which is traditionally used for medicinal purposes. The reddish and fragrant heartwood has a range of medicinal, pharmaceutical, industrial and timber values. Very few number of plants were recorded in Sri Lanka. According to the previous work, the main propagation method of this plant is through seeds but germination rate is very low. A limited number of Red sandalwood plants are available in Sri Lanka and fruit bearing habit is seasonal. Therefore, alternative propagation technique has to be developed for conservation and multiplication of Red sandalwood plants in Sri Lanka. In this regard, studies on *in-vitro* techniques for mass propagation of Red sandalwood is timely important.

Experiments were conducted to study the micro-propagation of Red sandalwood as affected by seed size, maturity staged, storage period and surface sterilization procedure. All treatments were arranged in a Completely Randomized Design (CRD) with ten replicates. Murushige and Skoog media was used as the basal medium.

The highest survival rate (85%) was recorded in the treatment of 0.1 % $HgCl_2$ for 16 min for sterilization while the lowest survival rate of 10% was observed in 10 % NaOCl for 10 min with the seed size of > 25 mm diameter. It was recorded 100 % germination and seeds with < 10 mm diameter were not germinated at all. Sometimes they did not have embryo. Embryos isolated from seeds, harvested at fully matured light brown stage showed a significantly ($p \leq 0.05$) higher germination of 90 %. Embryos isolated from fallen seeds were not germinated. Seeds stored for a period of one week recorded 90% germination. When storage period increased up to one month, the germination rate was decreased up to 31%.

It could be concluded that embryos isolated from fully matured light brown seeds with size of >25 mm, stored for a period of one week can be used for culture establishment after surface sterilizing with 0.1 % $HgCl_2$ for 16 min.