

## **DIEBACK OF *Syzygium rotundifolium* IN RAJAWAKA FOREST RESERVE, SRI LANKA: IS SOIL LEAD THE CAUSE?**

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Rajawaka Forest Reserve (RFR) in Sri Lanka is a Lower Montane Forest, near Balangoda region. Degradation of forest vegetation due to dieback of trees has become a serious problem. *Syzygium rotundifolium* has become one of the worst affected trees with the forest dieback. This research focused on finding out the link of dieback with lead (Pb) contamination of forest soil and studying the effectiveness of Pine (*Pinus* spp.) wood bio-charcoal in neutralizing soil Pb. Soil samples, at 0.10 - 0.12 m depth, were collected 0.50 m away from eight-dieback affected and eight healthy *Syzygium* trees for the laboratory trial. The general soil characteristics analyzed included soil texture, pH, Electrical Conductivity (EC), Soil Organic Matter (SOM) and soil microbial diversity. Additionally, the available soil Pb was also analyzed. Effectiveness of Pine wood biochar in neutralizing available Pb in the soil was assessed using Pb-spiked soil samples treated with powdered Pine biochar. These samples were left for incubation at room temperature for ten days. Available Pb concentrations were analyzed using the Atomic Absorption Spectrophotometer (AAS). Soil pH of healthy and dead soils were 4.74 and 4.90 respectively. The EC of healthy and dead soils were 0.0061 and 0.0054 S/m respectively. SOM content of healthy and dead soils were 10.35% and 9.37% respectively. The average microbial count of healthy soil is higher than the soils collected near dead trees. The available soil Pb in the dieback affected areas (2.25 mg/kg) was significantly higher than that in healthy areas (1.575 mg/kg). Also, Pine wood biochar at the rate applied (i.e. 5%) was not effective in neutralizing soil Pb.

**Keywords:** *Bio char, Forest dieback, Immobilization, Lead, Syzygium*