

## **EFFECT OF BIOCHAR ON PHOSPHORUS AVAILABILITY AND FIXATION IN SOME RUBBER (*HEVEA BRASILIENSIS*) GROWING SOILS OF SRI LANKA**

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In most rubber [*Hevea brasiliensis* (A. Juss.) Muell. Arg.] growing soils, phosphorus (P) availability is very low and added P fertilizers become unavailable to the rubber plant due to strong fixation of it into Fe and Al oxide minerals prevalent in these soils. Some studies have observed that amending soils with biochar (BC), a co-product of thermochemical conversion of lignocellulosic materials into advanced biofuels, has increased the P uptake and cut down chemical P fertilizer usage in rubber nursery plants. Therefore, a laboratory incubation study was undertaken to determine the dynamics of soil P availability in three rubber growing soils amended with BC made from rubber wood (RWBC).

Three soil types, i.e. Reddish Brown Latasolic (RBL) soil from *Parambe*, Reddish Brown Earth (RBE) soil from *Thanamalwila*, and Red Yellow Podsolc (RYP) soil from *Payagala* were amended with RWBC at 0, 2 and 5% by weight. The soil moisture content was maintained at 80% of water holding capacity and P availability was determined at 0, 1, and 4 weeks during the incubation period. P fixation of soils amended with RWBC was assessed using the Portch and Hunter (2002) method.

Available P contents were very low (4.1 to 10.7 ppm) in the three soils and was in the order RYP < RBE < RBL. Application of RWBC increased the available P content by 3 to 7 folds and the increase was in the order of RBE < RBL < RYP. The available P content decreased with incubation time and the greatest decrease (52%) was in RBL while the lowest (42%) was in RBE soil at 4 weeks after incubation in 5% BC amended treatments. Among the three soil types studied the RYP soil had the lowest P fixation ability, while RBL was the highest P fixing soil. Application of BC decreased the P fixation in RBE and RBL soils but not in RYP soil. The greatest decrease was observed when RWBC was applied at 5%. Therefore, amending rubber growing soils with RWBC appears to have altered the dynamics of available P in a positive manner.