

Impact of Biofertilizer on the Growth of Winged Bean (*Xanthosoma sagittifolium*)

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Soil phosphorus (P) loss from agricultural systems in Sri Lanka limits food production. Phosphorous is mainly removed from the soil with the harvested portion of the crop. Triple Super Phosphate (TSP) is one of the main inorganics of P for cropping systems. Plant-available forms of phosphorus in topsoil are required for plant growth and productivity. Although the Eppawala Rock Phosphate (EPR) is a natural P source found in Sri Lanka, P in it is less readily available to crops than that in TSP. This study focuses on increasing the plant availability of phosphorus from EPR using three different biofertilizers. Three different biofertilizers were prepared using soil microbes from Pine Forests (PFB), Lower Montane Forest (LMB), and bamboo bushes (BBF). Control was only with the topsoil collected from the farm, and the other treatment was the same potting media without biofertilizer. Gliricidia leaves, cow dung, brown sugar, and natural water were used for culturing microbes. Potting media containing a mixture of compost (30%), biochar (5%), EPR (5%) powder, and farm soil (15 kg) was used for the experiment. Five treatments, together with the control, were arranged in a randomized complete block design (RCBD). Winged Bean (*Xanthosoma sagittifolium*) was planted as the indicator crop. After a two-month period, a significant increase in the above-ground biomass of Winged Bean was observed in PFB and LMB. A significant increase in no of pods has resulted from PFB and BFB in Winged Bean. Thus, it was evident that PFB is effective in increasing the growth and productivity of winged Beans (*Xanthosoma sagittifolium*).

Keywords: Biofertilizer, Eppawala Rock Phosphate (EPR), Phosphorus