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## Impact of Co-compost Pellets with Biochar on Growth and Yield of *Ipomoea Batatas* (L.)

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## Abstract

Ecological recovery of soil fertility can be achieved through balanced application of organic matter and chemical fertilisers. Recycling of organic wastes by producing compost helps to maintain soil fertility by positively changing its physical, chemical and biological properties. Co-composting with the organic fractions of Municipal Solid Waste (MSW) and Dewatered Fecal Sludge (DFS) is a diverse and a cheap source for nutrient recovery. Further, it helps in managing the ever increasing solid and liquid waste quantity. Empty fruit bunches of oil palm (EFB), becoming a problem in Sri Lanka due to its high production rate and low utilisation can be used to produce biochar. This study was focused on utilisation of EFB as biochar together with co-compost in pellet form to amend sandy loam soil and evaluate its performance on plant growth and yield of short term crop, Ipomoea batatas (L.). The field trail was conducted at the Center of Excellence for Organic Agriculture, Makandura, Gonawila (NWP), in Sri Lanka. The experimental design was Randomised Complete Block Design (RCBD) with four blocks and seven treatments namely MSW-DFS 30% available nitrogen, MSW-DFS 100% available nitrogen, MSW-DFS-Biochar 30% available nitrogen, MSW-DFS-Biochar 100% available nitrogen, MSW-DFS-Mineral enriched, MSW-FS-Biochar-Mineral, and control with mineral fertiliser recommended by Department of Agriculture, Sri Lanka. Parameters of plant growth, vield and soil pH were recorded. The results revealed a significantly (p < 0.05) higher vield with MSW-DFS pellets (30% available nitrogen) and MSW-DFS-Biochar pellets (30% available nitrogen) treatments against the mineral fertiliser treatment recommended by Department of Agriculture, Sri Lanka. The highest mean soil pH was recorded with MSW-DFS-Biochar 30% available nitrogen and that was significantly different with the lowest pH recorded with control treatment. This may be due to soil buffering effect of biochar that causes low variations in soil pH. It could be concluded that, harvest of 15  $(\pm 0.91)$  to 19.5  $(\pm 0.56)$  tons/ha could be achieved by amending soil with 16.8 tons/ha of MSW-DFS-Biochar pellets with 30% available Nitrogen.

Keywords: Biochar, Co-compost, Oil palm empty fruit bunches, Sweet potato, Waste recovery

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