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## POTENTIAL UTILIZATION OF *EICHHORNIA* *CRASSIPES* FOR COMPOST PRODUCTION

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### ABSTRACT

Water hyacinth is a common noxious weed found in majority of aquatic systems in Sri Lanka. Consequently, water hyacinth is considered as an invasive alien species and total eradication of this plant is not a feasible option. Effective utilization has been identified as the best method for management of unwanted invasive weeds such as water hyacinth. The present study was aimed to evaluate the possibility to utilize water hyacinth to produce organic compost. The study sites were selected based on the nitrogen and phosphorus content in water. Accordingly, water hyacinth fresh samples for chemical analysis were collected from Boralesgamuwa lake, Attidiya marsh, Delkada keppu ela, Atalugama lake, Kada panaha tank and Parakrama samudra representing both wet zone and dry zone. Nitrogen content was measured by micro-kjeldahl method and metal concentrations were quantified using Atomic Absorption Spectroscopy (AAS). Phosphorous was measured using the spectrophotometric method where total carbon was quantified using Walkley-Black method. Analysis revealed that the total organic carbon was within the range of 40.21%-51.44%. Essential plant macronutrients such as Potassium, Nitrogen and Phosphorous were recorded as ranges of 0.13%-6.9%, 0.62%-50.85%, 0.06%-5.63% respectively. The other macronutrients; Ca (354.66- 3727.66 ppm), Mg (4038- 13 778 ppm) and micronutrients; Fe (120- 42 918 ppm), Mn (1.1-416.04 ppm), Ni (0-9.03 ppm), Zn (0.148-148.05 ppm), Cu (294-1644 ppm) were found in considerable concentrations. Further, it was found that the plant contains beneficial nutrients such as Na (31.2- 706.8 ppm) and Co (0-54.97 ppm) at satisfactory level and these nutrients are rarely seen in synthetic fertilizer. Heavy metals; Cd, Cr, As and Pb were found as 1.379 ppm, 19.4 ppm, 64.65 ppb and 69 000 ppm respectively. According to the SLSI standards given for compost in Sri Lanka, the heavy metal concentrations found in water hyacinth are not in hazardous level and fiber content of the plant is in accepted range (6.89%- 19.45% m/m). However high moisture content (63.68%-95.35% m/m) retained in water hyacinth is not preferable for compost according to SLSI standards. The lowest C: N ratio (47.8:50.9) was detected in roots where the highest was found in leaves. All parts of the plant; Leaves, roots and petioles show high affinity for metals, essential plant growth promoters and trace elements which cannot be supplied from synthetic fertilizers. Therefore, the findings of the present study reveals that the water hyacinth is a suitable candidate to produce cost effective organic compost in future as well as a solution to remove noxious invasive water hyacinth.

**Keywords:** Water hyacinth, Compost, nutrients, Heavy metals