

## Efficiency of Replacing Inorganic Fertilizer with Compost Made of *Eichornia crassipes* for Intensive Paddy Cultivation in the Ampara District of Sri Lanka

### Abstract

Application of high dose of inorganic fertilizer for the paddy cultivation in the Ampara district has caused serious threat to environment and has increased the cost of production tremendously. The heavy inorganic fertilizer application in Sri Lanka burdens the government to spend more foreign exchange on import and on the other hand it faces political issues in providing fertilizer subsidy to the farmers. *Eichornia crassipes* is listed as one of the most productive plants on earth and is considered the world's most problematic aquatic plant. This plant is amply available in the Ampara district spreading throughout inland and coastal freshwater bays, lakes and marsh lands. It interferes with fresh water fishing, recreation, irrigation and power generation activities. A study was carried out to see the possibilities of replacing the compost made of water hyacinth (*Eichornia crassipes*) in place of inorganic fertilizer for intensive paddy cultivation in the Ampara District. This study estimates nutrient content of the compost made of *Eichornia crassipes* with cost and benefit analysis and nutrient balance study. The estimated C,N,P contents in the compost were 24.5%, 17.6% and 0.44% respectively. C: N ratio of produced compost was 30.07. The estimated cost of production of compost is Rs. 7.00 per Kg. The cost of inorganic fertilizer to obtain a paddy yield of 140 bushels per acre in the coastal region of the Ampara district is Rs.16, 900.00 per season. Alternatively, to supply the equal amount of nitrogen, 8,873.5 Kg compost made of *Eichornia crassipes* has to be applied which will cost Rs.62, 114.20. This compost is expected to supply the nutrients for at least five seasons and therefore application of compost will save Rs. 22,385.80 in long run. Together with compost application, extra amount of phosphorus and potassium can be added to soil without any harm. Another big advantage of *Eichornia crassipes* is addition of micro nutrients which are not supplied through main inorganic fertilizers added by the farmers. Therefore replacement of compost made of *Eichornia crassipes* will reduce the application of inorganic fertilizer and eradicate the environmental problems caused by water hyacinth. However an analysis is required for heavy metals inclusion before the final recommendation. The lower concentration of P in the composting process will slow down the process of carbon matter decomposition. Therefore it is recommended to add inorganic P during the composting process.