

## **Uptake of Mn and Cd by wild water spinach and their bioaccumulation and translocation factors**

### **ABSTRACT**

Polluted ponds and lakes close to agricultural activities become the exposure route of manganese (Mn) and cadmium (Cd) to aquatic plants in near vicinity. Therefore, a study of the uptake, bioaccumulation, and translocation of Mn and Cd by the water spinach (*Ipomoea aquatica*) is presented in this paper. Different concentrations of Mn and Cd were added to the hydroponic nutrient solution that was used to grow the plants for the heavy metal uptake experiment under greenhouse conditions. The plant samples exposed to heavy metals were collected to determine the metal concentrations using atomic absorption spectroscopy (AAS) and the metal concentrations were found for Mn was between 1.589 to 9.696  $\mu\text{g/g}$  and Cd from 5.309 to 10.947  $\mu\text{g/g}$ . The correlation and regression results showed that the water-to-shoot bioaccumulation factor (BAF) decreased for Mn, while root-to-shoot translocation factor (TF) values increased in the order  $\text{Cd} > \text{Mn}$  to the increasing levels of metals in the water. Furthermore, it was revealed from the two-way analysis of variance (ANOVA) that the different metal types influenced the BAF and TF values at different metal concentration treatments.

**Keyword:**