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Biomass Production of *Azolla pinnata* in Different Wastewater

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Abstract

Usage of *Azolla pinnata* in wastewater treatment has great advantages in the environment. Besides its utilization as a water purifier plant on wastewater, *Azolla* sp. can be used as an animal feed and bio fertilizer. This research study was conducted to assess the biomass production and the treatment efficiency of *Azolla* sp. in different types of industrial wastewater from rice mills, the food industry and vehicle services stations. A split-plot experimental design was used with 4 replicates. For this study, eight artificial ponds were constructed by using polythene sheets. The size of each pond were 150×50×40 cm³. Out of eight ponds, three ponds were filled with three different types of wastewater, one was filled with groundwater and 90 g of *Azolla* sp. plants were introduced into them. Further, balance four ponds were filled with the same three different types of wastewater and groundwater. Ground water was used as a control to observe the growth of *Azolla* sp. without effect of wastewater. Each of the ponds was filled with 50 L of wastewater. Then the water quality parameters such as pH, EC, COD, BOD, TDS, TSS, temperature, oil and grease content and the biomass production of *Azolla* sp. were analyzed on the first day, the 7th day and the 14th day. Most of the water quality parameters in three different types of industrial wastewater were improved with *Azolla* sp. Significantly, a higher dry weight of *Azolla pinnata* was recorded in rice mill wastewater and the least values recorded in the service station wastewater. There are significant differences ($p<0.05$) among the water quality parameters such as EC, TDS and TSS of the four experiments. A significant difference was observed in EC, TDS and TSS of the *Azolla* sp. grown rice mill wastewater compared to control. EC of the food industry wastewater showed a higher significant difference. EC and temperature showed a highly significant difference in the service station wastewater.

Keywords: *Azolla pinnata*, Waste water, Biomass, Water quality