

Potential use of *Chlorella sp.* Grown in Parboiled Effluent on Growth and Yield of Water Spinach (*Ipomoea aquatica L.*)

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Usage of organic fertilizers is the best solution to overcome the detrimental effects caused by synthetic fertilizers. However, readily available quality organic fertilizers are limited. Microalgae could be used as bio fertilizers to the crops. A pot experiment (1kg soil/ pot) was conducted to assess the potential use of *Chlorella sp.* grown in wastewater on growth and yield of *Ipomoea aquatica* with different organic fertilizer and application combinations. Treatments were T1 Control (No fertilizer application), T2 *Chlorella* soil application (SA) – 2 g/pot soil, T3 *Chlorella* SA – 4 g/pot soil, T4 *Chlorella* foliar application (FA) – 165 mg live biomass /pot through foliar, T5 *Chlorella* FA- 33 mg dry biomass/pot through foliar, T6 100% cattle manure 3.23 g/pot, T7 *Chlorella* SA- 1 g/pot soil + 50% cattle manure, T8 *Chlorella* SA 2 g/pot soil + 50% cattle manure, T9 *Chlorella* FA 82.5 mg live biomass/pot through foliar + 50% cattle manure, T10 *Chlorella* FA 16.5 mg dry biomass/pot through foliar + 50% cattle manure, T11 50% cattle manure (1.61 g/pot). Treatments were arranged as completely randomized design with three replicates. Plant height, number of leaves, leaf area, and fresh and dry weight of edible yield were measured at the end of four weeks. Data were statistically analysed using ANOVA and mean separation was done using Duncan's multiple range test. Results of nutrient analysis of *Chlorella* indicated that it has considerable amount potassium (0.73%), phosphorous (3.23%), nitrogen (27%) and carbon (38.05%). At the time of harvest, significantly higher plant height was recorded in T2, T7 and T8, significantly higher leaf number was observed in T3, while the significantly highest leaf area was found in T3 compared with other treatments. The fresh and dry weight yield were significantly higher in T2, T3, T7 and T8, and T2, T3 and T7 respectively, indicating a better response to soil application of *Chlorella* compared to foliar application. It is interesting to note that the yield of *Ipomoea aquatica* was either equal or higher in treatments of *Chlorella* as sole soil application or combination with cattle manure compared to 100% cattle manure treatment, indicating the potential of *Chlorella sp.* as a bio fertilizer.

Keywords: Bio fertilizer, *Chlorella spp*, Foliar application, *Ipomoea aquatic*, Soil application