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The Effects of Nitrate and Phosphate on Growth of Algae, *Ulva rigida* in 40L Out-door Tanks

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Abstract

In order to determine the optimal concentrations of nutrients of nitrate and phosphate, growth of macroalgae *Ulva rigida* in the fertilizers sodium nitrate (10-40 mg/l) and superphosphate (5-20 mg/l) individually in four treatments with control (each in triplicate) were evaluated for 28 days. Biometry weight (g) of algae, salinity, pH were measured once weekly. Temperature was measured in the morning and afternoon every day. Algae growth at the end of the day 28 in the nitrate treatment (20 mg/l) and phosphate (10 mg/l) had significantly difference with other treatments (P<0/05) and the highest daily growth rate algae *U. rigida* was observed in treatments of nitrate (20 mg/l) and phosphate (10 mg/l) %76.56 ± 6.23 and %32.32±2.56 respectively. The following treatments of phosphate were cultured in fertilizers of nitrate+phosphate (20 + 10 mg). The highest percentage difference daily growth was observed in the amount of 68.34% at temperature 23°C at day 63. The results showed that generally by providing appropriate concentrations of nutrients of nitrate and phosphate and with the desired temperature, the algae *U. rigida* reached to maximum growth in the pools and tanks.

Keywords: *Ulva rigida, Nitrate, Phosphate, Growth rate.*