

**THE EFFECTS OF DIFFERENT SALINITY AND ORGANIC MATTER
LEVELS ON THE GROWTH OF BLUE-GREEN ALGAE**

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ABSTRACT

A one-month culture of lab-lab to determine the growth of blue-green algae in three levels of salinity (15 ppt = S_1 , 30 ppt = S_2 and 45 ppt = S_3) and two levels of organic matter (3.4 to 4.4% = OM_1 and 6.5 to 7.8% = OM_2) was conducted using a twenty-two plastic containers (diameter = 43 cm; height = 49 cm) at the University of the Philippines in the Visayas Brackishwater Aquaculture Center, Leganes, Iloilo. The study utilized a 3 x 2 factorial experiment in completely randomized design with three replicates.

Organic matter levels of the soil affected the chemical properties of soil and water (available phosphorus, reactive phosphorus, ammonia-nitrogen and pH). The higher the organic matter level, the higher the pH and the concentrations of ammonia and phosphorus. On the other hand, salinity did not apparently affect the fluctuations in ammonia, phosphorus and pH due to water replenishment to maintain treatment levels of salinity.

Earlier rapid growth of blue-green algae commencing on the 3rd to the 15th day was observed at higher organic matter level. While at lower organic matter level, this occurred only on the 18th to the 28th day.

Blue-green algae population (units/ml) was observed highest in treatment IV ($S_1 OM_2$; 1,262,113) followed by treatments III ($S_3 OM_1$; 761,338); II ($S_2 OM_1$; 514,788); I ($S_1 OM_1$; 494,375); V ($S_2 OM_2$; 413,750); and, the lowest was obtained from treatment VI ($S_3 OM_2$; 394,275). The relative percentage proportion of blue-green algae in the lab-lab complex showed that it composed 17.7% in treatment IV, 16.86% in treatment III, 16.64% in treatment II, 15.82% in treatment I, 15.2% in

treatment V and 14.9% in treatment VI. These, however, did not significantly vary among treatments. A low correlation coefficient (r) between the population count and the selected parameters: reactive phosphorus, water pH, soil pH and available phosphorus was obtained while a negative correlation was obtained between the population and ammonia-nitrogen.

Significantly higher biomass (ash-free dry weight) of lab-lab was obtained in higher organic matter (OM_2) and at 45 ppt salinity (S_3). The highest biomass (ash-free dry weight) was obtained in treatment VI (S_3OM_2 ; 0.160 g/cm^2) while the lowest was obtained in treatment I (S_1OM_1 ; 0.012 g/cm^2). The algal count of lab-lab also showed a significant difference in the organic matter levels but no significant difference on the salinity levels. The highest algal count was obtained in treatment V (S_2OM_2 ; 6,773,542 units/ml) and the lowest count was obtained in treatment II (S_2OM_1 ; 2,328,792 units/ml). However, the primary productivity based on O_2 production showed a significantly higher production in the lower organic matter and at higher salinity level (30 ppt.). The highest O_2 concentration was obtained in treatment III (S_3OM_1 ; 5.759 ppm) and the lowest was obtained in treatment V (S_2OM_2 ; 4.19 ppm).