Algal Abundances and Growth Performances of Nile Tilapia (Oreochromis niloticus) and Common carp (Cyprinus carpio) as Affected by Different Fertilizer

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ABSTRACT

The present study was carried out at a private fish farm at Tolombat 7 site Kafr El-Sheikh Governorate, Egypt. The study was performed for 140 days during the period from 5th July to 27th November 2010. The study aimed to investigate the effect of different fertilizer sources (chemical, organic or combined chemical + organic) on plankton abundances, growth performances of Nile tilapia (O. niloticus) and Common carp (Cyprinus carpio) and water quality parameters in earthen ponds compared to feeding fish only. The experimental ponds were stocked with 4000 O. niloticus fingerlings with an average initial weight of 17.18g and 500 C. carpio fingerlings initial weight of 16.50g in ten earthen ponds with dimensions of 21 x 100 m. each i.e. 1/2 fadden. Five treatments with two replicates each were applied as follow: The 1st treatment was fed only on a commercial fish feed (25% protein), the 2nd organic fertilizer (poultry manure 32.5 kg /0.5 feddan /week) and artificial feeding (25% crude protein), the 3rd combined fertilizer treatment included the application of both organic fertilizer (poultry manure 32.5 kg /0.5 feddan /week) and chemical fertilizer (urea 46.5 % N) at 1 kg /0.5 feddan / week, (triple super phosphate 20% P2O5) at 4 kg/0.5 feddan /week and artificial feeding (25% crude protein), the 4th, chemical fertilizer (urea at 1kg/0.5 feddan/week, triple super phosphate 4 kg/0.5 feddan/week) and artificial feeding (25% crude protein) and the 5th, organic fertilizer (poultry manure 32.5 kg /0.5 feddan /week) and chemical fertilizer (urea at 1kg/0.5 feddan/week, triple super phosphate 4 kg/0.5 feddan/week) where the daily allowances of the fish was calculated as 3 % of fish biomass/day 6 days a week. The average total phytoplankton counts (org/ml) were the highest in the feeding and combined fertilizer treatment compared to those feed only as a result of increased algal density and abundances. Total ammonia (NH₄) Nitrate (NO₃−N) and Nitrite (NO₂−N) concentrations in the combined fertilizer and feed treatments were higher with an increase in algal growth, abundance. Within fertilizer treatments, The daily

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تأثير الأسمدة المختلفة على وفرة الطحالب واداء نمو أسماك البلطيق النيلي والمريرك العادي

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ulators the nutrient solution and on the growth of fish. The results indicated that the fish growth was significantly affected by the different fertilizer treatments. The highest growth was observed with the treatment that contained the highest amount of nitrogen and phosphorus. The results also showed that the fish growth was negatively affected by the high levels of nitrogen in the nutrient solution. This study suggests that the use of suitable fertilizer combinations can improve the growth of fish in aquatic systems.

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The effect of different fertilizers on the growth of fish and algae in aquatic systems was investigated. The results showed that the growth of fish was significantly affected by the different fertilizer treatments. The highest growth was observed with the treatment that contained the highest amount of nitrogen and phosphorus. The results also showed that the growth of algae was negatively affected by the high levels of nitrogen in the nutrient solution. This study suggests that the use of suitable fertilizer combinations can improve the growth of fish and algae in aquatic systems.