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EFFECT OF DIETARY SUPPLEMENTATION OF BETAINE AND/OR STOCKING DENSITY ON PERFORMANCE OF NILE TILAPIA

Abdelhamid, M. A. * ; M. A. Ibrahim ; Nagwa A. Maghraby*** and A. A. A. Soliman*****

* Animal Production Dept., Fac. of Agric., Al-Mansourah Univ., Egypt.

** Animal Production Dept., Fac. of Agric., Kafr El-Shiekh Univ., Egypt,

*** Animal Production Dept., National Research Center, Cairo, Egypt.

ABSTRACT

In the present work, feeding *O. niloticus* fish on diets containing different levels of betaine (0.0, 0.5 and 1.0%) and stocked at three densities (2, 3 and 4 g fish / liter) led to some results which could be summarized in the following points. The results clearly showed that the diets containing (1% and 0.5% betaine) were slightly better in all the tested parameters than the control, but on the other hand the results clearly showed that the fish stocked at 2g fish / l and 3g fish / l were slightly better in average weight gain, average daily gain, specific growth rate, relative growth rate, and survival rate than the control. Increasing dietary betaine level caused significant increases in the growth rates (RGR and SGR) and consumption of feed and protein, but feed conversion efficiency decreased significantly. Elevated stocking density of fish led to significantly lower growth rates and protein intake; yet, the feed conversion improved significantly. Dietary protein utilization (PER and PPV) was improved significantly by raising the dietary betaine level, but the survival rate was not affected. Raising the stocking density of the experimented fish resulted in significant decreases of dietary protein utilization, although the survival rate was not influenced. Concerning whole fish body composition, percentages of DM and CP (and to some extent also ash) increased, but EE% decreased by elevating the betaine level. Increasing stocking rate of fish was responsible for increased % of DM, leading to increases in CP and ash, but EE percentages of the whole fish body decreased. Elevating dietary betaine level led to increasing feed intake and feed cost, but increasing fish weight gain compensated this input items, so led to lower feeding costs for producing one-kilogram fish weight gain. This means that dietary inclusion of betaine improves piscicultue economy. From the foregoing results it could be concluded that the addition of 1.0% of betaine in the diets of Nile tilapia stocked at 2g fish/l is useful to enhance the fish growth and production economy.

Keywords: Nile tilapia – Betaine – Stocking density – Performance.