NOTICE OF PUBLICATION

AQUACULTURE & FISHERIES INNOVATION LAB

RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Effects of Lysine and Methionine Supplementation and Cost Effectiveness in Production of Nile Tilapia Diets (*Oreochromis Niloticus*) in Western Kenya

Author(s): Elizabeth Obado[1], Josiah Ani[1], Phillip O. Raburu[1], Julius O. Manyala[1], Charles Ngugi[2], Kevin Fitzsimmons[3] & Hillary Egna[4]

1. University of Eldoret, Kenya, P. O. Box 1125, Eldoret, Kenya
2. Mwea AquaFish Farm P.O. Box 101040-00101 Nairobi, Kenya
3. University of Arizona, 1140 E, South Campus Drive, Forbes 306, Tucson, AZ 85719 USA
4. College of Agricultural Sciences, Oregon State University, Corvallis, Oregon 97331 USA

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Abstract: The proximate composition of local feed ingredient is limited by unbalanced dietary amino acid contents, thereby increasing de-amination and ammonia levels in water. This study formulated experimental diets and balanced the Essential Amino Acids (EAA) to enhance the feed nutritive value for culture of *Oreochromis niloticus* . Four diets comprising methionine+lysine and lysine supplemented at 5.1 g kg^{-1} , 2.7 g kg^{-1} to non-EEAs supplemented and commercial diets at the University of Eldoret Fish Farm were tested. Growth performance was conducted in hapas suspended in earthen pond 150 m^2 in a randomized design for 105 days. There were significant variations in temperature (24 to 26° C), Dissolved oxygen (4.8 to 6.2 mg L^{-1}) and pH (7.2-7.6) but within optimal range for tilapia. The diets provided about 17.17 MJ kg^{-1} with 22.9% digestible Crude Protein and 8.03% ash content. Lysine supplemented Diet 2 induced highest mean final weight of 156.05±1.74 g, 2.4 Specific Growth Rate, 1.42 Feed Conversion Ratio and 2.68 Protein Efficiency Ratio. A high profit index (2.286±0.07) at low incidence cost (0.437±0.05) was

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observed in Diet 2.The study reports reduced production cost by supplementing plant proteins with limiting amino acids hence increasing nutritive value of aquafeeds.

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