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

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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 m² 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
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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