

PP-03

Effect of Different Protein Level Feed on Growth Performance and Flesh Quality of Nile tilapia

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The study was conducted to evaluate how different protein levels affect the growth performance and flesh quality of Nile tilapia (*Oreochromis niloticus*). Objectives of the study include: 1) identification of effects of different protein levels, 2) growth and yield evaluation, 3) gross margin comparison, and 4) assessment and comparison of flesh quality. The experiment was conducted from March to July 2023 in cemented tank of Hatchery complex, Fisheries Program in 12 hapas with 10 fishes in each @5 fish/m² totaling 120 fishes (average body weight: 40-60g) stocked. The experiment followed a completely randomized design with four treatments: T₁ (23% CP, control), T₂ (25% CP), T₃ (28% CP), and T₄ (30% CP) and three replications. Fish were fed twice daily with diets at the rate of 2% of body weight over 90 days. The data was analyzed using SPSS (Version 20.0) and means difference was carried out by Duncan's Multiple Range Test (DMRT $p < 0.05$).

Results indicated that fish fed with 30% CP feed had the highest mean final weight (112±4.8 g), but no significant differences were observed among treatments. Feed conversion ratio (FCR) was obtained significantly lowest ($p < 0.05$) in T₄ (2.2±0.1) compared to T₁ (2.7±0.0), but it was non-significant with T₂ (2.5±0.1) and T₃ (2.5±0.1). Survival rate was 100% in all treatments. Viscerosomatic index (VSI) showed no significant differences, while Hepatosomatic index (HSI) was higher in T₁ and lower in T₃. Fish fillet yield was significantly highest in T₄ (28.5±5.5%) and lowest in T₁ (24.3±5.2%). Water quality parameters were within acceptable ranges. T₁ showed higher gross margin and B:C ratio. Flesh analysis revealed highest moisture in T₁ (79.4±0.7%), highest crude protein in T₄ (81.1±0.9%) and higher ash content in T₂ (5.6±0.5%) but crude fat was similar in all treatments. Variation on pH and Water holding capacity (WHC) of fish flesh was observed with increasing storage time.



Overall, fish fed 30% CP was found better in terms of fish growth and flesh quality but a wider range of dietary protein levels should be designed at a broader scale to identify the optimal growth and flesh quality of Nile tilapia.

Table: Flesh quality during 14th day of storage

| Treatment | pH | | | Water holding capacity (%) | | |
|----------------|------------------|---------------------|----------------------|----------------------------|-------------------------|--------------------------|
| | 0 day | 3 rd day | 14 th day | 0 day (%) | 3 rd day (%) | 14 th day (%) |
| T ₁ | 6.8 ^b | 6.6 ^a | 6.7 ^a | 68.8±7.1 ^a | 66.3±5.8 ^a | 61.1±3.8 ^a |
| T ₂ | 6.7 ^a | 6.6 ^a | 6.7 ^a | 75.1±3.5 ^b | 71.2±2.8 ^b | 68.4±5.1 ^b |
| T ₃ | 6.8 ^b | 6.5 ^a | 6.7 ^a | 76.7±2.5 ^{bc} | 72.3±3.0 ^b | 70.7±4.5 ^b |
| T ₄ | 6.8 ^b | 6.6 ^a | 6.8 ^b | 78.5±9.3 ^c | 73.0±2.9 ^b | 71.3±5.6 ^b |