

**ORL-F&HN-04****Replacement of Shrimp Meal with Fish Meal in Diet of Rainbow Trout *Oncorhynchus mykiss***

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The present experiment was carried out at Rainbow Trout Fishery Research Station, Dhunche, Rasuwa from 14<sup>th</sup> May to 6<sup>th</sup> August 2024 for 85 days. The experiment was aimed to assess the growth and yield of Rainbow trout (*Oncorhynchus mykiss*) by replacing the shrimp meal with fish meal. The experiment was conducted in a completely randomized design with four treatments and three replications. The treatments include: T1- Shrimp meal, T2- 25% Fish meal, T3- 50% Fish meal and T4- 75% Fish meal. Fingerlings of Rainbow trout were stocked at the rate of 90 fish/m<sup>2</sup> in 1.4 m<sup>2</sup> raceways. Average stocking weight of fingerling was 24.9±0.3 g/fish in T1, 24.8±0.1 g/fish in T2, 23.6±0.3 g/fish in T3 and 23.9±0.2 g/fish in T4. Pellet feed was prepared by using different ingredients such as shrimp meal, fish meal, soybean, wheat flour, rice bran, vitamins and minerals premix. Fish were fed twice a day at the rate of 2% of body weight. Water quality parameters such as temperature, DO and pH were recorded twice a day at three days interval.

During the study period, all the water quality parameters were within the optimum range. Results indicated that the replacement of shrimp meal by fish meal had a significant effect ( $p < 0.05$ ) in average final weight of fish where the final weight was significantly higher ( $p < 0.05$ ) in T3 (76.2±0.5 g/fish) compared with other treatments. Similarly, SGR, DWG, Survival rate, EGFY and ENFY were significantly higher ( $p < 0.05$ ) in T3 than in other treatments. The FCR was significantly lower in T3 (1.73±0.03) compared to T4 (2.33±0.05). The gross margin was significantly lower in T4 (1659±88) with B:C ratio (1.28±0.01) while there was no significant difference ( $p > 0.05$ ) in gross margin in other treatments. Thus, the present study showed that inclusion of 50% fish meal in feed is a productive and profitable treatment for Rainbow trout.

Table: Growth and yield of Rainbow trout

Parameters	T1	T2	T3	T4
Stocking number (No.)	125	125	125	125
Initial weight (g/fish)	24.9±0.3	24.8±0.1	23.6±0.3	23.9±0.2
Final weight (g/fish)	74.2±0.5 <sup>b</sup>	70.8±0.3 <sup>c</sup>	76.2±0.5 <sup>a</sup>	70.4±0.3 <sup>c</sup>
Harvested number (No.)	104±3 <sup>ab</sup>	102±1 <sup>b</sup>	110±2 <sup>a</sup>	100±1 <sup>b</sup>
Specific growth rate (SGR, %/0.day)	1.28±0.01 <sup>b</sup>	1.23±0.01 <sup>c</sup>	1.37±0.02 <sup>a</sup>	1.27±0.01 <sup>bc</sup>
Daily weight gain (DWG, g/fish/day)	0.58±0.01 <sup>b</sup>	0.54±0.01 <sup>c</sup>	0.61±0.01 <sup>a</sup>	0.54±0.01 <sup>c</sup>
Survival rate (%)	83±2.3 <sup>ab</sup>	82±1.2 <sup>b</sup>	88±1.9 <sup>a</sup>	80±1.6 <sup>b</sup>
Feed conversion ratio (FCR)	1.95±0.08 <sup>b</sup>	2.04±0.02 <sup>b</sup>	1.73±0.03 <sup>c</sup>	2.33±0.05 <sup>a</sup>
Gross fish yield (GFY, kg/m <sup>2</sup> /year)	23.7±1.0 <sup>b</sup>	22.2±0.3 <sup>bc</sup>	25.8±0.5 <sup>a</sup>	21.7±0.3 <sup>c</sup>
Net fish yield (NFY, kg/m <sup>2</sup> /year)	14.2±0.9 <sup>b</sup>	12.7±0.3 <sup>b</sup>	16.7±0.5 <sup>a</sup>	12.6±0.4 <sup>b</sup>
Production Economics				
Total cost (NRs./m <sup>2</sup> /year)	16865±81 <sup>d</sup>	16295±22 <sup>c</sup>	17276±30 <sup>b</sup>	17941±13 <sup>a</sup>
Total income (NRs/m <sup>2</sup> /year)	23831±664 <sup>ab</sup>	23374±332 <sup>b</sup>	25201±549 <sup>a</sup>	22993±274 <sup>b</sup>
Gross margin (NR./m <sup>2</sup> /year)	6966±585 <sup>a</sup>	7078±311 <sup>a</sup>	7925±521 <sup>a</sup>	5052±267 <sup>ab</sup>