RESPONSE OF UREA ON THE GROWTH PERFORMANCE OF MAJOR CARPS VIZ., *Labeo rohita, Catla catla* and *Cirrhinus mrigala*

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ABSTRACT

The project was carried out to study the effect of inorganic fertilizer (Urea) on the growth performance of major carps. Fertilization of treated pond was done by urea at the rate of 0.20 g N/100 gm of fish body weight. In the control pond the average weight gain of 179.5, 174.5 and 201.4 g were recorded *Labeo rohita, Catla catla* and *Cirrhinus mrigala* respectively. In treated pond the average weight gain of 277.3, 211.6 and 322.1 g for *Labeo rohita, Catla catla* and *Cirrhinus mrigala* respectively. Net fish yield (all three species together) in control and treated ponds were 18.455 and 27.103 Kg/pond/year respectively. Treated pond showed 1.46 times greater net fish production as compared to that of control pond.

Key words: *Labeo rohita, Catla catla, Cirrhinus mrigala*, and Growth performance.

INTRODUCITON

Among various problems emerging out as result of rapid population explosion of the world, the major one is the good quality of proteineous diet, being faced by the people of developing countries like Pakistan. A large number of people in Pakistan is malnourished because of insufficient supplies and high price of food items. The deficiency of protein can be met only by utilizing all available natural resources. The average annual fish consumption in Pakistan was 10 Kg/annum/capita in early nineties which decreased to 2-3 Kg/capita/annum. So there is an urgent need to increase fish supply. Fish culture system requires a relative less amount of energy for protein production than that of another farming system (Werner, 1991). The objectives of adding fertilizers in fish ponds is to maintain production of natural fish food during entire culture period. Qin *et al.* (1995) found that organic fertilizer alone failed to provide adequate nutrients for algae and sufficient oxygen for fish because of low Sodium (Na) and Phosphorus (P) contents and high oxygen consumption. So to stimulate growth of food organisms for fish in aquaculture pond, a combined use of inorganic and organic fertilizers should be recommended but amount of organic fertilizer should be determined which can avoid water quality deterioration. Use of phosphorus fertilizers in combination with nitrogen result in better fish production due to increased phosphorus and urea content (Sarkar, 1991).

In view of the importance of inorganic fertilizers, the present study reports the effect of inorganic fertilizer (Urea) on the growth performance of major carps (*Labeo rohita, Catla catla* and *Cirrhinus mrigala*).

MATERIALS AND METHODS

The experiment was conducted by using two earthen ponds measuring 25 X 8 X 1.5 m located at Fisheries Research Farms, University of Agriculture, Faisalabad. After one week of taking these steps all ponds were watered upto 1 m- Each pond was stocked with 20 *Labeo rohita*, 15 *Catla catla* and 15 *Cirrhinus mrigala*. In this experiment one pond was served as control and other as treated. After stocking, the treated pond was fertilized daily with inorganic fertilizer (Urea) at the rate of 0.20 g N/100g of fish body weight.

At the time of stocking the body weight of fishes were recorded at 15 days interval and a sample of five fish specimen of each species was captured randomly from each pond by using drag net. After recording data fish were released back into respective ponds. The comparison of mean values of various parameters were computed by using analysis of variance and Duncan Multiple Range Test with repeated sampling.

RESULTS AND DISCUSSION

In controlled pond *Labeo rohita* gained maximum body weight 25.8-g. *Catla catla* gained the maximum weight 23.9 g and *Cirrhinus mrigala* gained the maximum weight 23.3 g in 12th fortnight. However in treated pond *Labeo rohita, Catla catla* and *Cirrhinus mrigala* gained maximum body weight 42.4, 41.5 and 47.2 g in 10th fortnight respectively (Table 1). Analysis of variance shows that there was highly significant difference among the weight gained in fishes under control and treated ponds. The difference in average

body weight of three fish species were statistically highly significant. The interaction between (T X S) was highly significant which show that there was a great difference between control and treated ponds. (Table 2).

In the present project, the maximum growth of major carps (*Labeo rohita*, *Catla catla* and *Cirrhinus mrigala*) was observed in treated pond, which were fertilized with Urea. The results are in accordance with the results of Afzal (1984). She correlated the growth of fish with the increase amount of natural food as a result of addition of N:P:K in the ratio of 20:20:5. These results are also in line with results obtained by many workers (Abdalla, 1997; Mateen *et al.* 2001). Abdalla (1997) stated that for improving the hygeinic conditions and primary production, nitrogen and phosphorus fertilizers are widely used in fish ponds. Tarar (1997) obtained 3515 Kg/ha/year net fish production from a pond treated with urea as source of nitrogen which had a better nitrogen incorporation efficiency.

The present results are due to supplementation of the treated ponds with inorganic fertilizer (Urea) which caused a marked increased in fish production. Net fish yield in control and treated ponds were 18.455 and 27.103 Kg/pond/year, respectively. Net fish production were computed to be 922.75 and 1355.5 kg/pond/year in control and treated ponds, respectively. Treated ponds show 1.46 times greater net fish production as compared to that of control pond. The same results were obtained by Mahboob and Sheri (1997) who studied the growth performance of different fish species under the influence of artificial feed, plus. N:P:K (25:25:0).

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Table 1: Fortnightly increase in body weight (g) of major carps in control and treated pond

Date	CONTROL POND						TREATED POND					
	Labeo rohita		*Catla catla*		*Cirrhinus mirrigala*		*Labeo rohita*		*Catla catla*		*Cirrhinus mirrigala*	
	T.W.	I.W.	T.W.	I.W.	T.W.	I.W.	T.W.	I.W.	T.W.	I.W.	T.W.	I.W.
01.05.99	41.0	.....	24.0	.....	74.4	.....	43.2	.....	23.4	.....	73.8	.....
16.05.99	47.3	6.3	30.7	6.7	80.3	5.9	43.2	7.6	28.6	5.2	79.7	5.9
01.06.99	55.5	8.2	38.6	7.9	90.6	10.3	50.8	11.8	34.7	6.1	93.1	13.4
16.06.99	65.6	10.1	47.6	9.0	101.6	11.0	62.2	14.7	43.2	9.5	110.9	17.8
01.07.99	76.9	11.3	58.9	11.3	116.8	15.2	77.3	20.9	46.8	12.2	132.0	21.1
16.07.99	90.4	13.5	72.4	13.5	133.9	17.1	98.2	21.8	62.5	15.7	157.3	25.3
01.08.99	109.3	18.4	89.4	17.0	153.2	19.3	120.0	25.2	83.3	20.8	187.5	30.2
16.08.99	130.1	20.8	109.3	19.9	174.1	20.9	145.2	30.9	105.0	21.7	223.2	35.7
01.09.99	151.1	21.0	129.7	20.4	197.7	23.6	175.1	33.2	130.2	25.2	263.3	40.1
16.09.99	172.1	21.0	150.7	21.0	227.5	29.8	208.3	42.4	171.7	41.5	310.5	47.2
01.10.99	194.7	22.6	174.6	23.9	252.5	25.0	250.7	36.7	204.6	32.9	353.7	43.2
16.10.99	220.5	25.8	198.5	23.9	275.8	23.3	287.4	34.1	235.0	30.4	395.9	32.3

T.W. = Total weight
I.W. = Initial weight

Table 2: Analysis of variance of body weight of major carps in control and treated ponds

S.O.V.	DF	SS	MSS	F.VALUE
Treatment	1	8225.367	8225.367	83.6288**
Species	2	70877.827	35438.913	24.7948**
Treatment X Species	2	5220.415	2610.208	106.8283**
Fortnight	10	2777427.605	27742.760	7.8683*
Error	50	16586.849	331.737	
Total	65	378338.063		

** = Highly significant

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