

# Effect of Different Levels of Cow Dung on Growth Performance of Major Carps

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## ABSTRACT

The project was planned to study the effect of different levels of cow-dung on growth performance of major carps. One pond was kept as a control pond. While the treated ponds 1 and 2 were manured by cow dung at the rate of 0.1g and 0.15g N/100g of wet fish body weight daily, respectively. The experiment was conducted for a period of five months. In control pond, the average weights gain of 98.8, 82.9 and 101.6 g were recorded for the *Labeo rohita*, *Catla catla* and *Cirrhinus mrigala*, respectively. In treated pond 1, weight gain were recorded as 218.3, 218.8 and 224.9 g and in treated pond 2 these values were 199.2, 211 and 302.4 g for *L. rohita*, *C. catla* and *C. mrigala*, respectively. The fish production/ha/ year were computed to 1338.16, 2238.80 and 2265.21 kg in control, treated pond 1 and 2, respectively. Treated pond 1 and 2 showed 2.38 and 2.46 times higher fish production as compared to that of control pond, respectively while treated pond 2, showed 1.03 times higher fish production than treated pond 1.

**Key Words:** Cow dung; Fish; Major carps

## INTRODUCTION

Fish is one of the best and abundantly found aquatic animal that can provide good quality protein for human needs. Fish is considered as a principle source of animal protein for half of the global population. The manuring of fish pond is considered an important scientific discipline for increasing fish production (Doria & Leonhardt, 1993). Cow manure can be used as a complete fertilizer in fish ponds. Organic matter in cow manure accelerates the development of large bacterial population as a result of decomposition (Buschiel, 1983). Cow manure treatment in major carps nursery ponds yield 50-60 percent more fish than untreated ponds (Saha *et al.*, 1980). Cow manure adds to fish pond at the daily rate of 3-4% of fish yielded fish 20-30 kg/ha/day (Pullin & Schedadeh, 1980). In view of the great importance of manure, this study was carried out to determine the effect of different levels of organic manure on the growth performance of major carps i.e., *Labeo rohita*, *Catla catla* and *Cirrhinus mrigala*.

## MATERIALS AND METHODS

The experiment was conducted in three earthen ponds each measuring 25x8x1.5 m located at Fisheries Research Farms, University of Agriculture, Faisalabad. Each pond was stocked at the rate of 20 *L. rohita*, 15 *C. catla* and 15 *C. mrigala*. One pond was kept as control, while remaining two ponds 1 and 2 were manured with cowdung at the rate of 0.1 g N/100 and 0.15 g N/100g of wet fish body weight daily. The experiment was conducted for a period of five months.

At the time of stocking, their body weight was measured and recorded. Netting was done at fortnightly

intervals and a sample of fish of each species was captured randomly from each pond by using drag net. After obtaining data fish was released back into their respective ponds.

## RESULTS AND DISCUSSION

The initial and final average weight of *L. rohita* in control pond was 125.4 and 224.4 g, in treated pond 1 was 168.6 and 386.9 g and in treated pond 2 was 159.4 and 358.6 g, respectively. The initial and final average weight of *C. catla* were 137.4 and 220.3 g in control pond, 138.8 and 357.6 g in treated pond 1 and 136.6 and 347.6 g in treated pond 2, respectively. Similarly *C. mrigala* had initial and final average weight of 122.7, 224.3 g in control pond, 125.6, 370.5 g in pond 1 and 130.5, 432.9 g in pond 2 respectively (Table I, II and III).

Analysis of variance shows that there was highly significance difference among the weight gained in fishes under control and treated ponds. The difference in average body weight of three fish species were highly significant which shows that there was a great difference in weight gain between control and treated ponds (Table IV).

The two treated ponds shows higher growth than control pond. While the treated pond 2 shows the higher growth than treated pond 1. The results of this experiment are related with the results obtained by Javed *et al.* (1990) who found that manure increases the weight, fork length and total length of *L. rohita*, *C. catla* and *C. mrigala*. The fertilization of pond with cow-dung stimulated the growth of phytoplankten. The same results were obtained by Garg and Bhatnagar (1999). They studied the effect of five different doses (5000, 10,000, 15,000, 20,000, and 24,000 kg/ha/year) of organic fertilizer (cow-dung) on pond productivity in term of plankton production for a period of

**Table I. Fortnightly increase in body weight of *Labeo rohita* in control and treated ponds**

Date	Control		T <sub>1</sub>		T <sub>2</sub>	
	Average wt.(g)	↑ in weight	Average wt.(g)	↑ in weight	Average wt.(g)	↑ in weight
01-4-2001	125.4	-	168.6	-	159.4	-
16-4-2001	131.4	6.0	179.7	11.1	166.8	7.4
01-5-2001	139.0	7.6	195.1	15.4	177.3	10.5
16-5-2001	146.0	7.0	220.7	25.6	191.9	14.6
01-6-2001	154.9	8.9	244.4	23.7	207.1	15.2
16-6-2001	164.6	9.7	272.2	27.8	225.3	18.2
01-7-2001	176.0	11.4	290.5	18.3	244.0	18.7
16-7-2001	184.9	8.9	302.2	11.7	263.4	19.4
01-8-2001	196.0	11.1	323.7	21.5	288.7	25.3
16-8-2001	211.1	15.1	358.4	34.7	325.1	36.4
01-9-2001	224.2	13.6	386.9	28.5	358.6	33.5

**Table II. Fortnightly increase in body weight of *Catla catla* in control and treated ponds**

Date	Control		T <sub>1</sub>		T <sub>2</sub>	
	Average wt.(g)	↑ in weight	Average wt.(g)	Date	Average wt.(g)	↑ in weight
01-4-2001	137.4	-	138.8	-	136.6	-
16-4-2001	144.3	6.9	148.5	9.7	144.7	8.1
01-5-2001	153.1	8.8	159.9	11.4	156.8	12.1
16-5-2001	161.7	8.6	172.4	12.5	172.4	15.1
01-6-2001	167.4	5.7	188.3	15.9	194.1	21.7
16-6-2001	173.5	6.1	202.8	14.5	213.6	19.5
01-7-2001	179.9	6.4	223.3	20.5	232.2	18.6
16-7-2001	188.4	8.5	249.7	26.4	253.6	21.4
01-8-2001	198.6	9.8	282.0	32.3	282.2	28.6
16-8-2001	210.1	11.5	321.4	39.4	317.1	34.9
01-9-2001	220.3	10.2	357.6	36.2	347.6	30.5

**Table III. Fortnightly increase in body weight of *Cirrhinus mrigala* in control and treated ponds**

Date	Control		T <sub>1</sub>		T <sub>2</sub>	
	Average wt.(g)	↑ in weight	Average wt.(g)	Date	Average wt.(g)	↑ in weight
01-4-2001	122.7	-	125.6	-	130.5	-
16-4-2001	127.8	5.10	133.4	7.8	145.3	14.8
01-5-2001	136.3	8.5	144.9	11.5	164.2	18.9
16-5-2001	144.9	8.6	166.3	21.4	189.0	24.8
01-6-2001	155.4	10.5	194.8	28.5	218.9	29.9
16-6-2001	165.0	9.6	219.9	25.1	245.5	26.6
01-7-2001	173.6	8.6	244.6	24.7	275.1	29.6
16-7-2001	185.0	11.4	267.4	22.8	311.5	36.4
01-8-2001	198.0	13.0	297.4	30.0	350.0	38.5
16-8-2001	213.5	15.5	336.0	38.6	393.5	43.5
01-9-2001	224.3	10.8	370.5	34.5	432.9	39.4

60 days. Highest plankton population, Zooplankton, fish biomass and specific growth rate (2.36% body weight/d) were observed in ponds which were treated with 15000 kg/ha/year.

Supplementation of treated pond with organic manure cow-dung caused a marked increase in fish production. Gross fish yield of the control and two treated ponds were 26.76, 44.77 and 45.304 kg/pond/year, respectively. The fish production was computed to be 1338.16, 2238.80 and 2265.21 kg/ha/year, respectively. Treated pond 1 and 2 showed 2.38 and 2.46 times greater net fish production as compared to that of control pond, respectively. The same results were obtained by Mahboob and Sheri (1997) who

**Table II. Analysis of variance of body weight (g) of major carps in control and treated pond**

Sov	Df	SS	MS	F. value
T	2	3817.46	1908.73	96.95 **
S	2	403.02	201.51	10.24 **
SXT	4	305.81	76.45	3.88 **
F	9	3376.29	375.14	19.06 **
Error	72	1417.47	19.68	
Total	89	9320.05	2581.52	

\*\* = Highly significant; NS= Non-significant; T = Treatment; F = Fortnights; S = Species; E = Error

studied the growth performance of six fish species under the influence of artificial feed, broiler manure, buffalo manure, N:P:K (25:25:0) and a control pond was studied for period of one year. Broiler manure and N:P:K (25:25:0) fertilization remained the best treatment for maximum fish production of 9400 and 7300 kg/pond/year and the same results were also described by Costa and Keembiathetty (1993).

The results of present experiment revealed that maximum weight gain in *L. rohita*, *C. catla* and *C. mrigala* in controls and treated ponds were observed during August due to higher water temperature. Similar results were also recorded by Ivanova and Svirskaya (1991) who kept the Juvenile pike in aquaria with natural photo periods. The weight gain and feed intake data indicated that fish at higher water temperature has best growth and lowest mortality.

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