

# Peculiarities of the Use of Local Microorganisms in the Feeding of Carp (*Cyprinus Carpio*)

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**Abstract** As a result of the large-scale climatic work carried out in Uzbekistan in the middle of the XX century, the number of fish species in our water bodies increased significantly. During these periods, a number of fish species were brought from Russia, the USA, China and other countries and climate. In this article, the positive effect of adding "BACTOVIT UZ" bio-preparation to carp food in closed circulation water supply devices of "Technologies in Aquaculture of the Fisheries Research Institute" of the Research Institute of Fisheries is reflected in the experiments. Depending on the growth of the fish, a daily ration is developed.

**Keywords** "BACTOVIT UZ", Bio-preparation, Mixed feed, Hydrobionts, Microorganism, Probiotic, Fish

## 1. Introduction

In Uzbekistan, the cultivation of Fish and obtaining quality products from fish depends mainly on the diet. It is natural that the growing cost of food will come out of economic circulation. Therefore, there is a need for the production of technologies of intensive feed production, which will make a significant contribution to the economy of the Republic. The use of natural nutrients for fish: zooplankton, phytoplankton, benthos and macro-phytes in addition to feed is used in world practice. The climate of our country is very favorable for the cultivation of all types of agricultural products. In recent years, Technologies for intensive use of water bodies have been developed. The development and implementation of technologies for the use of all components in water bodies for fish is of paramount importance. Therefore, savings in natural feed are expected to increase by 20-30% and fish viability by 50%. Provision of artificial cultivation of natural nutrients can be carried out on feminine farms, greenhouses, stagnant water basins. Therefore, it is necessary to form a single base on the current Republic. These organisms are considered to be low-cost, as well as rich in biologically active substances in comparison with feed and other nutrients.

## 2. The Main Findings and Results

The main scientific works of many scientists in Uzbekistan on the natural nutrition of fish, including: Doctor of Biological Sciences, Professor I.M. Mirabdullaev, Doctor of Biological Sciences, Professor A.R. Kuzmetov, Doctor of Philosophy in Biological Sciences H.H. Abdinazarov and others dedicated to benthos and macrophytes. This issue is also on the agenda abroad.

The productivity of fish raised in fishery basins is directly related to all living components in the basin. All aquatic aquatic organisms play an important role as fish feed.

Fish differ in nutrition from other vertebrates. Almost all of the fish grown in Uzbekistan are fed by zooplankton organisms during the creeping period. From herbivorous fish, white Hawthorn passes when feeding with phytoplankton reaches a length of 1,5 cm. To some extent zooplankton organisms also want it during this period. White Amur fish 3-4 cm and at the age of one year go to the feeding with water plants. White Amur is fed only by high plants that grow in water and young plants that grow on earth.

The application of the bio-preparate "BACTOVIT UZ", presented by the Institute of Microbiology, in experiments on the addition of nutrients to fish is determined. Bio-preparate "BACTOVIT UZ" has the property of improving the digestion of mainly poultry and fish, preventing and treating various intestinal diseases. It is a drug created on the basis of local microorganisms, is a probiotic, fermented and protein-rich feed additive. It also serves to increase the energy value, efficiency, productivity of nitrogen.

### 3. Research Materials and Methods

The research was conducted for 45 days in the closed circulating water supply facilities of the “Laboratory of New Technologies in Aquaculture” of the Fisheries Research Institute. In the experiment, local carp (*Cyprinus carpio*) fish were used. The fish were raised in pools with a volume of 2m<sup>3</sup>.

Each pool was filled with 150 fish fry with an average weight of 35-40 g. Experiments: Controlled fish in pool A, dry matter of “BACTOVIT UZ” bio-preparate in pool V (5% of 1 kg of mixed feed), suspension of “BACTOVIT UZ” bio-preparate in S-pool (5% of 1 kg of mixed feed) experiments were performed without. The composition of the mixed feed in the experiment was prepared according to Table 1.

Table 1

Ingredient name	% In 1 kg feed
Fish flour	19
Meat and bone flour	1
Soybean meal	20
Sunflower seeds	10
Wheat groats	19
Corn	10
Bran	15
Feed yeast	3
Premix	3
Total	100
Grain structure	
Crude protein, %	32,3
Energy, kcal / kg	3884
MDj / kg	16,3

All the ingredients in the table were prepared with the purchase from the local market. Omelet grain was removed from the special apparatus and brought to the granule state after adding the necessary amount of ingredients and thoroughly mixing. The size of the granular-shaped grain was 2,5 mm. The feed was dried for 2 days and given to the fish in the experiment in an amount of 4% compared to its total biomass.

### 4. Obtained Results

Nutrition was given in 900, 1200, 1600, as well as in 2000, when the daily ration was divided into 4 parts. Developed a daily ration depending on the growth of the fish, conducted control hunting in every 15 days.

Experimental fish were brought from the soil pools of the Institute. In order for the difference in water temperature to not be sharp and prevent fish disease, the water temperature rose gradually for 5 days and the fish were adapted to the swimming pools. No fish were killed in any of the pools during the experiment. The water temperature averaged 21.0±0.5 during the experiment, and the hydro-chemical parameters of the water are as follows (Table 2).

When feeding fish of all groups with the addition of “BACTOVIT UZ” during the experiment, there was no negative effect on the quality of water. As a comment to this is that the performance print of the closed circulation water supply device is properly organized. The growth of Fish and feed quality were assessed by the following indicators.

Body weight gain  $Dw = w_2 - w_1$ , where  $w_1$  (g) is the average starting weight of the body,  $w_2$  (g) is the average final weight of the body;

Daily average body weight gain (g/Day) = body weight gain/t, here – the duration of the experiment is per day;

Table 2

The normative value according to technological requirements, mg / l		8 <sup>45</sup> (before feeding)			9 <sup>30</sup> (30 minutes after feeding)			10 <sup>00</sup> (60 minutes after feeding)		
		A	B	C	A	B	C	A	B	C
Water temperature t °C		21°C ±0,5	21°C ±0,5	21°C ±0,5	21°C ±0,5	21°C ±0,5	21°C ±0,5	21°C ±0,5	21°C ±0,5	21°C ±0,5
pH	7-8	7.21	7.23	7.18	7.08	7.10	7.13	7.08	7.84	8.06
Oxygen	5.0	4.8	4.8	4.7	4.9	4.8	4.9	4.8	4.9	4.9
Nitrite NO <sub>2</sub>	0.2	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Nitrogen NH <sub>4</sub>	1.0	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.4
Ammonia NH <sub>3</sub>	0.01-0.07	0.02	0.04	0.02	0.02	0.04	0.02	0.07	0.04	0.04

Specific growth rate (SGR) (% per day) =  $\{(\ln W_2 - \ln W_1) / t\} \cdot 100$ , where  $\ln$  is the natural logarithm;

Feed Unit (FCR) = Basin Mixed Feed (g) / Weight Gain (g)  
The analysis of the growth rates of the experimental fish is given in Table 3. (Table 3)

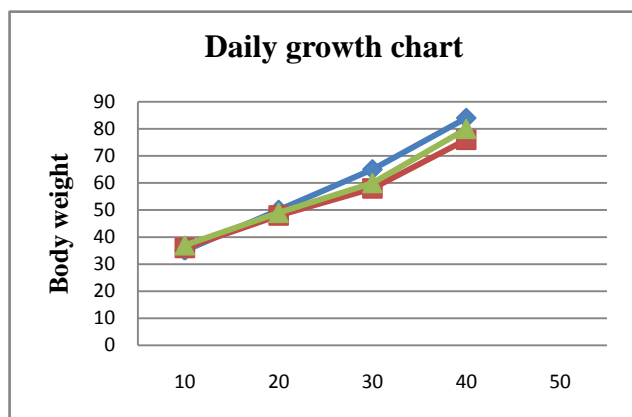
According to the analysis of the results of the study, fish in Group V were determined to have the highest growth rate.

The fish in this group gained a lot of weight in comparison with the A and C basins 9,1 and 7,1 gram. The average daily weight gain was 1,27 and 1,34 in g/Day A and S groups, the difference between which was almost not felt. The highest nutritional coefficient was observed in fish in the a swimming pool, this indicator was 2,4. It is known that in intensive aquaculture, the less the nutrients spent on growing

fish with a living weight of 1 kg, the better. In this experiment, this indicator was achieved in Group V fish. The calculation of the addition of dry matter of “BACTOVIT UZ” bio-preparate, which is a protein-rich and fermented feed additive created on the basis of local microorganisms, which improve the digestion, efficiency and productivity of fish in this group V, has been achieved. Fish in this group differed favorably in growth indicators compared to fish in control (diagram-1). When the suspension of these bio-preparates was added to the fish in Group C, there was no significant difference in growth indicators compared to the controlled fish.

Table 3

Indicators	Experimental pools		
	A	B	C
Initial body weight, g	37,2±0,11	35,3±0,11	38,3±0,13
Final body weight, g	75,7±0,22	82,6±0,55	78,5±0,81
Increased body weight, g	38,2±0,11	47,3±0,44	40,2±0,67
Average daily weight gain, g / day	1,27	1,57	1,34
Specific growth rate (% / day) (SGR)	1,6	1,9	1,6
Nutritional Coefficient (FCR)	2,4	2,1	2,35



A-red; V-blue; S-green;

Diagram 1

## 5. Conclusions

In conclusion, the use of BACTOVIT UZ in the preparation of high-quality feed for fish has been shown in experiments to be effective, as well as to increase the efficiency of feed consumption.

At the same time, it is recommended to conduct a series of studies on the level and cost-effectiveness of adding this feed supplement to the mixed feed, depending on the age and type of fish.

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