

## Fish feeding technology

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**Abstract:** The article examines ways of reproduction of zooplankton and phytoplankton organisms, which are the main food of fish, are found in artificial fisheries reservoirs.

**Keywords:** phytoplankton, zooplankton, zoobenthos, protein, shiny carp, white and cypress "Do'ngpeshona", white "Amur"

### INTRODUCTION

Fishing feed may be both natural and artificial. Aquatic creatures such as phytoplankton, zooplankton, zoobenthos, and higher algae are examples of natural food. Ponds are treated with organic and artificial fertilizers to promote growth. An elaborate procedure is used in such ponds to produce fish on fully natural diet. Incomplete intense fish feeding occurs when extra nutrients other than fertilizers are added to the pond [1]. When fish are reared in this manner, productivity increases dramatically. Intensive fish farming is performed when the farmed fish are provided a full mixed meal and no natural feed or fertilizers are used. A mill on the farm for the manufacture of artificial feed is desirable.

There are 3 ways to grow fish in fisheries:

1. Extensive fish farming is carried out using natural feed and fertilization.
2. A completely free rapid method. In this method, mixed feed is given in addition to natural feed with fertilizer. When the natural feed is reduced, it is fed additionally.
3. Intensive fish feeding. Fish raised in this way are fed only with mixed feed. Natural feed pollutes the water and negatively affects fish productivity.

A balanced mixed feed is used to grow valuable fish (sea bream, trout, channel flounder, etc.) [2].

Relatively inexpensive, especially extensive technology-based carp (carp, white and cypress carp and carp) are the most suitable fish species for the conditions of Uzbekistan, and their feed is natural feed. Therefore, it is necessary to develop nutritious organisms and organize feeding of fish with them.

### MAIN PART

Even now, fish feeding with balanced mixed feed produced by the state is practiced. This method of raising fish is not the only one. There are 2 other ways to feed fish. This method is as follows:

1. 10-20 s/ha fish farming technology is based on natural feed. If the goal is to increase the productivity of fish, then additional food is given - mixed feed.

2. If fish is reared on a scientific basis, this task is carried out from an ecological and technological point of view [3-7].

Currently, 50-80 percent of the cost of fish production is spent on feeding it.

3. Since balanced feed is expensive, each farm can prepare the amount of feed it needs. For this, the breeder should know well the technology of fodder preparation.

The main requirements for food

When feeding fish, you should pay attention to the following factors:

1) the suitability of raw ash for fish in the preparation of feed (in the local market);

2) that the price is not too expensive;

3) feed value or feed coefficient, taste and high digestibility of feed.

What nutrients do fish need? Just as nutrients are needed for livestock or other animals, they are also needed for fish.

These are proteins, oils, carbohydrates, vitamins, and minerals. Fish kept in ponds have different reactions to food. The demand for food is also different for different fishers. For example, carp has a high demand for balanced feed in pond conditions, white «Amur» is demanding on microscopic algae (phytoplankton), cypress carp is demanding on rotifers, benthic crustaceans (zooplankton). The amount of nutrients in the above food objects is different [8].

Protein is the main part of all living matter.

It is the main part of the organic matter in the fish body. Protein serves as the main building material for the growth of fish tissues and organs. Protein is also a source of energy. Protein is essential for all stages [9-12] of the fish life cycle. When feeding small fish (1-3 g), feed with a protein content of 50 percent is used, when feeding fish weighing 35-50 g, a feed with a protein content of 37 percent is required for growing commercial fish (450-500 g). Therefore, the protein requirement of fish is much higher than that of other farm animals.

Oil is the main energy source of fish. It participates in all physiological processes in the fish body and ensures its normal passage. If there is a lack of oil in the feed consumed by fish, the fish will stop growing, death will increase, and physiological functions will be disturbed. Pathological changes occur in liver function. Especially, such disturbances occur in muscle and kidney activity.

Carbohydrates are mainly found in the form of starch, cellulose and cellulose. Carbohydrate is also a building block and energy source for fish life. It is mainly given to fish in the form of flour, bran, and mixed feed [13].

Vitamins are organic substances with different structures that act as biocatalysts for the normal passage of chemical reactions in fish cells and tissues. The protein biosynthesis in the fish body is not very high and is not enough for its life activity.

That's why all vitamins should be in the food.

Vitamins necessary for fish life cycle are: A, V, V, V3, V5, V6, V,2, S, E, N, K.

Mineral substances are extremely necessary for all physiological processes occurring in the body of fish. Fish get the minerals they need not only from food, but also from water. Mineral substances contained in water are taken through the mouth, through the mucous membrane and skin of the oral cavity. Elements necessary for fish are calcium, phosphorus, magnesium, potassium, sulphur, chlorine, iron, copper, iodine, manganese, zinc, etc [14-17].

Invertebrates and benthic plants in the water biocenosis are the food of fish, mainly fish fry.

The composition of the ichthyofauna of the water body and the certain level of life activity of fish are closely related to the quantity, composition and quality of food in the water body.

White «Amur» feeding on tall aquatic plants begins when the water temperature is 10-12 degrees. In order to feed the white «Do'ngpeshona», strains such as *Chlorella vulgaris* and *Scenedesmus acuminatus* are artificially propagated.

Freshly hatched fish that feed on the yolk sac may die quickly if not supplemented during the development phase [18]. It is advisable to sprinkle 5-10 tons of well-rotted manure per hectare of the pond for good growth of natural food organisms.

The feed given to the chicks in the pond is monitored daily. If the chicks are not full of the given feed, the amount of feed can be reduced, and if they are full, the amount of feed can be increased.

The fishing industry is one of the strategic areas of ensuring food security. Thanks to the measures taken in recent times, the share of fisheries in the structure of the country's economy is steadily increasing. At the same time, there are still many shortcomings and problems in the fishing industry, their effective solution is to increase business activity, attract investments, introduce advanced technologies for fish farming, increase export potential, create new jobs. allows. Creating conditions for the further development of the fishing industry, improving the system of personnel training and retraining, increasing the quality of scientific and innovative research and development, wide implementation of their results, further development of production [19-21], fishing of artificial water bodies and fisheries creation of

breeding fish stocks by acclimatization of new and tested species of fish to provide; establishment of a modern hatchery for raising breeding fish larvae, increasing the volume of fish fry production, modernization and renovation of existing fish fry breeding ponds; strengthening the feed base by creating modern facilities for the production of full-value and high-protein feeds for their own needs and fisheries, wide implementation of innovative and modern intensive technologies, including the cage (sadok) method, closed increase the volume of fishing due to the increase in the productivity of artificial water bodies and fish breeding in water circulation system devices; first of all, to meet the needs of the population, as well as to organize modern complexes for processing fish and production of fish products (canned food, caviar, fish meal, etc.) for export to neighbouring countries; laboratory analysis of the hydrochemical composition of water, protection of fish from diseases, has become one of the main sources of economic development.

Until now, fishermen in Uzbekistan have been growing fish belonging to the family of carp (Cyprinidae). This type of fish grows quickly, is a predator and occupies the initial chain links in ponds. It is bred as a mass fish species that is consumed by the population

Carp *Cyprinus carpio* Large, fast-growing fish. It can be grown as a monoculture, or together with white carp and white carp. The wild type of this species - carp - lives in the reservoirs of all the plains of Uzbekistan, and the cultivated type of carp - has been cultivated in fisheries since the 1960s.

It is a widespread, valuable, important fish. The entire basin of the Sirdarya, Amudarya, Zarafshan and Kashkadarya rivers is very common in water bodies. In many reservoirs of our republic, the period of sexual maturity of carp is 3-4 years. In our natural reservoirs, their spawning period lasts from April to mid-June. It mainly lays its eggs in parts. It mainly chooses places of water bodies covered with plants near the coast for laying eggs. Individual absolute productivity is on average around 30-450 thousand, depending on their weight and length [22-24].

The local form of carp cultivated in the fish farms of our republic is the offspring of Ukrainian and Hungarian carp. Relatively pure species of the species did not remain in the republic, and the species were mixed in the rest of the fish farms.

Carp ranks first among other pond fish due to its rapid maturation, growth, maturity, endurance, shyness and some other characteristics. This is especially valuable and useful in their care and cultivation. Thanks to the efforts of breeding these fish for many hundreds of years, people have created modern types of carp.

#### *Shiny carp*

Its distinctive feature is the very large size of its grains, which resemble a mirror. These coins are located in irregular rows on the back, flanks and abdomen of fish. Sometimes this fish is also called "scattered coin shiner" [25-27]. Its shape is

closely similar to the glittering one with large beads running along the middle of the side.

### *Naked carp*

Rare scales are located only on the top of the tail and around the wounds. The rest of the body is not covered with scales.

The local form of carp cultivated in the fish farms of our republic is the offspring of Ukrainian and Hungarian carp. Relatively pure species of the species did not remain in the republic, and the species were mixed [28-30] in the rest of the fish farms.

### *Resistance to external conditions*

The conditions of the ground basins are very favourable for carp. It also grows well in brackish ponds created in drainage channels. At the age of two or three, it reaches sexual maturity when its body length [31-33] is 30-35 cm (without tail) and its weight is 2 kg. 4-5 year old and older fishes are used in flocks of mother fish. Fish farms in Uzbekistan are propagated with the help of "natural spawning" and hormonal stimulation.

Plankton organisms are the main food of carp during larval and juvenile stages. The food of adults consists mainly of benthic organisms, and their additional food consists of algae, higher plants and detritus. Several breeds of carp (carp - an artificially obtained breed of carp), as well as white carp and white carp are bred in fish farms. There are finned, naked and mirror breeds of carp, and fish of this breed are kept in pond farms. In the biology of carp breeds, there is almost no difference with that of carp. These fish are heat-loving, and the optimal temperature for them is from +20°C to +28°C [34-39].

### CONCLUSION

All breeds of carp differ to some extent in their feeding and growth rate compared to carp. For example, 2-year-old carp grown in fisheries weigh 400-600 g. They prefer well-warmed shallow water bodies with soil rich in organic matter. The demand for oxygen is not very high.

During intensive feeding, the amount of oxygen in the water is 6-7 mg/l. Their oxygen requirement is 3 mg/l if they are not fed rapidly. The lowest limit is 0.7 mg/l.

Carp is a very productive fish. For example, middle-aged carp (6-8 years old) throw 700-800 thousand seeds. In our conditions, their females become sexually mature at three years of age, and males at two years of age, which means that males reach sexual maturity a year earlier than females. At this time, their length is 15-20 cm.

Summing up from the above, it can be said that the reproductive characteristics of fish include the following biological indicators:

- a) puberty;

b) laying seeds - nearest;

c) productivity levels;

s) size of caviar;

d) relationship between reproductive characteristics and fish growth. When talking about the characteristics of fish maturation, experts pay attention to the following: oogenesis, gonadogenesis, and the age and growth rate of fish during puberty. In this regard, there is sufficient information in the literature on these parameters of carp fish. The reproductive characteristics of female fish are mainly taken into account.

One of the key reproductive characteristics of fish is the weight of the eggs they have matured in their ovaries, readying them for release during this breeding season. This size determines the developmental characteristics of the gonads of fish and is generally accepted in ichthyological studies.

In ichthyological studies, among the reproductive indicators of fish, their productivity is the most important indicator. Productivity is one of the most important biological indicators of any species. There are several types of fertility in sexually mature fish. These are: absolute productivity, that is, the number of eggs laid by female fish in one breeding season; relative productivity - the number of spawns in relation to the body mass of fish; population productivity is the total number of eggs laid by female fish in the entire population in one breeding season.

White and cypress are the freshwater basins of large Asian rivers that flow into the Pacific Ocean, the home of white carp and white carp. For the purpose of fishing and to improve the reclamation of natural basins, they are widely acclimatized on different continents. These fish were brought to Uzbekistan in the 1960s.

All three types of fish have adapted to grow and develop in ground ponds in Uzbekistan, including fresh and brackish water. The reproduction biology of these fish is also close to each other.

In order to spawn, breeding fish move up the riverbed during high water levels in large rivers. In Uzbekistan, such conditions exist only in the middle reaches of the Amudarya and Sirdarya rivers. Spawning takes place there in May and early June when the water temperature reaches 18-20 degrees. Breeding in ponds is carried out only artificially with the help of hormonal stimulation.

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