

# Cultivation and application of natural nutrients in fishing farms

**Allamuratova Bibizada Kadirbay kizi**

Student of the Nukus branch of the Samarkand State Veterinary Medicine University of Animal Husbandry and Biotechnology

Animal husbandry (fishery) burning

**Kalimbetova Aynura Kósherbay kizi**

Student of the Nukus branch of the Samarkand State Veterinary Medicine University of Animal Husbandry and Biotechnology

Zooengineering (fishery)

**Annotation.** This article explores the importance of the cultivation and use of natural nutrients in fish farms. It studies the potential benefits of applying sustainable practices such as organic nutrient and nutrient management techniques to improve fish health and optimize aquaculture operations. In the methods section, various approaches to the introduction of natural nutrients are indicated, the results, discussions and conclusions sections analyze the advantages and provide recommendations for the future.

**Keywords:** fish farms, natural nutrients, aquaculture, Sustainable practice, organic nutrients, nutrient management.

Aquaculture, particularly fish farms, play an important role in meeting the ever-growing global demand for seafood. However, this intensification of fish farming has raised concerns about environmental sustainability and the use of artificial additives in fish feed. The cultivation and application of natural nutrients to solve these problems has emerged as a promising approach to increasing the overall health and productivity of fish while promoting environmentally friendly practices.

\* Organic feed formula: fish farms can adopt organic feed formulas made up of natural ingredients such as vegetable proteins, algae and insects. These alternatives can provide essential nutrients, including proteins, lipids, vitamins and minerals, to support the growth and development of fish.

• Integrated multi-trophic aquaculture (IMTA): IMTA involves the co-cultivation of several species to create natural symbiotic relationships. For example, fish and shellfish can be grown in combination with seaweed. Seaweed absorbs excess nutrients from fish waste, improves water quality, and provides additional food for fish.

\* Beneficial microorganisms: the introduction of beneficial microorganisms such as probiotics helps to digest nutrients, increase nutrient absorption and reduce the accumulation of harmful substances in fish farms.

In recent years, targeted programs have been adopted and implemented in the Republic aimed at increasing the volume of food production, including replenishing the domestic market with quality and affordable fish products, ensuring price stability to high-demand types of food. As a result, more than 3,000 fish farms were established nationwide. In order to systematically support the development of fishing farms, loans are allocated by commercial banks, and these loans are directed to the introduction of modern technologies for intensive fish production in reservoirs and artificial devices in natural basins[3].

The sustainable development of aquaculture must take into account and ensure the satisfaction of the needs of competitive users and the protection of the integrity of the environment. For this reason, sustainable management of aquaculture needs to allocate resources based on local conditions.

The growth, health and reproduction of Fish and other aquatic animals depends primarily on the adequate supply of nutrients in quantity and quality, regardless of the culture system in which they are grown. It is important to provide raw materials (feed, fertilizer, etc.) so that the nutrient and energy requirements of the species being grown are satisfied and the system achieves its production goals. Complete information on nutrient requirements is available only for a limited number of species. Although the need for protein and

lipids and the use of carbohydrates has been relatively well studied for several fish and shrimp species, data on micronutrient requirements such as amino acids, fatty acids and minerals are only available for the most cultivated types of meat and selected fish. Carbohydrates are the cheapest form of dietary energy and are often used to save protein in developed diets. Fish and shrimp differ in their ability to effectively digest carbohydrates. The use of food carbohydrates also varies depending on the complexity or chemical structure of the carbohydrate source used. In general, warm-water omnivorous or herbivorous fish species such as common carp, channel catfish, and snakefish have been found to be more tolerant of high dietary carbohydrate levels.

The fish feed used in the pond fishery is of 3 species. 1. Natural feed. Natural nutrient resources in the pond include: phytoplankton, zooplankton - microscopic algae, high aquatic plants, bottom and high crustaceans, bacteria, detritus, zoobentos, nektobentos, insects and other aquatic creatures. The amount of natural feed resources depends largely on the quality of the water. Breeding hydrobionts in water also enriches natural nutrient resources. Their feed coefficient is equal to 8 —10.

2. Additional feed. It is inserted into the pool by hand. This type of feed is available on the local market. Livestock waste, plant crops, and kitchen waste can also be included among additional nutrients. Such Feed has a coefficient of 5-6. The omixta feed currently prepared is of poor quality, it consists of bran or cellulose. Supplementary feed is considered to be an artificial omuxta feed, which is prepared in an industrial way. It is made in a special industrial way.

3. Balanced feed. This is also given to fish by hand by the fisherman. But the feed is incredibly full-fledged, prepared in special plants. The feed coefficient is 1.5-2.0, and the fish productivity is high, but extremely expensive. With such feed, mainly species of fish are fed, such as common larch, channel larch, honeyeater (forel) and carp. On a Republican scale, aquaculture or artificial pond fishing is organized in three directions.

These are: 1. Artificial pond fishing ponds prepared for mining on the ground. 2. On the territory of natural water bodies are fishing ponds (net ponds). 3. The pool pool is made up of fishing ponds (indoor and outdoor pool). Currently, there is a great deal of literature on fish feeding and fish feeding in the artificial pond pond area. But there are few necessary methodological manuals about feeding fish in natural bodies of water. In particular, there is no data on the demand for fish for food, the provision of feed in a specific feed environment, the rapid consumption of food organisms by fish, as well as the effective use of the feed object by the population of fish, obtaining additional fish products. Phytoplankton, zooplankton, microscopic algae. Microscopic algae are called free "floating" in water.

The cultivation and application of natural nutrients in fish farms, also known as aquaculture, is an important practice to support the growth and health of cultivated fish while encouraging sustainable and environmentally friendly operations. By using natural feed sources, fish growers can reduce confidence in artificial information and reduce its negative impact on surrounding ecosystems. Here are some basic aspects to consider:

\* Organic waste processing: fish waste and other organic waste can become valuable natural nutrients in fisheries. This can be achieved by introducing integrated systems such as aquaponics or using waste as fertilizer for growing plants. Plants, in turn, filter and absorb nutrients, helping to purify water that is returned to fish tanks.

- Algae and phytoplankton cultivation: algae and phytoplankton are excellent sources of natural nutrients for fish. They serve as a natural food source and contribute to improving water quality by consuming excess nutrients, including nitrogen and phosphorus. Farmers can provide a balanced diet and grow specific strains of algae and phytoplankton that are suitable for the types of fish being grown.

- Use of organic nutrients: farmers may include organic nutrients made from natural ingredients such as fish flour, soybeans and other plant sources, rather than relying solely on artificial or chemically produced fish nutrients. These nutrients can provide fish with essential nutrients and reduce the likelihood of environmental contamination.

\* Combining polyculture systems: polyculture involves the reproduction of several fish species or other aquatic organisms in the same environment. It mimics natural ecosystems and promotes nutrient cycling. For example, some species of fish may feed on different types of food, and their detritus may be used as feed for other species.

\* Composting • composting organic matter can be an effective way to create nutrient-rich compost that can be used as a natural fertilizer for aquatic plants or nearby agricultural crops. This process helps to process nutrients and reduce the environmental impact of the fish farm.

\* Imitation of natural ecosystems: it can be useful to design fish farms to mimic natural ecosystems. By incorporating features such as bog land or artificial swamps, it promotes the circulation of natural nutrients and creates habitats for beneficial organisms that support fish health.

• Water management and recirculation: the introduction of effective water management methods and circulating water systems helps to store and reuse nutrients in the farming environment. This reduces the need for excessive water changes and reduces the loss of valuable nutrients.

Through the cultivation and application of natural nutrients in fish farms, aquaculture operations are more sustainable, which can reduce their ecological footprint and ensure the health and well-being of the fish grown. In addition, sustainable practices can contribute to the long-term viability of the aquaculture industry and help meet the demand for fish products without harming the health of our oceans and waterways.

The cultivation and application of natural nutrients in fish farms has several notable advantages. By reducing reliance on artificial additives, these practices contribute to more sustainable and environmentally friendly aquaculture systems. In addition, healthy fish provide good yields and economic benefits for Fish Growers. Nevertheless, difficulties persist, including the high cost of organic feed and potential complications associated with the transition from traditional to natural feed practice. Proper management and technical expertise are essential to optimize the benefits of these sustainable approaches.

### Conclusions and suggestions:

In conclusion, the cultivation and application of natural nutrients in fish farms is a great promise for the future of aquaculture. By prioritizing organic feed, IMTA, and beneficial microorganisms, fish growers can improve fish health, protect the environment, and produce high-quality seafood. To facilitate wide acceptance, governments, research institutions and industry stakeholders must collaborate to develop incentives, train and conduct further research on cost-effective strategies.

In addition, consumer awareness of the importance of sustainable aquaculture practices can trigger market demand for environmentally friendly seafood products. By using these practices together, we can ensure a healthier and more sustainable future for the fishing industry and our oceans.

### Adabiyotlar.

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