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Commentary

Nutritional Needs of Fish Feeding

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DESCRIPTION

For its growth, health, and maintenance, the fish requires a variety of nutrients. Proteins, lipids, carbs, vitamins, and minerals are among the nutrients required for fish and shellfish. The nutritional needs of fish vary depending on a variety of parameters such as the type of fish, its size, age, metabolic condition, and so on. Binders, antioxidants, enzymes, pigments, growth promoters, and feed stimulants are some of the feed additives that have been dealt with. The importance of preserving the nutrient value of feeds during storage is highlighted by an account of feed storage, preservatives, and antioxidants. Good nutrition is critical for the cost-effective production of healthy, high-quality products. Because feed accounts for 40-50 per cent of the production costs in fish farming, fish nutrition is crucial. With the creation of commercial diets that enhance fish growth and health, fish nutrition research has progressed in recent years. The aquaculture (fish farming) sector is benefited from the development of species-specific feed formulations expanding to meet the growing need for low-cost, safe, and high-quality fish and seafood. Nothing is more vital than good nutrition and adequate nourishment when it comes to culturing fish in captivity. As a result, growth is limited by either a lack of feed intake or a lack of feed use. Regardless of the quality of its environment, an undernourished animal cannot retain its health and productivity. Research, quality control, and biological evaluation are all required in the production of nutritionally balanced fish feed. Faulty nourishment definitely reduces fish productivity and leads to a decline in health until diseases become noticeable. The line between stunted growth and poor health on the one hand, and overt sickness on the other, is a difficult one to determine. The difficulty of identifying a decline in performance earlier on and taking corrective action will, therefore, remain an important part of the fish culturist's skill.

One of the least developed sections of aquaculture, particularly in third-world nations, is fish feed technology. The majority of current fish feed analysis is based on nutritional and diet research conducted on temperate fish species in advanced countries. Commercial feed formulae are usually kept a secret, and the ingredients employed are often too expensive for developing countries to use. As a result, the need for designing appropriate feeds based on locally available, low-cost components has been widely acknowledged. Muscle, fat, epithelium, and connective tissue are all laid down during fish growth. Fish growth follows an s-shaped curve. Because of the small size of the fish and the difficulties in ingesting extra food, the fish will grow slowly at first. This is referred to as the preliminary phase. With the progress of time, fish begin to consume more food, get larger, and their capacity to reproduce increases, the cost of fish feeding and growing increases. The rate of rise in growth begins to slow after a certain point, as the overall weight of the fish has reached a maximum, and therefore growth now occurs at a diminishing rate. Although fish never stop growing, their growth is slower as they get older, and their proportional size increase is highest as they get younger. Fish, like any other terrestrial species, requires the same nutrients to grow.

However, because of variations in metabolic rate, the amount of these nutrients differs. As a result, there is a need for certain nutrients in fish feed. Fish, unlike animals, have a different availability of essential nutrients due to their surroundings. Some nutrients are obtained from water, which must be considered while formulating fish feed. For optimal growth and well-being, finfish require approximately 40 nutrients. Proteins, lipids/fats, and carbohydrates are considered "macro nutrients," while vitamins and minerals complexes are considered "micronutrients" that are necessary for fish to grow healthy.

Farmed fish are fed diets that are specifically tailored to their nutritional requirements. This feed contains all of the nutrients they need to stay healthy and flourish. This feed is normally in the form of dried pellets, which are comparable to dry dog chow in many aspects. Fish nutritionists must account for around 40 important elements that the fish require. Vitamins, minerals, amino acids (protein building blocks), and some lipids are among them. Fishmeal, fish oil, plants, and animal trimmings are among the elements in the feed that supply these nutrients. The NOAA-USDA Alternative Feeds Initiative aims to find new dietary ingredients that will minimise the amount of fishmeal and fish oil in aquaculture feeds while preserving the human

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health advantages of farmed seafood. It appears to be effective. For example, the percentage of fishmeals in salmon diets is thought to have decreased from 70% in 1980 to around 25% in 2017.