

Rainbow Trout Fish Farming

Opportunities and the Challenges

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Fish were the first vertebrates that appeared on the earth. There are roughly 25 thousand types of fish and Rainbow Trout is one among them. Scientifically, it is known as *Oncorhynchus mykiss*. One can rarely find the person who has never been heard about the fish. On the contrary, only a few persons might have known about Rainbow Trout fish particularly in the case of our country. But the reality is something different and i.e. Rainbow Trout fish farming as a cold-water fish culture in the mid hills of Nepal had already been developed both in private and the public sector.

Since Rainbow Trout is not a native fish species of Nepal, it was introduced to Nepal for the first time in the late 1960s and early 1970s from UK, Japan and India. It could not survive due to the lack of technical know-how and was re-introduced from Japan in 1988. During such period, the Nepal Agricultural Research Council (NARC) developed the breeding and culture technology for this species. Rainbow Trout is a carnivorous species that requires high protein feed and well oxygenated water. In nature it feeds on aquatic insects, small crustaceans and small fish. It could be cultured using artificial feed of no less than 20 to 30 percent of animal protein.

Depending on quality of the diet and temperature, Rainbow Trout can reach marketable size (200-300g) within 12-14 months from free-swimming larvae. It is more economical to reach marketable size as soon as possible (Huet, 1975).

Opportunities

There is full scope of Trout culture in Nepal. The prime factor required for Trout culture is water resource and the water temperature. It needs a regular flow of abundant cold and clean water in raceway ponds, with sufficient oxygen content. Trout is able to live within a temperature range of 0-25°C and it grows at the water temperature range of 10-20°C. Being a mountainous country, the natural water resource such as spring water and river (glacier and snow melt) water suitable for Trout culture is available in different part of mid-hills area of the country.

Another opportunity for Trout culture development in Nepal is sound technical background. NARC and Fisheries Research Centre have already developed the technical know-how required for Trout culture. The research centres as such have had successfully developed hatching, breeding, feed and disease control measures.

Furthermore, a preliminary analysis carried out revealed that Trout farming in Nepal is economically viable. With a cost of about NRs 255 to produce 1 kg of Trout, which is sold for NRs 300/kg in Government Farm having a profit of NRs 45 per kilogram gives a rate of return on initial cost of 19.5 percent, and the rate of return on operating cost is 17.6 percent. This is a good opportunity for the Trout farmers in private sector from the investment point of view.

At present, the price of Trout in Government Farm is NRs 300 per kilogram whereas it is NRs 700 to 750 in private farm. There are 12 Trout farmers in private sector all located in Nuwakot district. These farmers produce Trout in their own ponds and sold to different supermarkets in Kathmandu as well as to the visitors of their farm either in raw or cooked form. The annual production of Trout is estimated about 16 metric tons and it is increasing each and every year simultaneously. This has become self explanatory that Trout farming has good internal market opportunity in the country.

Despite having good opportunities, there exist a number of challenges in Trout farming in Nepal.

The Challenges

Of course, water is an indispensable part of fish farming but that is not enough for Trout culture. The water being supplied for Trout farming should be crystal clean, abundant and with continuous flow, and full of oxygen. Unnecessary residues, silts and waste deposits in the pond, and malnutrition may generate various fatal diseases like columnaris, tail and fin rot, gill disease, water mold, hepatoma, trichodiniasis to the Trout. Similarly, finding out an appropriate land site in the hilly region for fishpond construction is not simply a just another task.

Trout is a carnivorous animal by nature that needs a supply of high protein content feed in pellet form. Generally, more than 35% crude protein (CP) is necessary for Trout. Feeding rate varies on the basis of fish size and the water temperature. Young Trout (< 30 g) need to be fed 3-10 percent of body weight per day, but 1-2 percent is sufficient for bigger ones. A little variation in feed quantity and feeding time may impede the growth rate causing huge loss to the farmers. Therefore, appropriate feed has stood as one of the crucial challenges in Trout farming.

Higher cost of production is another challenge associated with Trout culture in Nepal. Shrimps are one of the important ingredients of Trout feed that is not produced in Nepal and need to import at higher price. As a result, the production cost of Trout is comparatively higher than the cost involved in other fishes like common carp, silver carp, and big head production. Due to the higher cost of production, the price of Trout is also considerably higher than the price of other fishes in the market. Consequently, Trout is not

available in the common fish market and the price is also not affordable by the people with common living standard.

These are some major challenges associated with Trout culture in Nepal but it does not mean that the challenges are beyond faceable.

Higher production cost is the main problem and that is all due to higher feed cost. The total cost of production could be reduced provided the feed cost is minimized. It is possible through establishment of a feed industry in Nepal for commercial production.

Other problems associated with Trout diseases could be reduced enhancing the present status of technical capability.

The most important assenting side of Trout culture in Nepal is the natural water resource that is accessible in mid hill range of Nepal. For example, apart from Nuwakot and Rasuwa district, water of the Modi Khola (Parbat), Khimti (Dolakha), Khokundol (Sindhupalchowk), Naubise (Dhading) have also been found suitable for Trout farming in Nepal.

Given that the proper utilization of natural water resource and entrepreneurship development for Trout production in public private partnership approach may be proved as a source of income of Nepal.

Rainbow Trout is the best-suited exotic fish for growing commercially in mid-hills of Nepal. It has good internal market as well as good export potential. Considering the commercial and economical value of Trout, Nepal Government had recently implemented a national program called One Village One Product (OVOP) in Nepal. Rainbow Trout is one among four commodities selected to promote in commercial way in Nuwakot and Rasuwa district. However, the outcome of the program will be determined by the effectiveness of the program implementation.

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