

Aquaculture Development in Nepal and Current Needs

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Background:

History of aquaculture in Nepal is about 60 years which is considered relatively short compared to other aquaculture developed countries of south and south-east Asia. Successful introduction and breeding of common carp from back in 2013 (BS) and introduction of Chinese carps (silver carp, bighead carp and grass carp) and breeding success of Chinese and indigenous major carps (rohu, naini and bhakur) during late thirties and early forties (BS) was a very important step ahead to expand and develop the aquaculture with the availability of fish fry. Aquaculture development project of government was an another key instrument that developed infrastructure facilities of government farms along with capacity building and human resources development during 2038-2050 BS. The project helped to expand aquaculture areas of the country supporting for new ponds construction and renovating old ponds of the farmers. However, the project excluded small land holders and addressed bigger farmers with the minimum pond size of 2000 m² area. There was a slag period without any further achievements for about 5-7 years during 2050-2057 BS for aquaculture development in the country.

A new initiative of aquaculture addressing to small land holders – “small-scale aquaculture” was started since 2056 BS through non-governmental organization (NGO) and international non-government organization (INGO) helping farmers to build 100 - 200 m² ponds in the central and far-western tarai which later expanded to western mid hills regions too. Successful development of this model triggered government to initiate and develop the program of “kitchen pond” basically addressing to small-scale farmers. Government initiated priority program as “mission fish” since 2065 BS that has enhanced area expansion by new pond construction in southern plain area with increased fish production. Thousands of hectares of rice fields have been converted to fish ponds during last 5-6

years time by farmers. This attraction in aquaculture might have associated with the problems for labor in rice farming coupled with profit margin. Aquaculture pond area has been increased from 6500 ha to 9200 ha during last 6-7 years.

Current Aquaculture Systems:

Current aquaculture systems of Nepal can be classified into three categories.

- Small-scale aquaculture
- Medium-scale aquaculture
- Commercial-scale aquaculture

Small-scale aquaculture:

This type of aquaculture is associated with small land holding households and pond size varies with 100-300 m². Farming technology comprises with 3-6 species carp polyculture in green water with supplemental feed. Livestock manure available in the household is the major inputs to make pond green. Chemical fertilizers are seldom used and household agriculture byproducts like rice bran and mustard oil cake is used as supplemental

feed. Around 40-50% fish produced are used for family consumption where as 50-60% fish are sold for supplemental income. Current productivity of such small-scale pond is about 3-5 ton/ha/year.

Medium-scale aquaculture:

This type of aquaculture is associated with larger land holding farmers. Pond size may varies from 1000 m² (3 katta) to 3000 m² or more (bigha). Production technology used is semi-intensive (green water with supplemental feed). Chemical fertilizers and organic manure are commonly used and self formulated or factory feed are mostly used. Carps





polyculture is the common culture system. However, Chhadi culture (30-70 g size naini and rohu fish production system) is also popular to some extent in this system. Majority of fish produced (80-90%) are sold and 10-20% fish are used for household consumption. Current fish production in such pond is about 4-8 ton/ha/year.

Commercial-scale aquaculture:

This type of aquaculture is associated with registered fish farm either by individual entrepreneur or by groups in leased or own land. Farm size may varies from few hectares (3-4 ha) size to several hectares (15-20 ha). Fish are fed with commercial pellet feed. Various commercial aquaculture developed in country are – carps polyculture, African catfish culture, Pangas catfish culture, trout culture and, tilapia culture to some extent. Productivity of ranges from 6-8 ton/ha/year for carps polyculture, 20-30 ton/ha/year for African catfish, 30-50 ton/ha/year for Pangas catfish, 100-120 ton/ha/year for trout and about 6-10 ton/ha/year for tilapia.

Farm inputs:

Fish seed:

Carps seed and trout seeds are fairly managed and produced in the country as required but the seeds of African catfish and Pangas catfish are not produced in country and completely dependent to fish seed traders of India. The constraints of seeds of those catfish have limited to expand its culture. Similar seed constraints are in tilapia culture as mono-sex seed are not available and mixed-sex seed are used to culture which has hampered in size of harvest and productivity.

Feed:

Demand of commercial feed in country has been increased with the development of commercial aquaculture. Supply and production of commercial trout feed has been reasonably regular but commercial supply of carps and catfish feed seems inconsistent as per the demand.

Market:

Fish are available in different forms – fresh, dried and live fish in town and cities. Produced fish in farm ponds are sold to local buyer, local fish traders or live fish traders. It seems market link and channels are not well established to small-scale and medium-scale aquaculture farmers as they complain for not been able to sell their fish.

Current needs for aquaculture development:

Promotion for commercial aquaculture:

Country needs to address all three levels of aquaculture (small-scale, medium-scale and commercial- scale) which will remain in the country for many years though commercial-scale will be developed more and more in near future. Commercialization of small-scale and medium-scale aquaculture is needed to benefit those farmers besides the household family nutrition security. Country needs to develop prerequisite for commercial aquaculture helping entrepreneurs in developing fish hatchery of commercial fish species (pangas catfish, African catfish, and tilapia) and feed industry for the production of quality seeds and feeds. A commercial fish farm should have a well trained technical manpower to look after the farm. Expansion of production area wherever suitable with intensification of production systems with suitable and appropriate technology will improve productivity and national production of fish.

Market link and channel:

Development of fish market centers (wet market) for local and distant market in fish production pockets and cities has to be developed to local sell and distribute fish in demand area of the country. Development of quality dried fish products where fresh fish products are not assessable will explore market add values. Live fish sale at possible markets will add values. Production, timely marketing and distribution as per the consumers demand will help further to develop aquaculture in the country.