FACT SHEET

Carp-SIS polyculture in periphyton enhanced system

Introduction

In AquaFish Innovation Lab Phase I, we did an on – farm trial in Majhui in Chitwan district and Seri and Nandapur in Nawalparasi district to test performance of split bamboo mat as a periphyton substrate in carp-SIS ponds. The result showed that split bamboo mat increased fish production and profit by 24.0% and 51.2%, respectively, over carp ponds. There are several substrates which can be used to enhance periphytons in fish pond but attention should be given on their sustainability, locally availability, cost and effectiveness. In this regard, Agriculture and Forestry University (AFU) in collaboration with Michigan University has recently tested potential periphyton substrates in Phase I farmers' pond.

Field Test

Altogether 30 farmers including 15 from Sundardeep women fish farmer's cooperative in Chitwan district and 15 from Mishrit cooperative in Nawalparasi district participated to the field test of Carp-SIS polyculture using periphyton substrates. Five groups of farmers containing 3 farmers in each group in each site used separate substrate except control group. Five groups were i) control without substrate, ii) split bamboo, iii) whole bamboo, iv) banana midrib and v) plastic bottle using groups. Those substrates were recommended by farmers in workshops. Each group cultivated 6 carp species (Rohu, Mrigal, Silver carp, Bighead carp, Common carp and Grass carp) along with 2 SIS (Dedhuwa and Pothi) for 7 months. Farmers fed dough of rice bran and mustard oil cake mixed at equal ratio at 1.5% body weight per day to fish. Grass carp was fed with grass, banana leaves and vegetables at 50% body weight per day.

Results

It was found that fish yield, income and profit from fish was higher in substrate used ponds than without substrate ponds. Using this technology 1 kg of carp can be produced by feeding less than 2 kg of supplementary feed. On other hand using plastic bottles such as mineral water bottles, Coke-Fanta bottles for periphyton substrate helps cleaning the environment in the locality.

What is Carp-SIS polyculture in Periphyton enhanced system ?

A low cost fish farming system where Carp and SIS are grown in a pond using substrates for periphyton colonization. Carp feed on periphyton and grow bigger.

Parameter	Types of substrate				
	Control	Split Bamboo	Whole Bamboo	Banana midrib	Plastic Bottle
Carp Yield (kg/100 m^2/yr)	36.3	38.7	40.5	42.8	43.4
SIS Yield (kg/100 m^2/yr)	0.7	0.7	1.0	1.0	0.8
Combined Fish Yield (kg/100 m^2/yr)	37.0	39.3	41.5	43.8	44.1
Feed Conversion Ratio	2.0	1.5	1.7	1.8	1.9
Income (Rs/100 m^2/yr)	11023	11738	12344	13037	13160
Profit (Rs/100 m^2/yr)	6813	8047	8240	8677	8884

Why Periphyton based Carp-SIS polyculture?

- It supports both income generation and family nutrition.
- It increases fish production by providing nutrient rich natural food periphyton to Carp.
- It increases income by selling large Carp.
- It improves family nutrition through increased consumption of micronutrient rich SIS.
- It decreases feed cost by reducing supplementary feed input.

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