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Profitable management practices of fish culture ponds in Koshi region of Araria District in Bihar

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Abstract: Koshi region of Araria district has large number of ponds which receives flood and rain water. The pond of this region is very fertile and well known for fish culture. A survey has been conducted to study the present package of practices of fish culture in the area through a pre tested questionnaire. The preliminary information of the survey has been depicted in the table. It is interesting to note that only 15-20% farmers are adopting the recommended package of practices and 25% adopting partially where as large number of farmers have not adopted it due to unknown reason. The annual production of the fish in this region ranges from 1-8 tone/ha showing the ample scope of improving the annual yeild if the farmers adopt the recommended practices properly. The extension missionary has to play an important role to educate the farmers by demonstrating the technology to make the fish culture a source of livelihood and strong source of income.

Key words: Koshi region, Araria, fish culture, recommended package, profitable management, improved production

INTRODUCTION

Aquaculture has acquired a special significance not only because of its contribution to food resources but also for contribution to quality of our diet. India is getting good amount of foreign exchange by exporting the aqua products by adopting the scientific management techniques. Bihar is located in the eastern part of India where Araria district situated at latitude 26.135' and longitude 87.464' respectively posesess a large cultivable stagnant fresh water area in the form of pond and tanks, out of which only small part is utilized for fish culture. Most of the farmers involved in this region for fish culture are not using scientific method and practices due to lack of proper knowledge so they are getting minimum fish production (1000kg/Ha), while few farmers using the recomended scientific techniques and

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are getting maximum production up to 8000-9000 kg/Hain the same area. If we can provide the proper knowledge regarding culture technique, site selection, pond construction, stocking of quality seeds, fed quality feed etc then only they will achieve the desire level of production and a day will come when our state stop to import the fish and start to export the fish to the other states. Although aquaculture development in the region is taking place at a rapid rate however integrated efforts are necessary to increase the present level of production through both horizontal and vertical expansion.

MATERIALS & METHOD

A survey was conducted in Araria district where randomly farmers were selected for collection of data. Practices of fish culture in the area through a pre tested questionnaire.

RESULT & DISCUSSION

Present investigation reveal that most of the farmer involved in culturing of fish in this region are either not using or using little available scientific techniques and thus unable to attain the targeted level of production, either it may be due to lack of awareness or facility. Intention of the present paper is to give the proper knowledge regarding the fish culture so that people of this region get maximum benefit.

MANAGEMENT OF CULTURE POND

(A) DRYING

The phase refers to pond preparation to ensure maximum survival and proper growth of culture fish and involve repair of embankment, ploughing of the pond in summer month.

- i. Oxidation of organic deposited it by exposing to air.
- ii. Killing the pathogenic agent, unwanted fish etc.
- iii. Removal of heavy organic deposits which releases obnoxious gases like Hydrogen sulphide (H_2S).

(B) PLOUGHING OF THE POND IN SUMMER MONTH:

Ploughing the pond bottom helps in removal of the obnoxious gases and exposing the organic deposited to the air. As per necessity either shallow or deep ploughing is carried out in the direction of perpendicular or parallel to the length of pond.¹

15% farmers adopted in full. 25% adopted partially and 60% not adopted.

(C) APPLICATION OF PLANT –BASED PISCICIDES IN PERINEAL POND

Four methods manual, mechanical, chemical and biological are used to eradicate weed and unwanted fish from ponds, among which Biological method using fish and duck is probably the best method for controlling weed.²

17% farmers adopted in full, 28% adopted partially and 55% not adopted.

(D) APPLICATION OF MANURE

Primary production of the pond is not enough to fulfil the requirement of culture animals as organic as well as inorganic fertilizer is applied to increase the primary production. Among organic fertilizer cow dung is most preferable as it supplies all the nutrients need by the primary production³.

It consider better to apply cow dung in two doses instead of one good quality of zooplankton can be maintained for a longer period if a dose of 10000kg/ha/yr.

13% farmers adopted in full, 26% partially adopted and 61% not adopted.

(E) APPLICATION OF THE LIME

The first step in fertilization of pond is the application of quick lime (Cao) which raises the water pH and act as antiparasite, killing bacteria and parasite and their larval stages. Liming also helps to decompose the organic matter, thus increase the productivity and possibly it counteracts the harmful effects of excess magnesium, sodium, potassium ions etc. Quick lime @ 500kg /ha is generally spread on the bottom. 18% farmers adopted in full, 25% adopted partially and 57% not adopted.³

(G) STOCKING OF FINGERLING

Stocking phase consist of evaluation of carrying capacity of the pond, relative density and combination of selected species. High production of fish from a pond is possible if a Culture considering the type of pond management. The stocking rate varies from 6,000-8,000 no/ha fingerling depending upon the carrying capacity of the pond.

18% farmers adopted in full, 30% adopted partially and 52% not adopted.

(H) SIX VARIETIES AS PER RECOMMENDATION

Choice of a suitable species is an important factor in delivering high yield, where as proper -combination of 3-5 species of carp gives best result.

Generally Indian major carp such as *Catla*, *Rohu*, *Mrigal* and exotic carp like Silver carp, Grass carp and Common carp are grown together in a pond and gave a high yield. 20% farmers adopted in full, 26% adopted partially and 54% not adopted.

(I) APPLICATION OF STOCKING RATIO:

16% farmers adopted in full recommended stocking ratio 4:3:3: 31% adopted partially and 52% not adopted.

(J) APPLICATION OF FEED

Feed should be done @ 2-3% of the biomass is to ensure proper growth of cultured of fish artificial feeding enhances fish production Supplementary feeding is necessary so that high density of fish can be maintained. Natural food production in the pond is limited but it

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provides all the essential nutrients to the fish, Hence, a mixture of natural and artificial food gives best results. The artificial food should be such that it is acceptable to fish and is easily digestible; it should have good nutritive value and high conversion rate etc.

Finely powdered rice bran, mustered oil cake or groundnut oil cake are use as food for fish, fry, fingerling of IMC and exotic carp in mixture (1:1) and is considered to the best artificial food, which is given daily @2-3% of the total fish biomass. It is either sprayed over the water surface or kept as thick paste in shallow, wide open mouth earthen pots in the pond. Feeding initially done in the morning and evening and should not change suddenly.⁴ Artificial feeding enhances fish production and attributes 50 to 80% of total fish production in ponds in Germany to artificial feeding. 18% farmers adopted in full, 18% adopted partially and 67% not adopted.

(K) REGULAR NETTING OF HEALTH MANAGEMENT

The practices vary often convert into causative agent of serious epizootic to the cultured host and closed water bodies; otherwise it leads to growth retardation and mortality 17% farmers adopted in full, 25% adopted partially and 58% not adopted.⁵

(L) FISH PRODUCTION (achieved)

Fish production adopted in full fish culture practices, partially or not adopted fish farmers realise additional profit by 8000kg/ha, 4000kg/ha, 1000kg/ha. Both management and material involved the economics of three input levels of fish production under Araria district.

(M) SALE PROCEEDS (Rs/ha)

8 lakh adopted in full, 4 lakh partially and 1 lakh not adopted.

Table 1 - Survey of farmers fish culture

S.No	Recommended practices	Adopted in full	Adopted partially	Not adopted
1	Ploughing in the pond in summer month	15%	25%	60%
2	Application of plant based piscicides in perineal pond	17%	28%	55%
3	Application of manure @10 tons/ha/year	13%	26%	61%
4	Application of lime @500kg/ha	18%	25%	57%
5	Stoking of fingerling	18%	30%	52%
6	Six varieties as per recommendation	20%	26%	54%
7	Application of stoking ratio	16%	31%	52%
8	Application of feed @2-3% of the biomass	18%	18%	67%
9	Regular netting for health management	17%	25%	58%
10	Fish production	8000 kg/ha	4000 kg/ha	1000 kg/ha
11	Income/ha	8 lakh	4lakh	1lakh

Table 2- Production cost, income and returns in composite fish culture CFc&SP (Randhir 1984)⁶

	High level inputs RS	Intermediate RS	Low level inputs RS
1 Pond development	2,000	2,000	2,000
Maintenance of embankment	2,000	2,000	2,000
Fingerling	12,000	12,000	12,000
Feed	30,000	20,000	
Manure	1,000	600	
Lime	2,000	800	
Health management, Netting, Misc.	2,000	2,000	1,500
Total	51,000	39,000	16,500
Cost of production	8,00,000	4,00,000	1,00,000
Net Income	7,49,000	3,61,500	83,500

REFERENCES

1. **H. Singh. 2006.** Nursery management for production of fry major carp Book Biodiversity & Aquaculture 313p (Daya publishing) Delhi
2. **S.N. Makh & V. K Gorad. 2009.** A text book of pisciculture and Aquarium keeping 157-158p (Daya publication House)
3. **H.Sing, R.M Tibli and G.S Ghode. 2006.** Nursery management for production of fry & Major carp Book Biodiversity and Aquaculture 314p (Daya publication)
4. **Chakrabarty, R.D., P.R Sen, D.K Chatterjee and S. Jena. 1975.** On the use of fertilizer a supplementary feed for enhancing fish production in composite fish culture of Indian and exotic carp *Pro.Nat.Acad. Sci., India.* 45.
5. **Manas Kr. Das. 2002 & 2006.** Fish Health Management of India: Text Book Biodiversity & Aquaculture 325 (Daya publication)
6. **Randhir, M.1984.** Economic analysis of composite fish culture Fourth Advisory Committee Meeting of NACA (FAO/UNDP Project, 3-6 Dec 1984, Bhubaneswar, India: 80-86
