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Assessing Knowledge and Adoption of Fish Farmers about Fish Production Technology in Madhya Pradesh

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ABSTRACT

Fishery plays a very important role in the socio-economic development of nation through employment generation, contribution to food security and foreign exchange. The present study was undertaken to assess the knowledge level and adoption of fish farmers about fish production technology. The study was conducted with 90 fish farmers randomly selected in 3 villages of Jabalpur district, which were results showed that. Fish farmers in Jabalpur were of comparatively young age group, education up to high school, low annual income, common pond for fish farming, minimum experience of 15 years, fish farming + singhara cultivation as their main occupation, low attitude towards fish farming, medium market orientation, high scientific orientation, low aspiration level, low use of information sources and training exposure. The knowledge level and adoption of fish farmers about recommended fish practices was medium. It was also observed that there was considerable variation in their knowledge and adoption on different aspects.

Fish is an excellent source of energy, as it provides 1000-2000 kcal/kg. Moderately active females (19–30 years old) need 1500–2500 kcal/day, while males of the same age need 2500–3300 kcal/day. Generally, fish diets tend to be highly rich in protein. Protein requirement levels in children diets often approach or exceed 40% crude protein, while that for adults diets may contain 25-35% protein. Fish in diet provides 15-25% protein. India is the sixth largest producer (5477 mt.) of fish. The total world fish production is 130882 mt., India is the second largest producer in the world of inland fish production, next to China, (Sharma 2006). Indian fisheries have made great strides during last five decades with an annual production of 6.4 million tons in 2005-2006. The present senerio of fish productivity in Madhya Pradesh is 1348 kg/ha comparatively lesser than the national productivity of 2186 kg/ha.The total water area in MP is 3.44 lakh ha, of which 3.24 lakh ha comes under fish production. In Jabalpur district there are 701 tanks/ponds, with an area of 8684 ha, and annual production of 2356 tons.

India is second in inland fish production, it is therefore necessary to ensure that improved fish production technologies that have been developed and disseminated are adopted, in order to increase fish production. The fishery industry is crucial to the World economy. The livelihoods of millions of people worldwide are dependent on fish farming (Nwachukwu Ike, 2005).

According to S Ayyapan of Indian Council of Agricultural Research, India is home to more than 10 % of global fish biodiversity with 2200 species of fish and shellfish in the marine and inland waters. “With water resources in terms of 29,000 km of rivers, 3.15 million hectares of reservoirs, 2.35 million hectares of ponds and tanks and 0.2 million hectares of floodplain wetlands, the potential production levels are estimated at over 4.5 mmt annually,” Mr Ayyapan said. With fish becoming a popular diet component, aquaculture should be promoted with a view of achieving nutritional secrity and generating further employment opportunities. (About TheFish Site.com). Keeping the view in mind the present study was formulated to assess the knowledge and adoption of different fish production practices.

There are two types of ownership of these ponds in panagar block i.e. Panchayat (leased) and individually owned (own) Panchayat Ponds constitutes more than 80% of the water area. The preparation of any development strategy means information about the existing

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level of knowledge of the target group. Thus, the present study was conducted to assess the knowledge and adoption of the fish farmers regarding fish production technology (Sharma and Laharia 2006).

METHODOLOGY

The study was conducted in Jabalpur district of Madhya Pradesh state in 2011, as the district has covered large area under fish farming than the other district of M.P. and average yield of fish production of the district is lower than the national average yield. The Jabalpur district comprises of seven blocks out of which only Panagar block was selected because this block covered large area under fish farming as compared to other blocks. The Panagar block comprises of 218 villages, but only 10 villages suitable for fish farming as per the record of fishery department out of them 3 villages i.e. Budhagar, Gosalpur, and Chhatarpur were selected due to maximum area of these villages were covered under fish farming. A comprehensive list of fish farmers of each selected village was prepared with the help of fishery department and out of which 30 equal number of fish farmers from each selected villages was selected randomly, thus the total 90 fish farmers was the sample size of the study.

Measurement of knowledge level

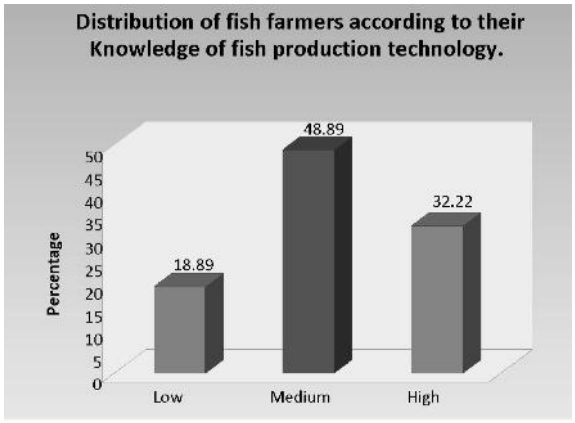
The knowledge was operationalized as the information possessed by the fish farmers about the recommended practices for fishery production. The existing profile, knowledge level and adoption were measured through a schedule prepared on the basis of package of practices of fish production technology recommended by Department of Fishery, Government of Madhya Pradesh. Major technological aspects such as pond management, selection of seed and management, feed and fertilizer management, unwanted fishes and weed management, fish protection management, harvesting and storage management. The response on 26 items was obtained on 2 point continuum i.e. yes and no and scores of 1 and 0 were assigned, respectively. The farmers were categories into low, medium and high knowledge.

Table 1: Profile of fish farmers

S. No.	Categories	N= 90	
		Frequency	Percentage
1. Age	Young age group (20-35 years)	53	58.88
	Middle age group (36-50 yrs)	27	30.00
	Old age group (51 & above)	10	11.12
2. Education	Illiterate	18	20.00
	Up to primary school	13	14.44
	Up to middle school	24	26.67
	High school and above	35	38.89
3. Annual income	Low income Rs 5000-12000 /-	48	53.34
	Medium income Rs 12001-19000 /-	12	13.33
	High income Rs 19001/- & above	30	33.33
4. Area covered under fish farming	Owned pond	17	18.89
	Common pond	73	81.11
5. Experience	Low experience (10 - 20 years)	47	52.22
	Medium experience (21 - 30 years)	30	33.33
	High experience (31 years & above)	13	14.45
6. Occupation	Fish farming	09	10.00
	Fish farming + Singhara cultivation	46	51.12
	Fish farming + Singhara cultivation +Labour	35	38.88
7. Attitude towards fish farming	Low (2 - 5)	58	64.45
	Medium (6 - 8)	21	23.34
	High (9 & above)	11	12.21
8. Market Orientation	Low (1 - 2)	25	27.78
	Medium (3 - 4)	45	50.00
	High (5 & above)	20	22.22

9.Scientific Orientation	Low	(Up to 12 scores)	0	0.00
	Medium	(13 to 24 scores)	16	17.78
	High	(25 and above scores)	74	82.22
10. Aspiration level	Low	(10 – 13)	54	60.00
	Medium	(14 – 16)	30	33.34
	High	(17 & above)	06	6.66
11.Use of information sources	Low	(3 – 6)	57	63.34
	Medium	(7 – 9)	22	24.45
	High	(10 & above)	11	12.21
12.Training exposure	Low	(Up to 2 Trainings)	57	63.34
	Medium	(3 - 4 Trainings)	03	3.34
	High	(5 - 6 Trainings)	30	33.32

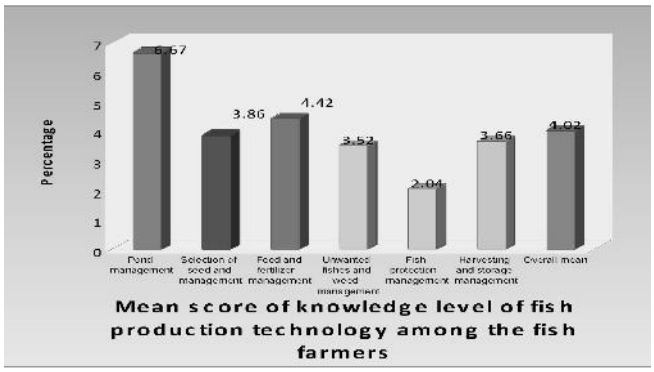
Distribution of fish farmers according to their Knowledge of fish production technology.



The data in the graph indicates that out of the total fish farmers, highest percentage i.e. 48.89 per cent was found in medium knowledge category, whereas 32.22 per cent in high and 18.89 per cent in low knowledge categories.

Thus, it can be concluded that the higher (48.89%) of the fish farmers had medium level of knowledge of fish production technology.

Aspect-wise knowledge level of fish farmers about different fishery practices



The perusal of data in graph reveals that the mean knowledge score of fish farmers 4.02. The Graph further shows that the important technological aspect was pond management, feed and fertilizer management, selection of seed and management, while the less important technological aspect was unwanted fishes and weed management, fish protection management, harvesting and storage management (Nagarajaih,2005), (Tiwari,2007).

Table 2. Distribution of fish farmers according to their adoption level of fish production technology.

S. No.	Categories		No. of fish farmers	Percentage
1.	Low Adoption	(Up to 19 scores)	14	15.55
2.	Medium Adoption	(20 to 22 scores)	50	55.55
3.	High Adoption	(23 and above)	26	28.90
	Total		**90**	**100.00**

The data in the Table 2 indicates that out of the total fish farmers, highest percentage i.e. 55.55 per cent was found in medium adoption category, whereas 28.90 per cent in high and 15.55 per cent in low adoption categories.

Thus, it can be concluded that the higher (55.55%) of the fish farmers had medium level of adoption of fish production technology (Talukdar, 2005).

Table 3. Aspect-wise adoption level of fish farmers about different fishery practices

S.No.	Aspect	Mean	Rank
1	Pond management	5.33	I
2	Selection of seed and management	3.85	III
3	Feed and fertilizer management	3.93	II
4	Unwanted fishes and weed management	2.83	V
5	Fish protection management	2.04	VI
6	Harvesting and storage management	3.64	IV
	Overall mean (X)	**3.60**	

Aspect-wise adoption level of fish farmers about different fishery practices

The perusal of data in Table 3 reveals that the mean adoption score of fish farmers 3.60. The Table further shows that the important technological aspect was pond management, feed and fertilizer management, selection of seed and management, while the less important technological aspect was unwanted fishes and weed management, fish protection management, harvesting and storage management.

Table 4. Association between independent variables with their knowledge level and adoption.

S. No.	Variables	Knowledge		Adoption	
		χ^2	Degree of freedom	χ^2	Degree of freedom
1.	Age	15.337**	2	13.861**	2
2.	Education	10.181*	3	9.483*	3
3.	Annual income through fish farming	17.590**	2	9.662**	2
4.	Area covered under fish farming	3.159 NS	2	4.433 NS	2
5.	Experience of fish farming	10.467**	2	7.465*	2
6.	Occupation	2.339*	2	9.307**	2
7.	Attitude towards fish farming	16.636**	2	7.917*	2
8.	Marketing orientation	9.910*	4	10.090**	2
9.	Scientific orientation	6.185**	2	8.531*	2
10.	Aspiration Level	11.012**	2	7.440*	2
11.	Use of information sources	10.067**	2	6.577*	2
12.	Training exposure	11.674**	2	13.861**	2

*** Significant at 0.05 and 0.01 level of probability, NS, Non-significant

Association between profile of fish farmers and their knowledge level

It is seen from Table 4 that all the variables except area, have significant positive association with the overall knowledge level and adoption. It suggest that in general, the farmers knowledge and adoption increases with the increase in their education level, experience, attitude towards fish farming, scientific orientation, use of information sources, training exposure.

Constraints in fish production technology.

Constraints are the forcible restrictions and confinement of action, for implementation of any technical strategies, the constraints plays very important role. Therefore, to obtain better result it is very essential to find out the constraints and to minimize the same in implementation and adoption of fish production technology as far as possible.

Table 5. Constraints in fish production technology reported by fish farmers.

S.No.	Constraints	Respondents N = 90		
		Frequ-ency	%	Rank
A	**Economic constraints**			
i	Lack of money to purchase useful fishery inputs	69	76.66	VII
ii	Lack of money for pond cleaning	90	100.00	I(c)
Iii	High cost of seeds (fry and fingerlings).	80	88.88	III
iv	High labour charges	45	50.00	XIII
B	**Technical constraints**			
i	Lack of informations about fishery programmes and insurance policies	51	56.66	XI
Ii	Lack of knowledge about production technology.	75	83.33	V
iii	Lack of knowledge about insects and diseases of fish	44	48.88	XIV
iv	Lack of knowledge of integrated fish farming	55	61.11	X
v	Lack of knowledge about soil and water testing	32	35.55	XV
C	**Extension constraints**			
i	Lack of technical guidance from FEOs	50	55.55	XII
ii	Lack of information available in local language	35	38.88	XIV
iii	Irregular visit of FEOs,	77	85.55	IV
iv	Lack of demonstration conducted by fishery department	70	77.77	VI
v	Lack of trainings provided on fish production technology	65	72.22	VIII
D	**Institutional constraints**			
i	Co-operative societies are not providing seeds timely	90	100.00	I(a)
ii	Lack of fishery related technical information from Gram Panchayat	85	94.44	II
E	**Situational constraints :**			
i	Water scarcity	90	100.00	I(b)
ii	Low market price	60	66.66	IX

CONCLUSION

The knowledge and adoption of various technological components, it was found that Pond management, Feed and fertilizer management, Selection of seed and management as important technological components, While the less important technological components to the fish farmers were, Unwanted fishes and weed management, Fish protection management, Harvesting and storage management. Similarly, Knowledge and Adoption of fish farmers was studied regarding fish production technology. It was observed that higher percentage of fish farmers belonged to medium knowledge category. (Nagarajaih,2005). It was also observed that the higher percentage of fish farmers belonged to medium adoption category (Talukdar, 2005).

Association between independent variables with their knowledge and adoption, revealed that age, education, annual income, experience, occupation, attitude towards fish farming, marketing orientation, scientific orientation, aspiration level, use of information sources and training exposure were positively related with knowledge of fish production technology but area were negatively related with knowledge and adoption of fish production technology.

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