Scientific Knowledge and Adoption Behaviour of Fish Farmers in Terms of Economic Benefit in FLDs under KVK Dewas, Madhya Pradesh

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Abstract—*Fisheries sector is a source of livelihood for people engaged in fully, partially or in subsidiary activities. It's an integral component of rural development programme and its requirement of capital investment is relatively low and gestation period short. Moreover it is gaining importance due to its potential for employment generation. It caters primarily to the needs of socio economically weaker and backward communities of fishermen, SC/ST and OBC's, who constitute the poorest section of the society. It is revealed that after training the fish farmers with high level of adoption has been increased by 8.34 per cent over before the training. Simultaneously, the medium level of adopter had been increased by 1.66 per cent over before the training. On the other hand, the fish farmers with low level of adoption had been decreased by 10.00 per cent over before the training and they upgrated into high level of adoption in respect of "overall fish production technology.*

1. INTRODUCTION

Fishing in India is a major industry in its coastal states, employing over 14 million people. Fish production in India has increased more than tenfold since its independence. According to the Food and Agriculture Organization, fish output in India doubled between 1990 and 2010. India is a major supplier of fish in the world. In 2006 the country exported over 600,000 metric tonnes of fish, to 90 countries, earning over $1.8 billion. Fisheries and aquaculture are important sources for food and livelihoods for people along the world's seashores and waterways and influence the livelihoods for long number of population. Fish production is not only an indispensable component of agriculture since long, but also the most suitable food production system that has enormous potential to improve the socio economic status of the large percentage of the rural population engaged in fishing business. India is the sixth largest producer (5477mt.) of fish in the world after China (39937 mt.), Peru (7878 mt.), Japan (7408 mt.), Chillie (6366 mt.) and USA (5493 mt.). The total world fish production is 130882 mt. India is the second largest producer in the world of inland fish, next to China. Indian fisheries have made great strides during last five decades with an annual production of about 7.0 million tonnes in 2013-14.

Fish farming is a lucrative business that can mitigate poverty in the country if practiced by adopting the necessary technologies. It requires less expand of land and it can be practiced in both rural and urban areas within the country. It also requires less time for its management and hence can be practiced by virtually everybody including the youths, house wives, working class and retirees. All the socio-economics characteristics considered, gender, educational status, level of fish production and other income generating activities of the respondents can be used to adoption of fish production technologies in the study area.

Studies revealed that the maximum profit from fish production can be achieved by adoption of proper recommended technology. To improve the adoption of fish production technology, it is necessary to assess its level existing at actual situation. Therefore, the present study entitled "Study of scientific knowledge and adoption behaviour of fish farmers in terms of economic benefit in FLDs under Krishi Vigyan Kendra Dewas, Madhya Pradesh" is paramount important.

Keeping the above facts in mind, the present study was designed to conduct and formulated for the study with following objectives.

2. OBJECTIVE

To study the impact of training on production technology among fish farmers.

3. REVIEW OF LITERATURE

Roger (2003) reported that the adoption of technology can be affected by the way it is named and positioned. However,

attitude of fish farmers towards production technologies need to be ascertained for high adoption level.

Nandeesha (2007) reported that farmers have been actively engaged in innovations in the field of aquaculture. In fact, farmers do not adopt any technology without innovations to best suit their farming conditions. Study also reported that the fish farmers adopted only medium level of fish production technology due to lack of innovation.

Ike and Roseline (2010) reported that the level of adoption of aquaculture technology in the Imo State of Nigeria was low. Many of the farmers who were supposed to be engaged in aquaculture had abandoned it. Important components of the technology that had to do with raising and processing the fish at harvest were adopted by few of the respondents.

Apata (2012) This reported that if farmers are aware and adopt relevant technologies, it can lead to high income from their farming enterprise. Hence agricultural technologies should be disseminated to farmers using as many channels as possible.

4. MATERIAL & METHODS

For present study, Krishi Vigyan Kendra (KVK) Dewas was selected which is situated in Dewas district of Madhya Pradesh. According to the information obtained from KVK Dewas, there was 9 villages have been adopted under the mandate of their programme and conducted FLDs of fish production technology. These FLDs villages of fish production were considered as representative of the study. A list of 9 villages under FLDs programme of KVK Dewas was prepared with their fish programme information. Out of these villages, only 6 villages have been selected for present study. 120 fishery farmers had been benefited by this programme in selected 6 villages under the KVK during 2010 to 2013. All the beneficiary farmers were is sample respondent for present study. Thus, the total 120 respondents as under FLDs programme of KVK were constitute the sample of the study.

5. RESULT & DISCUSSION

Impact of training on production technology among the fish farmers: The impact of training on production technology among fish farmers was analyzed by considering the criteria change in extent of adoption of technology after over before the training. The impact of training on status of adoption level of technology before and after the training and FLD's was documented. The data relating to the impact of training on production technology among fish farmers was presented under sub-heading as follows:

Pond management technology: The distribution of fish farmers as per their status of adoption level in respect of "pond management technology" after and before perceived training is presented in following Table

Table: Status of adoption level of pond management technology:

Adoption level of "pond management"	Before training	After training	% change over before
Low	44 (36.67)	31 (25.83)	-10.84
Medium	43 (35.83)	48 (40.00)	+4.17
High	33 (27.50)	41 (34.17)	+6.67
Mean Score	1.91	2.08	8.90

The data clearly denoted that before the training there were only 33 or (27.50% of total) fish farmers with high level of adoption, which increased and become 41 or (34.17% of total) fish farmers after the training. Again before the training there were only 43 or (35.83% of total) fish farmers with medium level of adoption, which increased and become 48 or (40.00% of total) fish farmers after the training. On the other hand, in case of low adopter there were only 44 or (36.67% of total) fish farmers with low level of adoption at the before the training, which decreased and become 31 or (25.83% of total) fish farmers after the training.

On the basis of above fact and findings, most notable difference has been seen that after training the fish farmers with high level of adoption has been increased by 6.67 per cent over before the training. Simultaneously, the medium level of adopter had been increased by 4.17 per cent over before the training. On the other hand, the fish farmers with low level of adoption had been decreased by 10.84 per cent over before the training and they up grated into high level of adoption in respect of "pond management".

The average mean score values of adoption showed by before and after the training were 1.91 and 2.08. This clearly shows that as regard the adoption level there was a significant difference between before and after the training and it was the positive impact of training on adoption of fish production technology.

Selection of seed and management: The distribution of fish farmers as per their status of adoption level in respect of "selection of seed and management" after and before perceived training is presented in Table bellow-

Table: Status of adoption level of selection of seed and management:

Adoption level of "Selection of seed and management"	Before training	After training	% change over before
Low	42 (35.00)	30 (25.00)	-10.00
Medium	47 (39.17)	46 (38.33)	-0.84
High	31 (25.83)	44 (36.67)	10.84
Mean Score	1.91	2.12	10.99

The data clearly denoted that before the training there were only 31 or (25.83% of total) fish farmers with high level of adoption, which increased and become 44 or (36.67% of total) fish farmers after the training. On the other hand, before the training there were 47 or (39.17% of total) fish farmers with medium level of adoption, which decreased and become 46 or (38.33% of total) fish farmers after the training. Similarly, in case of low adopter there were 42 or (35.00% of total) fish farmers with low level of adoption at the before the training, which decreased and become 30 or (25.00% of total) fish farmers after the training.

6. FINDINGS

On the basis of above fact and findings, one of the most notable difference has been seen that after training the fish farmers with high level of adoption has been increased by 10.84 per cent over before the training. On the other hand, the medium level of adopter had been decreased by 0.84 per cent over before the training. Similarly the fish farmers with low level of adoption had been also decreased by 10.00 per cent over before the training and they upgrated into high level of adoption in respect of "selection of seed and management".

The average mean score values of adoption showed by before and after the training were 1.91 and 2.12. This clearly shows that as regard the adoption level there was a significant difference between before and after the training and it was the positive impact of training on adoption of fish production technology.

Feed and fertilizer management:

The distribution of fish farmers as per their status of adoption level in respect of "feed and fertilizer management" after and before perceived training is presented in given Table

Table: Status of adoption level of feed and fertilizer management:

Adoption level of "Feed and fertilizer management"	Before training	After training	% change over before
Low	37 (30.83)	27 (22.50)	-8.33
Medium	43 (35.83)	42 (35.00)	-0.83
High	40 (33.34)	51 (42.50)	9.16
Mean Score	2.03	2.20	8.37

The data clearly denoted that before the training there were only 40 or (33.34% of total) fish farmers with high level of adoption, which increased and become 51 or (42.50% of total) fish farmers after the training. On the other hand, before the training there were 43 or (35.83% of total) fish farmers with medium level of adoption, which decreased and become 42 or (35.00% of total) fish farmers after the training. Similarly, in case of low adopter there were 37 or (30.83% of total) fish farmers with low level of adoption at the before the training, which decreased and become 27 or (22.50% of total) fish farmers after the training.

On the basis of above fact and findings, one of the most notable difference has been seen that after training the fish farmers with high level of adoption has been increased by 9.16 per cent over before the training. On the other hand, the medium level of adopter had been decreased by 0.83 per cent over before the training. Similarly the fish farmers with low level of adoption had been also decreased by 8.33 per cent over before the training and they up grated into high level of adoption in respect of "feed and fertilizer management".

The average mean score values of adoption showed by before and after the training were 2.03 and 2.20. This clearly shows that as regard the adoption level there was a significant difference between before and after the training and it was the positive impact of training on adoption of fish production technology.

Unwanted fishes and weed management:

The distribution of fish farmers as per their status of adoption level in respect of "unwanted fishes and weed management" after and before perceived training is presented in following Table

Table: Status of adoption level of unwanted fishes and weed management:

Adoption level of "Unwanted fishes and weed management"	Before training	After training	% change over before
Low	45 (37.50)	33 (27.50)	-10.00
Medium	46 (38.33)	50 (41.67)	+3.34
High	29 (24.17)	37 (30.83)	+6.66
Mean Score	1.87	2.03	8.56

The data clearly denoted that before the training there were only 29 or (24.17% of total) fish farmers with high level of adoption, which increased and become 37 or (30.83% of total) fish farmers after the training. Again before the training there were only 46 or (38.33% of total) fish farmers with medium level of adoption, which increased and become 50 or (41.67% of total) fish farmers after the training. On the other hand, in case of low adopter there were only 45 or (37.50% of total) fish farmers with low level of adoption at the before the training, which decreased and become 33 or (27.50% of total) fish farmers after the training.

On the basis of above fact and findings, one of the most notable difference has been seen that after training the fish

farmers with high level of adoption has been increased by 6.66 per cent over before the training. Simultaneously, the medium level of adopter had been increased by 3.34 per cent over before the training. On the other hand, the fish farmers with low level of adoption had been decreased by 10.00 per cent over before the training and they upgrated into high level of adoption in respect of "unwanted fishes and weed management".

The average mean score values of adoption showed by before and after the training were 1.87 and 2.03. This clearly shows that as regard the adoption level there was a significant difference between before and after the training and it was the positive impact of training on adoption of fish production technology.

Fish protection management:

The distribution of fish farmers as per their status of adoption level in respect of "fish protection management" after and before perceived training is presented in the Table bellow-

Table: Status of adoption level of fish protection management:

Adoption level of "Fish protection management"	Before training	After training	% change over before
Low	44 (36.67)	34 (28.33)	-8.34
Medium	43 (35.83)	40 (33.33)	-2.50
High	33 (27.50)	46 (38.34)	+10.84
Mean Score	1.91	2.10	9.95

The data clearly denoted that before the training there were only 33 or (27.50% of total) fish farmers with high level of adoption, which increased and become 46 or (38.34% of total) fish farmers after the training. On the other hand, before the training there were 43 or (35.83% of total) fish farmers with medium level of adoption, which decreased and become 40 or (33.33% of total) fish farmers after the training. Similarly, in case of low adopter there were 44 or (36.67% of total) fish farmers with low level of adoption at the before the training, which decreased and become 34 or (28.33% of total) fish farmers after the training.

On the basis of above fact and findings, one of the most notable difference has been seen that after training the fish farmers with high level of adoption has been increased by 10.84 per cent over before the training. On the other hand, the medium level of adopter had been decreased by 2.50 per cent over before the training. Similarly the fish farmers with low level of adoption had been also decreased by 8.34 per cent over before the training and they up grated into high level of adoption in respect of "fish protection management".

The average mean score values of adoption showed by before and after the training were 1.91 and 2.10. This clearly shows that as regard the adoption level there was a significant difference between before and after the training and it was the positive impact of training on adoption of fish production technology.

Harvesting and storage:

The distribution of fish farmers as per their status of adoption level in respect of "harvesting and storage" after and before perceived training is presented in following Table

Table: Status of adoption level of harvesting and storage:

Adoption level of "Harvesting and storage"	Before training	After training	% change over before
Low	38 (31.67)	27 (22.50)	-9.17
Medium	44 (36.66)	47 (39.17)	+2.51
High	38 (31.67)	46 (38.33)	+6.66
Mean Score	2.00	2.16	8.00

The data clearly denoted that before the training there were only 38 or (31.67% of total) fish farmers with high level of adoption, which increased and become 46 or (38.33% of total) fish farmers after the training. Again before the training there were only 44 or (36.66% of total) fish farmers with medium level of adoption, which increased and become 47 or (39.17% of total) fish farmers after the training. On the other hand, in case of low adopter there were only 38 or (31.67% of total) fish farmers with low level of adoption at the before the training, which decreased and become 27 or (22.50% of total) fish farmers after the training.

On the basis of above fact and findings, one of the most notable difference has been seen that after training the fish farmers with high level of adoption has been increased by 6.66 per cent over before the training. Simultaneously, the medium level of adopter had been increased by 2.51 per cent over before the training. On the other hand, the fish farmers with low level of adoption had been decreased by 9.17 per cent over before the training and they upgrated into high level of adoption in respect of "harvesting and storage".

The average mean score values of adoption showed by before and after the training were 2.00 and 2.16. This clearly shows that as regard the adoption level there was a significant difference between before and after the training and it was the positive impact of training on adoption of fish production technology.

Overall fish production technology:

The distribution of fish farmers as per their status of adoption level in respect of "overall fish production technology" after and before perceived training is presented in Table

Table: Status of adoption level of overall fish production technology:

Adoption level of "Overall fish production technology"	Before training	After training	% change over before
Low	42 (35.00)	30 (25.00)	-10.00
Medium	44 (36.67)	46 (38.33)	+1.66
High	34 (28.33)	44 (36.67)	+8.34
Mean Score	1.93	2.12	9.84

The data clearly denoted that before the training there were only 34 or (28.33% of total) fish farmers with high level of adoption, which increased and become 44 or (36.67% of total) fish farmers after the training. Again before the training there were only 44 or (36.67% of total) fish farmers with medium level of adoption, which increased and become 46 or (38.33% of total) fish farmers after the training. On the other hand, in case of low adopter there were only 42 or (35.00% of total) fish farmers with low level of adoption at the before the training, which decreased and become 30 or (25.00% of total) fish farmers after the training.

On the basis of above fact and findings, one of the most notable difference has been seen that after training the fish farmers with high level of adoption has been increased by 8.34 per cent over before the training. Simultaneously, the medium level of adopter had been increased by 1.66 per cent over before the training. On the other hand, the fish farmers with low level of adoption had been decreased by 10.00 per cent over before the training and they upgrated into high level of adoption in respect of "overall fish production technology".

The average mean score values of adoption showed by before and after the training were 1.93 and 2.12. This clearly shows that as regard the adoption level there was a significant difference between before and after the training and it was the positive impact of training on adoption of fish production technology.

On the basis of fact and findings of results, one of the most notable differences has been seen that after training the number of fish farmers increase under high adoption level. On the other hand, the number of farmers' under medium adoption level and low adoption level has been decreased due to effect of training and FLD's by K.V.K. Hence, it may be concluded that the data provides enough evidence for sizable impact of training on production technology among the fish farmers. This clearly shows that as regard the adoption level of fish production technology there was a significant difference between before and after the FLD's situation.

The above fact reflected that there is positive impact of extension activities through KVK on adoption of fish production technology. The impact is more positive due to imparting learning through "work experience" to those who are engaged in farming is the main purpose of the KVKs. On the basis of above points it may be say that KVK is an educational institution, offers a very real opportunity by organizing training to work closely with trainees in developing a more skilled and educated work force. KVK has to develop and adopt both on campus and off campus training. The farmers are the users of farm technologies. They adopt it in their fish farming system at micro and medium level after the programme which realized impact of KVK.

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