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Influencing the Knowledge Level of the Fish Farmers in Southern Karnataka

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Abstract: For the purpose of present investigation, a teacher made knowledge test was constructed to measure the knowledge of the respondents about composite fish culture practices. The analysis clearly revealed that, the education and socio-economic status were favorable psychological and communication variables played and important roles. However, amongst these psychological, communication and socio-economic variables, innovative proneness, scientific orientation and size of holdings were obtained as the determining factors in the multiple regression analysis. Further, path analysis revealed that scientific orientation through innovative proneness was giving direct effect on the knowledge level of farmers.

Introduction

Karnataka was one of the pioneering states to organize fisheries department by establishing its Department of Fisheries in the year 1957. The first FFDA of the country was established in Mysore district of Karnataka during 1973-74. Presently, there are 13 FFDAs operative in the state. At this stage it was important to assess the knowledge level of the fish farmers, as giving knowledge was the primary responsibility of the extension in fisheries. In this study, knowledge was defined as the body of information understood and retained by the respondents about the composite fish culture and management for increasing the yield of fish. Similar studies were made by different authors in other sectors of agriculture. In the field of dairying this phenomenon was reported by, Awasthi, Singh. and Sharma (2000), Chandrakala, and Eswarappa, (2000) and Kaidan K.S. and Ram Kumar(1999). In crops such findings were reported by Deshmukh, Shinde , Bhople (1997), Nagaraj, , (1999), Ravishankar and Katteppa (1999),Sudarshan Reddy, and Bhagawath Swaroop ,(1995) and Sakharkar (1995). Sahukar (1991), and Subashini, and Tyagrajan, (2000),Yogananda, (1992). In fisheries sector, some researchers have explored this aspect and got similar results. These researchers were, Ingle , Rajurkar and Rahad , (1991),Meeran, and Jayaseelan (1999),Rajkumar, (1998),Talukdar, (2000) and Vijay Kumar (2000). However, very few studies in fisheries are reported with path analysis. Against this backdrop, this study was conducted with the objectives of to know the knowledge level of the fish farmers on specific recommendations of composite fish culture practices, the relationship between the independent variables of fish farmers and their knowledge level on composite fish culture practices, and to establish the direct, indirect and substantial indirect effects of independent variables on knowledge level of fish farmers on composite fish culture practices.

Material and Methods

The present study was conducted during the year 2000-01 in the district of Mysore, Shimoga and Tumkur of Southern Karnataka state. These districts were purposely, selected so that the average situation for Southern Karnataka could be arrived as Shimoga represented irrigated area, Tumkur depicted a rain shadow area and Mysore in representing both.

From each of the above districts, only those talukas were taken where number of fish farmers were maximum. Thus, 5 talukas from Mysore and Tumkur districts were taken and 7 talukas from Shimoga district were selected. The technique of proportionate sampling was adopted. On the whole there were 130 respondents who were finally selected for the data collection. This spread over 112 villages and 17 talukas of these. These districts were covering about 17 percent of the total population in the area. The dependent variable was kept as knowledge which was seen against other independent variables like personal variables, socio-economic variables, physiological variables, communication variables and situational variables.

For the purpose of present investigation, a teacher made knowledge test was constructed to measure the knowledge of the respondents about composite fish culture practices. The knowledge score was further related with the scores obtained for other independent variables. An interview schedule was developed consisting of schedule items and profile characteristics for measuring the variables included in the study. Multivariate analysis was also done to draw meaningful conclusions.

Results and Discussion

The results presented in table 1 revealed that the majority had high and medium level of knowledge and very few had low knowledge. Further investigation (Table 2) indicated that farmers were quite knowledgeable about the suitability of soil, liming, manuring, control of aquatic weeds, controlling predators, recommended size of fish while stroking, use of supplementary feeds, size of fish while harvesting etc. They were moderately knowledgeable on the minimum depth of water in fish pond, use of grass carp and water quality management. However, they did not know fastest growing Indian or exotic crap, recommended stocking rate, indicators of oxygen depletion, fish disease and feeding habits of cultivable carps, which were important to increase the productivity per unit area. Hardly anybody knew about supplementary feeds and recommended stocking density of different species. So the next programmes should highlight on the weak points. Correlation (Table 3) between independent variables and knowledge level of fish framers on composite fish culture depicted that, psychological variable (risk orientation, scientific orientation, economic motivation and innovative proneness) and the communication variables (extension participation, extension agency contract, mass media participation and cosmopoliteness) seemed to have relationship with the knowledge level of the fish framers beside his education, socio-economic status, yield and economic performance. Multiple regressions (Table 4) of knowledge level of fish framers with

Table 1. Overall knowledge level of fish farmers regarding recommended composite fish culture practices

Sl. No.	Knowledge categories	Fish farmers		Mean knowledge score
1.	Low (upto 43.57)	35	26.92	31.27
2.	Medium (43.58 to 59.49)	49	37.69	50.12
3.	High (59.50 and above)	46	35.49	68.45
	Mean = 51.53		SD = 15.92	

Table 2. Knowledge level of fish farmers about specific recommended composite fish culture practices

Sl. No.	Knowledge items	Response Categories	
		No.	%
1.	What kind of soil is good for fish culture?	108	83.08
2.	What is the minimum depth of water required for fish culture?	81	62.31
3.	What are the nutrients required for production of natural fish food organisms in fish pond?	21	16.15
4.	Is it necessary to use lime in fish culture?	106	81.54
5.	How do you correct acidic condition of fish culture pond?	25	19.23
6.	Do you know the recommended dosage of lime used in general?	7	5.38
7.	Should we have to manure the fish culture ponds?	126	96.92
8.	What are the advantages of manuring fish culture pond?	72	55.38
9.	Name some common organic manures used in fish culture.	116	89.23
10.	Do you know the rate of application of cow dung (including initial dose and subsequent monthly doses)?	30	23.08
11.	How many days before stocking of fish seed manure should be applied?	66	50.77
12.	Is it necessary to use inorganic fertilizers in addition to organic manures in fish culture?	56	43.08
13.	What are the advantages of using inorganic fertilizers?	19	14.62
14.	Is it necessary to eradicate excess aquatic weeds?	107	82.31
15.	Name some aquatic weeds.	97	74.62
16.	Do you feel predators and weed fishes are desirable in fish culture pond?	115	88.46
17.	Mention any 2 predators and 2 weed fishes known to you.	100	76.92
18.	What is the manual method of eradication/control of predators and weed fishes?	101	77.69
19.	Name any piscicides used in fish culture	16	12.31
20.	Do you know the recommended dosage of mohua oil cake?	32	24.62
21.	Name three Indian major carps	100	76.92
22.	Name three exotic carps	52	40.00
23.	Which are the fastest growing major carp and exotic carp?	58	44.62
24.	Say Yes/No. Catla & Silver carp are surface feeders.Rohu is a column feeder Mrigal feeds on bottom vegetation Common carp is omnivorous	25	19.23
25.	Which fish grows well in weed infested tanks?	81	62.31
26.	What is recommended rate of stocking for irrigation tanks when composite fish culture is practiced?	55	42.31
27.	Name three exotic carps	52	40.00
28.	Which are the fastest growing major carp and exotic carp?	58	44.62
29.	Do you know the recommended species combination for composite fish culture? 3 spp - 400 C: 300 R: 300 M (or 300 CC) 4 spp - 300 C: 250 R: 150 M: 300 CC 6 spp - 150 C: 250 R: 100 M: 200 SC: 100 GC: 200 CC	3	2.31
30.	What is the ideal size of fish seed for stocking?	106	81.54
31.	Whether supplementary feeding is necessary in CFC?	123	94.62
32.	Name the commonly used supplementary feeds.	119	91.54
33.	What is the best method of feeding?	88	67.69
34.	Generally supplementary feeding is provided at	1	0.77
35.	After stocking once in how many days manuring should be done?	73	56.15
36.	Do you know the recommended manuring schedule to be practiced after stocking?	35	26.92
37.	Do you know the indicators of oxygen depletion in fish pond?	39	30.00
38.	Is it necessary to stop manuring and feeding when pond water turns greenish?	81	62.31
39.	Name any fish disease that occurs in fish culture ponds.	10	7.69
40.	How do you control disease out breaks?	26	20.00
41.	Is it necessary to check the growth after stocking?	92	70.77
42.	In general, after how many months of stocking the fish crop should be harvested?	115	88.45
43.	What should be the optimum size of harvesting?	112	86.15

Table 3. Correlation between independent variables of fish farmers and their knowledge level on composite fish culture practices

Variable code	Independent variables	Correlation coefficient (r)
A. Personal variables		
X_1	Age	-0.1226NS
X_2	Education	0.3150**
X_3	Family type	-0.0200NS
X_4	Family size	0.0170 NS
X_5	Fish farming experience	0.0170NS
X_6	Occupation status	0.1395 NS
B.Socio economic variables		
X_7	Caste	0.601NS
X_8	Socio economic status	0.3295**
X_9	Social participation	0.2307*
X_{10}	Credit orientation	0.2027*
X_{11}	Possession of fishing equipments	0.2831**
X_{12}	Size of land holding	-0.0411NS
X_{13}	Annual income	0.1039NS
X_{14}	Yield	0.2983**
X_{15}	Economic performance	0.2562**
C. Psychological variables		
X_{16}	Risk orientation	0.51221**
X_{17}	Scientific orientation	0.5902**
X_{18}	Economic motivation	0.4098**
X_{19}	Innovative proneness	0.6460**
D. Communication variables		
X_{20}	Extension participation	0.4352**
X_{21}	Extension agency contract	0.4202**
X_{22}	Mass media participation	0.3771**
X_{23}	Cosmopoliteness	0.4312**
E. Situational variables		
X_{24}	Size of water body	0.0005NS
X_{25}	Distance of water body to the residence	-0.1278NS
X_{26}	Duration of water availability	0.1427NS
X_{27}	Source of water	0.0801 NS
X_{28}	Extent of weed infestation	0.1983*

NS = Non significant

* = Significant at 0.05 level of probability

**= Significant at 0.01 level of probability

Table 4. Multiple regression of knowledge level of farmers with independent Variables

Variable code	Independent variables	Regression coefficient (b)	SE of reg Coefficient (b)	't' value
X_1	Age	-0.1438	0.1614	0.8766
X_2	Education	0.9446	0.7888	1.1975
X_3	Family type	1.3206	3.0004	0.4401
X_4	Family size	-2.0714	2.4793	0.8355
X_5	Fish farming experience	0.3744	0.2354	1.5901
X_6	Occupation status	2.6232	2.7915	0.9397
X_7	Caste	0.4262	1.5856	0.2688
X_8	Socio economic status	0.2481	0.4150	0.5979
X_9	Social participation	-0.0564	0.4108	0.1373
X_{10}	Credit orientation	0.3297	0.8795	0.5044
X_{11}	Possession of fishing equipments	0.1885	0.5211	0.3617
X_{12}	Size of land holding	-1.0422	0.4530	2.305*
X_{13}	Annual income	-0.0543	0.0533	1.0183
X_{14}	Yield	0.0042	0.0209	0.7905
X_{15}	Economic performance	-0.0169	0.7397	0.8067
X_{16}	Risk orientation	0.2978	0.3534	0.8427
X_{17}	Scientific orientation	1.7076	0.6457	0.8703
X_{18}	Economic motivation	-0.3976	0.4549	0.8742
X_{19}	Innovative proneness	1.3746	0.0053	3.4171
X_{20}	Extension participation	0.7654	0.6457	0.8703
X_{21}	Extension agency contract	1.1247	0.6082	1.7463
X_{22}	Mass media participation	0.5309	0.7370	0.8728
X_{23}	Cosmopoliteness	-0.5552	0.8836	0.6283
X_{24}	Size of water body	-0.2268	0.4797	0.4729
X_{25}	Distance of water body to the residence	-0.2721	1.7462	0.3679
X_{26}	Duration of water availability	0.0221	1.5453	0.0143
X_{27}	Source of water	-1.3444	1.7462	0.7699
X_{28}	Extent of weed infestation	0.1075	1.1127	0.0966
R2= 0.6235		F=5.97**		'a' value =7.8013

*=Significant at 0.05 level of probability D.F: 28,101

**= Significant at 0.01 level of probability

independent variables further depicted that innovative proneness; scientific orientation and size of holding are the determining factor to predict the knowledge level of the fish framers. The direct and indirect effects of independent variables on knowledge of fish farmers about composite fish culture practices (Table 5) by incorporating only the significantly correlated factors in the path analysis revealed that innovative proneness, scientific orientation, extension agency contact,

Table 5. Path coefficients showing direct, indirect and substantial indirect effects of independent variables on knowledge level of fish farmers on composite fish culture practices

Variable code	Variables	Correlation coefficient	Direct effects	Rank	Total indirect effects	Rank	Variables through which substantial indirect effects are channeled through		
							I	II	III
			A. Personal variables						
X_2	Education	0.3150**	0.1161	5	0.1989	14	0.1264 X_{19}	0.0699 X_{22}	0.0618 X_{17}
			B. Socio-economic variables						
X_8	Socio-economic status	0.3295**	0.1049	6	0.2246	13	0.1453 X_{19}	0.0883 X_{17}	0.0840 X_{22}
X_9	Social participation	0.2307**	-0.0097	13	0.2404	11	0.1015 X_{19}	0.0537 X_{21}	0.0507 X_{22}
X_{10}	Credit orientation	0.2027**	0.0423	11	0.1604	16	0.0764 X_{19}	0.0681 X_{17}	0.0427 X_{21}
X_{11}	Possession of fishing equipments	0.2831**	0.0450	10	0.2381	12	0.0775 X_{19}	0.0655 X_{21}	0.0612 X_{17}
X_{14}	Yield	0.2983**	0.0482	9	0.2501	8	0.0965 X_{19}	0.0914 X_{21}	0.0582 X_{17}
X_{15}	Economic performance	0.2562**	-0.0604	14	0.3166	6	0.1160 X_{19}	0.0697 X_{21}	0.0485 X_{17}
			C. Psychological variables						
X_{16}	Risk orientation	0.5121**	0.899	7	0.4222	3	0.2390 X_{19}	0.1238 X_{17}	0.0582 X_{21}
X_{17}	Scientific orientation	0.5902**	0.2217	2	0.3685	4	0.2397 X_{19}	0.0502 X_{16}	0.0499 X_{21}
X_{18}	Economic motivation	0.4098**	-0.0904	16	0.5002	1	0.2272 X_{19}	0.1310 X_{17}	0.0629 X_{16}
X_{19}	Innovative proneness	0.6460**	0.3613	1	0.2847	7	0.1471 X_{17}	0.0634 X_{21}	0.0594 X_{16}
			D. Communication variables						
X_{21}	Extension participation	0.4352**	0.0887	7	0.3465	5	0.1574 X_{19}	0.1094 X_{21}	0.0772 X_{17}
X_{21}	Extension agency contact	0.4202**	0.1794	3	0.2408	10	0.1276 X_{19}	0.0617 X_{17}	0.0540 X_{20}
X_{22}	Mass media participation	0.3771**	0.1240	4	0.2470	9	0.1637 X_{19}	0.849 X_{17}	0.0710 X_8
X_{23}	Cosmopoliteness	0.4312**	-0.0611	15	0.4923	2	0.1943 X_{19}	0.1137 X_{17}	0.0597 X_{22}
			E. Situational variables						
X_{28}	Extent of weed infestation	0.1983**	0.0098			15	0.0536 X_{19}	0.0529 X_{17}	0.0264 X_{21}

Residual value = 0.3779

mass media participation and education occupied the first five ranks in that order. It was further observed that the largest substantial positive indirect effect on knowledge of fish farmers was exerted by 'scientific Orientation' of the fish farmer through their innovative proneness. The above analysis clearly revealed that, the education and socio-economic status were favorable psychological and communication variables played important roles. However amongst these psychological, communication and socio-economic variables, innovative proneness, scientific orientation and size of holdings were obtained as the determining factor in the multiple regression analysis. Further, path analysis revealed that scientific orientation through innovative proneness was giving direct effect on the knowledge level of farmers. Therefore, extension programmes should concentrate on generating reasoning ability to improve scientific orientation and curiosity to improve the innovation proneness through its programmes. This can be done by organizing knowledge tests. Through illustrations of success stories the innovativeness of the farmers can be increased.

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