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Knowledge level of the paddy farmers on integrated management practices

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ABSTRACT
The research was conducted in three villages of Sindhudurga district of Maharashtra. A sample of 120 respondents growing paddy crop was selected from the selected three villages by following the proportionate random sampling technique. Knowledge level of the respondents on the integrated management practices was measured with the help of specially constructed schedule, which was prepared by discussing with experts. The practices such as selection of suitable variety, purpose of seed treatment, summer ploughing, planting, cropping system ,water management, nutrient management, weed management, plant protection were taken into consideration for studying the knowledge level.

Key words : Knowledge level, Paddy farmers, Integrated management practices.

INTRODUCTION

Rice is the staple food of 65 per cent of the total population in India. It constitutes about 52 per cent of the total foodgrain production and 55 per cent of total cereal production. The area under rice in India is 44.80 million hectares and production 89.30 tonnes in 2000-01. But the Agriculture out put however depends up on monsoon as nearly 60.00 per cent of area is rainfed. Unfavourable weather condition in the year 2002-03 adversely affected the agriculture production. According to fourth All-India advance estimates of agriculture production for 2002-03, the food grain production is expected to be 182.57 million tonnes, which is less than the production of 212.02 million tonnes in 2001-02 by 29.45 million tonnes (13.9 %). The estimated production of rice at 75.72 million tonnes is lower by 17.36 million tonnes (18.7 %) as compared to 2001-02 production level. India needs food grain security.

Since rice is the important crop in India, the expansion of the area under rice is not possible and the demand has to meet out only by increasing productivity.The concept of integration was, therefore, introduced during 1980s in the formulation of technological recommendations for rice crop management, with the development of Integrated Pest Management (IPM), Integrated Weed Management (IWM) and Integrated Nutrient Management (INM) programmes (Shastry *et al.*, 1996). These approaches attempted to broaden the understanding of the range of factors affecting pest or weed growth and development or fertilizer response of rice and to involve these factors in the farmer's decision-making process. While these programmes created improvements and benefits, the technology focus was still relatively narrow, generally involving only specific areas of crop management, pest management, weed management or nutrient provision. However, the concept of integrated management was beginning to develop and influence attitudes towards crop management (Way and Heong, 1994).

In order to unearth the status of the farmers with regard to integrated management practices, a study was undertaken with the following specific objectives.

1. To study the characteristics of paddy farmers.
2. To assess the knowledge level of paddy farmers about integrated management practices in paddy cultivation.
3. To study the relationship between characteristics of paddy farmers and their knowledge level.

MATERIALS AND METHODS

Paddy growing farmers of the selected three villages of Sindhudurga district of Maharashtra were the respondents of the present study. A sample of 120 farmers was considered for the study. There were totally 5107 paddy growers in the three selected villages. From this, a sample of 120 farmers was selected by using proportionate random sampling technique. The number of respondents for each village was fixed based on the probability proportionate random sampling method.

FINDINGS

Age:

Majority of the respondents were belonged to middle aged (52.50 %) followed by old (31.66 %) and young aged (15.84 %) category.

Education:

Primary level of education was found with more than one-fourth (25.83 %) of the respondents followed by functionally literate (24.17 %) and illiterate (19.17 %).

Occupation **:**

Majority (23.34 %) of the respondents had farming + service as their profession. Equal proportion (21.66 %) of the respondents were found farming + business and Farming + wage earners as their occupation.

Farming experience :

Majority of the respondents (40.00 %) possessed more than ten years of farming experience followed by 34.17 per cent with less than five years and 25.83 per cent of the respondents with medium level of farming experience.

Farm size :

Majority of the farmers (37.50 %) were found to operate

* Author for corrospondence.

small sized farms, closely followed by 34.17 per cent and 19.17 per cent of the respondents who possessed medium and marginal sized farms respectively.

Area under paddy:

Majority of the respondents (56.66 %) were found to allocate more than 65.00 percentage of their total farm holding for paddy cultivation. This was followed by medium (33.34 %) and small farm size under paddy (10.00 %).

Annual income:

Majority of the respondents (42.50 %) had low level of annual income through paddy cultivation followed by medium (35.00 %) and high (22.50 %) levels.

Social participation:

Most of the respondents (54.16 %) had medium level of social participation followed by low and high levels of social participation with 30.84 per cent and 15.00 per cent respectively.

Extension agency contact:

Majority were found to have medium level contact with extension agency (48.34 %) followed by low (27.50 %) and high (24.16 %) levels.

Mass media exposure:

Majority of the respondents (61.66 %) had medium level of exposure to mass media sources, followed by equal proportion (19.17 %) of the respondents with low and high level of mass media exposure.

Scientific orientation:

Majority of the respondents (40.84 %) possessed medium level of scientific orientation followed by 38.33 and 20.83 per cent in low and high levels respectively.

Economic motivation:

Exactly 40.00 per cent of the respondents had low level of economic motivation, whereas, 31.67 and 28.33 per cent of the respondents possessed medium and high levels of economic motivation respectively.

Innovativeness:

Majority of the respondents (40.00 %) had low level of innovativeness followed by medium (35.83 %) and high (24.17 %) levels.

Decision-making pattern:

Nearly half of the respondents (45.85 %) took independent decision, followed by more than one-third of the respondents (35.00 %) took joint decision by consulting with family members. Meagre percentage found in the other categories of decision-making.

Participation in training:

More than half of the respondents (52.00 %) did not attend any training programme, followed by more than one-third (35.00 %) and nearly one-tenth (8.34 %) had attended one and two training programme for the past three years respectively.

Knowledge level of the respondents

Overall knowledge

Majority of the respondents (54.16 %) had medium level of overall knowledge, followed by high (25.84 %) and low (20.00 %) levels of overall knowledge on the integrated management practices of paddy.

This finding corroborates with the findings of Ponkathaperumal (1994), who also reported that majority of the respondents had medium level of knowledge.

Practice-wise knowledge

Majority of the respondents had high knowledge about the practices *viz.,* selection of suitable variety for study area, summer ploughing, purpose of seed treatment, mechanical weed control and recommended spacing.

Moderate level of knowledge was found with respect to practices such as soil testing, crucial stages of proper drainage, crop rotation, recommended fertilizer dose, intercropping, crucial stages for maintaining water level and split application of N and K. Respondents possessed low level of knowledge regarding fungicide for blast control, insecticide for BPH control, fungicide for sheath blight control, herbicide for weed control, insecticide for stem borer and bio-control for stem borer.

Relationship of characteristics of the respondents with knowledge

The correlation analysis revealed that there existed positive and significant relationship between the independent variables *viz.,* educational status (X_2), farming experience(X_4),farm size(X_5), area under paddy (X_6), annual income (X_7),social participation (X_8), extension agency

Table1 : Association of characteristics of respondents with their knowledge level (n = 120)

Variable number	Variables	'r' value
X1	Age	-0.036NS
X_2	Educational status	0.322**
X_3	Occupational status	-0.036NS
X_4	Farming experience	0.283**
X_5	Farm size	0.417**
X_6	Area under paddy	0.313**
X_7	Annual income	0.583**
X_8	Social participation	0.395**
X_9	Extension agency contact	0.194*
X_{10}	Mass media exposure	0.364**
X_{11}	Scientific orientation	0.329**
X_{12}	Economic motivation	0.133NS
X_{13}	Innovativeness	0.280**
X_{14}	Decision-making pattern	0.430**
X_{15}	Participation in training	0.425**

** Significant at one per cent level * Significant at five per cent level NS Non-significant

contact (X_9), mass media exposure(X_{10}), scientific orientation (X_{12}), innovativeness (X_{13}), decision-making pattern (X_{14}), participation in training (X_{15}) and dependent variable knowledge.

The regression analysis revealed that the selected fifteen independent variables jointly produced 50.80 per cent of variation in the knowledge level of the respondents. Further it showed that the variables *viz.,* annual income (X_3) and decision-making pattern (X_{14}) had positive and significant influence on knowledge.

The direct, indirect and substantial effects studied through path analysis showed that the crucial variables for knowledge were farming experience (X_4), annual income (X_7) extension agency contact (X_9) and decision-making pattern. (X_{14}).

Farming experience showed positive and significant relationship with knowledge. Greater the experience greater will be the confidence on their own ways of dealing with farm activities. Thus, it makes the people to have a better knowledge on the various farm related activities. This might be the outcome of this association.

Similarly farm size and area under paddy were found to have positive and significant association with knowledge level of the respondents. The farmers with larger farm size would have been interested to acquire more information about the various management aspects. He/she might have been preferred to adopt different management practices to get more production in the smaller area in order to earn more income. Thus the need for gaining knowledge on these aspects among the respondents would automatically have been increased. The result is in accordance with the findings of Jayashree (2004).

In general, farmers having more income won't hesitate to spend money in knowledge gathering activities like subscription of farm magazine, books, newspapers etc., Similarly their interest to acquire information about the new technologies will also be high, which in turn may motivate them to gain knowledge regarding the same. Thus the positive and significant contribution of this variable towards knowledge can be justified.

Social participation of individuals pave the way for sharing their views and experiences with others members of organization, which lead to a high level of knowledge. At the same time there is more chance for clarifying their doubts and getting opinion from different people, which further helps to enrich their knowledge. This is how the significant influence of this variable on knowledge can be explained.

Extension agency contact was found to have positive and significant association with knowledge level of the respondents. This finding explained that more contact with extension agency would enhance the knowledge level of the farmers. Extension agencies help the farmers to become aware of the latest technologies. They also provide opportunities to the farmers for acquiring more information about recommended cultivation practices and new technologies by means of organizing training, conducting demonstrations, distributing the relevant printed materials *etc.,* for the farmers, which in turn would lead to enrich their knowledge. This is how the positive and significant relationship between contact with extension agency and knowledge could have exhibited. This finding derives support from the finding of Rajakumar (1981).

It is generally believed that acquiring agricultural information by means of listening to radio, reading or listening to reading newspaper, magazines, bulletins, visiting exhibition and attending field days would increase the level of knowledge of the respondents. Thus the positive and significant contribution of the variable mass media exposure towards knowledge level could be explained. Similar finding was also reported by Selvamalathi (2003).

Scientific orientation and innovativeness would naturally lead the individual to know more and more regarding recent advances in agriculture and improved methods of cultivation practices. Thus the positive and significant relationship of the variables scientific orientation and innovativeness with knowledge can be explained.

The finding derives support from Selvarani (2000) for the variable scientific orientation and Ahiah (1993) for the variable innovativeness.

When an individual has to take any decision about his problem, he has to analyze it properly so as to reach on a firm decision. This process gives the opportunity to individual to think and solve the problem in favour of getting better out come. No individual will take any decision against his favour though the results we can not forecast always. This might have influenced the variable "decision-making pattern" towards positive and significant relationship with knowledge level.

The results showed that there existed a positive and significant contribution of participation in training towards knowledge level. This indicated that increase in participation in training tend to increase the knowledge level of farmers. Due to more participation in various training programmes, the individual might be able to acquire new technologies related to agriculture and this may lead to increase the knowledge level of farmers.

Table 2 : Distribution of respondents based on their over all knowledge level

(n = 120)

S. No.	Category	Number	Per cent
1.	Low	24	20.00
2.	Medium	65	54.16
3.	High	31	25.84
	Total	120	100.00

Table 3 : Direct, Indirect and substantial effects of independent variables on knowledge level

Variable number	*Variables*	*Direct*	*Indirect*	*Total*	*Substantial effects*		
					I	II	III
X_1	Age	-0.0766	0.0404	-0.0362	0.0125 (X_2)	-0.0109 (X_7)	0.0087 (X_6)
X_2	Educational status	0.1125	0.2096	0.3221	0.0721(X_7)	0.0566 (X_{14})	0.0243 (X_4)
X_3	Occupational status	-0.0565	0.0206	-0.0359	0.0315 (X_{14})	0.0227 (X_4)	-0.0169 (X_{11})
X_4	Farming experience	0.1448	0.1387	0.2835	0.0695 (X_7)	0.0469 (X_{14})	0.0189 (X_2)
X_5	Farm size	-0.0111	0.4277	0.4166	0.1624 (X_7)	0.0584 (X_{14})	0.0367 (X_2)
X_6	Area under paddy	0.0983	0.2151	0.3134	0.0843 (X_7)	0.0315 (X_{14})	0.0248 (X_9)
X_7	Annual income	0.3219	0.2608	0.5827	0.0652(X_{14})	0.0339 (X_{14})	0.0315 (X_{10})
X_8	Social participation	0.0892	0.3062	0.3954	0.1224 (X_7)	0.0626 (X_8)	0.0278 (X_{11})
X_9	Extension agency contact	0.1188	0.075	0.1938	0.0438 (X_7)	0.0205 (X_{14})	-0.0115 (X_{14})
X_{10}	Mass media exposure	0.0887	0.2754	0.3641	0.1142 (X_7)	0.0513 (X_6)	0.0432 (X_8)
X_{11}	Scientific orientation	0.0832	0.2462	0.3294	0.0992 (X_7)	0.0449 (X_{14})	0.0298 (X_8)
X_{12}	Economic motivation	0.011	0.1216	0.1326	0.0175 (X_{14})	0.0154 (X_{10})	0.0145 (X_4)
X_{13}	Innovativeness	0.0038	0.2761	0.2799	0.1146 (X_7)	0.0515 (X_{14})	0.0317 (X_8)
X_{14}	Decision-making pattern	0.2053	0.2247	0.43	0.1022 (X_7)	0.0272 (X_8)	0.0182 (X_{11})
X_{15}	Participation in training	0.009	0.4159	0.4249	0.0844 (X_{14})	0.0358 (X_8)	0.0253 (X_{11})

The findings of the study indicated that the respondents had medium level of knowledge about various integrated management practices. Therefore, the farmers should be made aware of the availability and benefits of integrated management practices through TV, radio, newspapers and extension literature. Training programmes may be organized for farmers regarding scientific use of fertilizer, plant protection through bio-control measures and water management aspects etc.

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