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Regression analysis between profile and knowledge level of farmers about climate and weather in relation to crop management

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Abstract

The present study was conducted in Latur district from Marathwada region of Maharashtra state, with an objective to study the farmer's knowledge of climate change in relation to crop management. Four villages from each tahsil were selected randomly. Total twelve villages were selected for research study. Ten respondents from each village were selected randomly to comprise a sample of 120 respondents. One short case study method of ex-post-facto medium research design was adopted for this study. The important study were that, co-efficient of determination (R^2) of the independent variables was 0.450 it means that 45.03 per cent of total variation in knowledge level of farmers about climate and weather in relation to crop management was explained by the 10 selected independent variables. The remaining 54.97 per cent of knowledge was remain unexplained. amongst independent variable of farmers, three variable viz., age, education and occupation was positively and highly significant with knowledge and seven variable viz., land holding, family type, farming experience, annual income, extension contact, social participation an economic motivation were found to be positively non significant. The majority of the farmers suggested that information needs of the farmers about climate and weather in relation to crop management was most needed for crop protection (83.3%) and crop production(78.3%), crop planning information related needs (54.2%) of farmers needed somewhat, climate and weather parameters (54.2%) viewed that they somewhat needed, and post harvest management only (19%) perceived as the most needed information. And also Most needed training areas of crop management in relation to climate and weather were crop protection (80.8%), crop production (73.3%), crop planning training needs for majority (60.0%) of the respondents were somewhat needed, training needs general climate and weather parameters for majority of the respondents were somewhat needed, In case post harvest management only 18 per cent of respondents prefer this as the most needed for training.

Keywords: regression analysis, knowledge, farmer, climate, weather, crop management

Introduction

The importance of agriculture to the country is best summed up by this statement: "If agriculture survives, India survives". Climate and weather are virtually important for agriculture, and is extremely vulnerable to its change. Climate including weather are some of the biggest risk factors impacting on farming performance and management of agriculture.

Agricultural activities are very sensitive to climate and weather; these are some of the biggest risk factors in growing conditions. Indeed, agriculture has been described as the most weather-dependent of human activities (Oram, 1989), and most production decisions directly or indirectly involve consideration of this factor. Climate change projections for India for the 2050s suggest an increase in temperature of 2–4°C for the region south of 25°N and by more than 4°C for the northern region. While there is likely to be little change in the average amount of monsoon rainfall, climatologists expect the number of rainfall days to decrease over a major part of the country (NATCOM, 2004). Rao *et al.* (2011) reported that the changes in production and productivity during El Niño years compared to remaining years decreased by 18.0 and 7.0 per cent respectively in Telangana region of Andhra Pradesh. Weather and climate are considered as important factors impacting the farming community leading to decline in agricultural production and in turn affecting their livelihood, particularly in arid and semi-arid zones.

Specific Objectives

1. Regression Analysis between profile and knowledge level of farmers about climate and weather in relation to crop management.
2. To seek suggestions and recommend approaches to improve crop related climate and weather information among farmers.

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Method of sampling

1. Selection of district

The study was conducted in Marathwada region of Maharashtra state. From this region Latur district was randomly selected for research purpose.

2. Selection of tahsils

There were ten tahsilas in Latur district viz., Latur, Renapur, Ausa, Nilanga, Shirur (Anantpal), Chakur, Ahmedpur, Jalkot, Udgir, and Deoni Out of which Latur, Ausa, and Renapur

List of selected talukas and villages from Latur district

District	Tahsils	Villages	Respondents
Latur	Latur	Chincholirao	10
		Bamani	10
		Babhalgaon	10
		Gangapur	10
	Ausa	Karajgaon	10
		Fattepur	10
		Yakatpur	10
		Sarola	10
	Renapur	Rajewadi	10
		Gavhan	10
		Kamkheda	10
		Pangaon	10
Total	3	12	120

5. Research Design

Ex-post facto design of social research was used in the present study.

Results & Discussion

1. Regression Analysis between profile and knowledge level of farmers about climate and weather in relation to crop management

Multiple regression analysis was carried out for determining the contribution of independent variables with knowledge level of farmers about climate and weather in relation to crop management.

Table 1: Multiple regression analysis between profile and knowledge level of farmers about climate and weather in relation to crop management.

Sr. No.	Variables	Regression Coefficients (B)	Standard Error (SE)	't' value
1.	Age	8.771	2.468	3.553**
2.	Education	0.109	0.030	3.544**
3.	Land holding	0.259	0.211	1.227 ^{NS}
4.	Family type	0.169	0.200	0.847 ^{NS}
5.	Farming experience	0.162	0.719	0.225 ^{NS}
6.	Occupation	0.093	0.032	2.865**
7.	Annual income	0.421	0.659	0.638 ^{NS}
8.	Extension contact	0.353	0.260	1.359 ^{NS}
9.	Social participation	0.152	0.116	1.306 ^{NS}
10.	Economic motivation	0.065	0.173	0.377 ^{NS}

R² = 0.450

F = 8.9313

* Significant at 0.05 level of probability.

It could be observed from Table 1 that co-efficient of determination (R²) of the independent variables was 0.450 It means that 45.03 per cent of total variation in knowledge level of farmers about climate and weather in relation to crop management was explained by the 10 selected independent

tahsils were selected randomly.

3. Selection of villages

For the purpose of the study, four villages from each selected tahsil were randomly selected. Thus, total 12 villages were selected for the study.

4. Selection of respondents

From each village 10 respondents were selected randomly to comprise total 120 respondents for the study.

variables. The remaining 54.97 per cent of knowledge was remain unexplained. It was also observed that, amongst independent variable of farmers, three variable viz., age, education and occupation was positively and highly significant with knowledge and seven variable viz., land holding, family type, farming experience, annual income, extension contact, social participation an economic motivation were found to be positively non significant.

2. To seek suggestions and recommend approaches to improve crop related climate and weather information among farmers.

Table 2.1: Suggestions needs of the farmers about climate and weather relation to crop management. (N=120)

Sl. No.	Information need areas	Frequency and per cent of Respondents		
		Not needed	Somewhat needed	Most needed
1.	General climate and weather parameters	47 (39.2)	65 (54.2)	08 (6.7)
2.	Crop planning	32 (26.7)	65 (54.2)	23 (19.2)
3.	Crop production	0 (0)	26 (21.7)	94 (78.3)
4.	Crop protection	0 (0)	20 (16.7)	100 (83.3)
5.	Post harvest management	17 (14.2)	84 (70.0)	19 (15.8)

The results obtained from the table 2.1. indicate that information needs of the farmers about climate and weather in relation to crop management is most needed for crop protection (83.3%) and crop production (78.3%) i.e., which may be due to importance of these subject matter for crop management. Whereas for crop planning information related needs 54.2 per cent of farmers needed somewhat. Similarly for general climate and weather parameters 54.2 per cent viewed that they somewhat needed the information. But in

case of post harvest management only 19 per cent perceived as the most needed information.

Table 2.2: Recommended approaches needs of the farmer about climate and weather in relation to crop management. (N=120)

Sl. No.	Training need areas	Frequency and per cent of Respondents		
		Not needed	Somewhat needed	Most needed
1.	General climate and weather parameters	42 (35.0)	71 (59.2)	07 (5.8)
2.	Crop planning	18 (15.0)	72 (60.0)	30 (25.0)
3.	Crop production	0 (0)	32 (26.7)	88 (73.3)
4.	Crop protection	0 (0)	23 (19.2)	97 (80.8)
5.	Post harvest management	14 (11.7)	88 (73.3)	18 (15.0)

Results in Table 2.2. revealed that most needed training areas of crop management in relation to climate and weather were crop protection (80.8%), followed by crop production (73.3%), the similar results were also found for the information needs of the respondents. Whereas for crop planning training needs for majority (60.0%) of the respondents were somewhat needed. Similarly for training needs general climate and weather parameters for majority of the respondents were somewhat needed. In case post harvest management only 18 per cent of respondents prefer this as the most needed for training.

Table 2.3: Timing of the information sources about climate and weather in relation to crop management (N=120)

Sl. No.	Information source	Frequency and per cent of Respondents			
		Morning	Afternoon	Evening	Any time
1.	T.V.	21 (17.5)	03 (2.5)	87 (72.5)	09 (7.5)
2.	Radio	61 (50.8)	03 (2.5)	18 (15.0)	38 (31.7)

From the table 2. 3. It was clear that according to the respondent's preference for timing of agriculture related programmes, majority of the farmers prefer television programmes of agriculture in the evening, i.e., 72.5 per cent preferred evening as the best suitable time, which may be due to leisure time available in the evening. Whereas in case of radio programmes 50.8 per cent preferred morning as the best suitable timing for agriculture related information programmes for them, which may help the farmer to plan his day of work according to the information.

Conclusions

The study indicated that, Co-efficient of determination (R^2) of the independent variables was 0.450 it means that 45.03 per cent of total variation in knowledge level of farmers about climate and weather in relation to crop management was explained by the 10 selected independent variables. The remaining 54.97 per cent of knowledge was remain unexplained. It was also observed that, amongst independent variable of farmers, three variable viz., age, education and occupation was positively and highly significant with knowledge and seven variable viz., land holding, family type, farming experience, annual income, extension contact, social participation an economic motivation were found to be positively non-significant. The results indicate that

information needs of the farmers about climate and weather in relation to crop management is most needed for crop protection (83.3%) and crop production (78.3%) i.e., which may be due to importance of these subject matter for crop management. Whereas for crop planning information related needs 54.2 per cent of farmers needed somewhat. Results revealed that most needed training areas of crop management in relation to climate and weather were crop protection (80.8%), followed by crop production (73.3%), the similar results were also found for the information needs of the respondents. Whereas for crop planning training needs for majority (60.0%) of the respondents were somewhat needed.

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