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Relationship between profile of the farmers and their awareness regarding adaptation strategies of climate smart agriculture

[1]Kanade SV, [2]Kamble VB, [3]Gaikwad SR and [4]Samrit VB

[1]PG Student, Department of Extension Education, College of Agriculture, Latur, Maharashtra, India

[2]Professor (H.O.D.) (rtd.), Department of Extension Education, College of Agriculture, Latur, Maharashtra, India

[3]Ph.D. Scholar, Department of Agricultural Extension Education, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

[4]Ph.D. Scholar, Department of Agricultural Extension Education, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

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Corresponding Author: Kanade SV

Abstract

The present study was conducted mainly with the objective to study "Awareness on adaptation strategies of climate smart agriculture by farmers." For the study, Latur district were selected from Marathwada region of Maharashtra. Three talukas *viz*., Latur, Renapur and Ausa were selected randomly and four villages from each Talukas were selected randomly. From each village ten members were selected randomly constituting the sample size 120. Ex-post-facto research design was used for the study. From the study, Awareness on Adaptation strategies of climate Smart Agriculture, it has been found that, majority of the respondents were having education up to secondary level, and were having farming as their main occupation. It is also clearly observed that majority of the farmers belong to medium level of age, farming experience, cropping pattern, annual income, crop insurance, extension contact and risk orientation. Further it has been observed that majority of the respondents have bore as their main irrigation facility. And also, the respondents were highly innovative due to which majority of the respondents belong to high level of innovativeness category. It was observed from the study that, education, occupation, land holding, cropping pattern, annual income, crop insurance, extension contact, innovativeness and risk orientation had positive and highly significant correlation with the awareness regarding climate smart agriculture. While innovativeness had positive and significant correlation with the awareness regarding climate smart agriculture. Whereas, age, farming experience and irrigation facilities had negative and highly non-significant correlation with the awareness regarding climate smart agriculture.

Keywords: Awareness, climate smart agriculture, farmers, adaptation strategies

Introduction

Eradicating poverty, ending hunger, and taking urgent action to combat climate change and its impacts are three objectives and global community has committed to achieving by 2030 by adopting the sustainable development goals.

Presently, Climate change is an emerging as a prominent issue in the world. It is a global challenge with diverse implications at the national and subnational level through impacts on various sectors such as agriculture, water resources, forestry and biodiversity, human health, energy and infrastructure. To implement climate smart agriculture practically, in 2008, a National Action Plan on Climate Change (NAPCC) for India was released in view of addressing the challenges posed by climate change along with the imperatives of poverty alleviation and economic growth of India. FAO has recognized that for agriculture to feed the world in a way tha t can ensure sustainable rural development, it must become 'climate smart'. Climate smart agricu lture (CSA), as defined and presented by FAO at the hague Conference on Agriculture, Food security and Climate change in 2010 is an approach to developing the technical, policy and investment conditions to achieve sustainable agricultural development for food security under climate change. It contributes to the achievement of national food security and development goals with three objectives; FAO launched the concept of climate smart agriculture (CSA) in 2009 to draw attention link between achieving food security and combating climate change through agricultural development, and the opportunities for attaining large synergies in doing so. Perspective on CSA is sustainable agriculture, based upon integrated management of water, land and ecosystems at landscape scale.

Therefore, this study was carried out to know the correlation between profile of farmers and awareness of farmers regarding climate smart agriculture. This will assist policy makers to know the how profile characteristics are having impact on awareness of farmers regarding climate smart agriculture.

CSA is certainly not a lot of practices that can be all around applied, but instead a methodology that includes various

components installed in nearby settings. CSA identifies with activities both on-ranch and past the homestead, and consolidates innovations, arrangements, foundations and speculation. Various components which can be incorporated in climate smart agriculture methodologies include:

1. Management of farms, crops, animals, aquaculture and catch fisheries to oversee assets better, produce more with less while expanding strength.
2. Ecosystem and scene the board to monitor biological system benefits that are critical to increment simultaneously asset effectiveness and strength.
3. Services for farms and land administrators to empower them to execute the essential changes.

Objectives

1. To study the profile of farmer
2. To ascertain the relationship between awareness of farmers regarding climate smart agriculture and the profile of farmers

Methodology

The present study was conducted in Latur district of Marathwada region from Maharashtra state. In Latur district there are 10 tahsils, out of which three Tahsils namely Latur, Renapur and Ausa were randomly selected on the basis "Awareness on adaptation strategies of climate smart agriculture by farmers in Marathwada Region" From each tahsils 4 villages were randomly selected and from each village 10 farmers were randomly selected to comprise 120 respondents. Ex-post facto research design was used for the study. Data were collected by personally interviewing the respondents with the help of pretested structural schedule. Collected data were tabulated properly. Mean and standard deviation, frequency, percentage, coefficient of correlation methods of statistics was used for interpretation of data.

Results and Discussion

Personal and Socio-economic characteristics of the respondents

A number of profile characteristics were selected as independent variables to find out profile of farmers of the study area. It was cleared from Table 1 that, majority (58.33%) respondents belong to middle age group whereas, 23.33 per cent and 18.34 per cent respondent belong to old and young age group respectively. As regard with education, more than half (53.34%) respondents belong to secondary level of education, followed by graduate and above (18.32%), whereas (13.34%) of respondents belong to 10th to 12th education category, 10.00 per cent of the respondents were illiterate and only (5.00%) were educated upto primary level. As regard with farming experience, majority of the respondents (60.83%) had 'medium' farming experience category while 20.00 per cent respondents belongs to 'high' farming experience category and 19.17 per cent of respondents were found to be having 'low' level of farming experience. Regarding occupation, agriculture is the main occupation of the respondents and majority of respondents (74.17%) of them were engaged in farming alone. Nearly 11.66 per cent of the respondents were practicing agriculture along with service as their main occupation whereas, 10.84 per cent were engaged as farm labour in agriculture, only 3.33 per cent of them were engaged in agriculture along with business. As regard with land holding, slightly more than one third (35.83%) of the respondents were possessing 1.01 to 2.00 ha of land and belongs to small farmers category while 25.00 per cent of the respondents were possessing up to 1 ha of land and belongs to marginal farmers category, and 19.17 per cent of the respondents belonged to medium farmers category (4.01 to 10.00 ha) whereas; 17.50 per cent farmers included under semi medium farmers category (2.01 to 4.00 ha) category. Only 02.50 per cent of the respondents had more than 10 ha land holding which comes under big land holding category. Majority (57.50%) respondents have 'medium' cropping pattern, followed by (25.00) respondents have low cropping pattern and only 17.50 per cent of the respondents have high cropping pattern. As regard with irrigation, majority (51.67%) of farmers had bore as irrigation source followed by (24.17%) had well as irrigation facility, near about 10.82 per cent farmers had no irrigation facility. And about 05.00 per cent farmers depend upon the river as source of irrigation. 02.50 per cent of farmer had farm pond and lake as source of irrigation. Only 01.67 per cent of respondents have canal as their main source of irrigation.

Majority (76.67%) of farmers had medium annual income (Rs 50,079 to Rs 2,84,588) followed by (18.33%) farmers had high annual income category (Rs 2,84,589 & above) and only few (05.00%) respondents belong to low annual income category (Up to Rs 50,078) per year. As regard with crop insurance, majority (62.50%) of farmers had medium awareness about crop insurance followed by 20.83 per cent of farmers belong from high level category whereas 16.67 per cent farmers belong from low level of awareness category. With respect to extension education, majority (56.66%) of respondents had medium level of extension contact followed by (25.84%) and (17.50%) high and low extension contact respectively. Whereas, majority i.e., 54.16 per cent of study area farmers were in the high innovative proneness category, while, 41.67 per cent of respondents belong to medium innovativeness category whereas, only 04.67 per cent of the respondents belong to low innovativeness categories. Additionally, majority (62.50%) of the respondents were having medium level of risk orientation, whereas, 23.50 per cent and 15.00 per cent belongs to high and low category respectively.

Table 1: Distribution of respondents according to their profile (N= 120)

Sr. No.	Variables	Frequency (F)	Percentage (%)
1.	**Age**		
	Young	22	18.34
	Middle	70	58.33
	Old	28	23.33
2.	**Education**		
	Illiterate	12	10.00

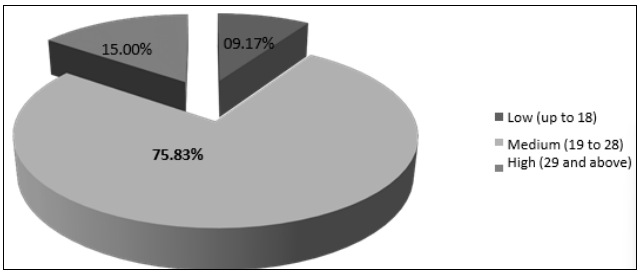
	Primary	06	05.00
	Secondary	64	53.34
	Higher	16	13.34
	Graduate and above	22	18.32
3.	**Farming experience**		
	Low	23	19.17
	Medium	73	60.83
	High	24	20.00
4.	**Occupation**		
	Farm labour	13	10.84
	Caste occupation	00	00.00
	Business	04	03.33
	Farming	89	74.17
	Service+ farming	14	11.66
5.	**Land holding**		
	Marginal	30	25.00
	Small	43	35.83
	Semi medium	21	17.50
	Medium	23	19.17
	Big	03	02.50
6.	**Cropping pattern**		
	Low	30	25.00
	Medium	69	57.50
	High	21	17.50
7.	**Irrigation facilities**		
	River	06	05.00
	Pond	02	01.67
	Well	29	24.17
	Bore	62	51.67
	Farm pond	03	02.50
	Lake	03	02.50
	Canal	02	01.67
	No irrigation	13	10.82
8.	**Annual income**		
	Low	06	05.00
	Medium	92	76.67
	High	22	18.33
9.	**Crop insurance**		
	Low	20	16.67
	Medium	75	62.50
	High	25	20.83
10.	**Extension Contact**		
	Low	21	17.50
	Medium	68	56.66
	High	31	25.84
11.	**Innovativeness**		
	Low	05	04.17
	Medium	50	41.67
	High	65	54.16
12.	**Risk orientation**		
	Low	18	15.00
	Medium	75	62.50
	High	27	22.50

Table 2: Overall Extent of awareness of farmers regarding Climate Smart Agriculture

Sr. No.	Category	Respondents (N= 120)	
		Frequency	Percentage
1.	Low (Up to 18)	11	09.17
2.	Medium (18 to 28)	91	75.83
3.	High (29 & above)	18	15.00
	Total	120	100.00
	Mean= 23.32 S.D.= 05.02		

The analysis of the data in table 16 reveals that, 75.83 per cent of the respondents belong to medium awareness category, followed by 15.00 per cent of respondents belong to high awareness category and only 09.17 per cent of the respondents have low awareness regarding climate smart agriculture.

The findings are similar as that of Verma (2017).



Distribution of respondents according to their overall Awareness regarding Climate Smart Agriculture

Table 3: Coefficient of correlation between profile of farmers with their awareness regarding adaptation strategies of climate smart agriculture:

Sr. No.	Variables	Correlation Coefficient
1.	Age	-0.445**
2.	Education	0.715**
3.	Farming experience	-0.475**
4.	Occupation	0.337**
5.	Land holding	0.339**
6.	Cropping pattern	0.332**
7.	Irrigation facilities	-0.270**
8.	Annual income	0.395**
9.	Crop insurance	0.670**
10.	Extension Contact	0.689**
11.	Innovativeness	0.199*
12.	Risk orientation	0.802**

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

1. Age and Awareness

From the data presented in Table 3 it can be concluded that there was negative and highly non-significant relationship between age and awareness of farmers regarding climate smart agriculture.

The presumable reason age does not have any impact on the awareness. Age is just a criterion for distribution of population but age is not directly proportional to awareness. Any age group can have more or less awareness.

2. Awareness with education

The data in the Table 3 shows that, there was a positive and highly significant correlation between education and awareness of farmers regarding climate smart agriculture.

The presumable reason education is directly proportional to the awareness. Education helps a person to develop knowledge, skill, attitude etc. Education also increases the understanding of farmers towards various aspects. Education tends a farmer to expose themselves towards the change and adopt that changes accordingly. Education develops more access to various mass media, so that they can get to know more about the ongoing developments and innovations. Education develops a person's decision-making ability and increases confidence. This might be the possible reason that education has positive and highly significant correlation between education and awareness of farmers regarding climate smart agriculture.

3. Awareness with farming experience

The data in the Table 3 shows that, there was a negative and highly significant correlation between farming experience and awareness of farmers regarding climate smart agriculture.

The presumable reason farming experience is not directly proportional to awareness. It is well known that experience helps the farmers to do better farming. But for the awareness regarding various farming activities there is no need of farming experience. Even an educated person without any farming experience may be aware about all the farming activities. For awareness there is no need of doing farming physically. This might be the possible reason that there is a negative and highly non-significant correlation between farming experience.

4. Awareness with occupation

The data in the Table 3 shows that, there was a positive and highly significant correlation between occupation and awareness of farmers regarding climate smart agriculture.

As farming is the major occupation of farmers therefore the awareness among them is more. With the increase in farming as an occupation farmer gains more interest in it and try to acquire more information regarding it.

5. Awareness with land holding

The data in the Table 3 shows that there was a positive and highly significant correlation between land holding and awareness of farmers regarding climate smart agriculture.

It shows that with increase in landholding there is also increase in awareness level. Farmers with large area of land holding can adapt various strategies to tackle with the negative impacts of climate and other resources. Which shows that land holding possesses positive and highly significant relationship awareness of farmers regarding climate smart agriculture.

6. Awareness with cropping pattern

The data in the Table 3 shows that there was a positive and highly significant correlation between cropping pattern and awareness of farmers regarding climate smart agriculture.

Growing of various crops by the farmers in different seasons increases their awareness level. Farmers with more land holding can grow variety of crops which helps them to diversify their knowledge. Hence cropping pattern possess positive and highly significant relationship with awareness of farmers regarding climate smart agriculture.

7. Awareness with irrigation facilities

The data in the Table 3 shows that there was a negative and highly significant correlation between irrigation facilities and awareness of farmers regarding climate smart agriculture.

This result may be due to less or no relation between irrigation facility and awareness. Proper irrigation helps farmers to do agriculture proper but does not possess and relationship with awareness of farmers regarding climate smart agriculture.

8. Awareness with annual income

The data in the Table 3 shows that there was a positive and highly significant correlation between annual income and awareness of farmers regarding climate smart agriculture.

Economic status of the farmer is determined by his/her

income/earning. Annual income of the respondents therefore, could establish positive and highly significant relationship with awareness of farmers regarding climate smart agriculture.

9. Awareness with crop insurance

The data in the Table 3 shows that there was a positive and highly significant correlation between crop insurance and awareness of farmers regarding climate smart agriculture.

The occurred result may be because of provided crop insurance against weather induced risk could considerably improve the livelihood of small and marginal farmers. Farmers emphasis the need of insurance for taking risk. Hence crop insurance possesses positive and highly significant relationship with awareness of farmers regarding climate smart agriculture.

10. Awareness with extension contact

The data in the Table 3 shows that there was a positive and highly significant correlation between extension contact and awareness of farmers regarding climate smart agriculture.

Higher level of contact with extension services helps farmers to have better awareness regarding all aspects of agriculture innovations and development. Extension contact also encourage and provide information and confidence to farmers and enhances their awareness and knowledge. Hence extension contact possess positive and highly significant relationship with awareness of farmers regarding climate smart agriculture.

11. Awareness with innovativeness

The data in the Table 3 shows that there was a positive significant correlation between innovativeness and awareness of farmers regarding climate smart agriculture.

Innovativeness is an important aspect of an individual to adjust with the fast-growing advance world. Farmer should be innovative and should adopt all the innovations, practices in order to minimize the losses caused due to climatic conditions. Hence innovativeness possesses positive and highly significant relationship with awareness of farmers regarding climate smart agriculture.

12. Awareness with risk orientation

The data in the Table 3 shows that there was a positive and highly significant correlation between risk orientation and awareness of farmers regarding climate smart agriculture.

This finding may be due to those respondents who had high risk orientation are psychologically prepared to try new practices with a view to make progress in farming. Due to proper education, there is proper awareness among farmers and therefore they are ready to take risk. Hence risk orientation possesses positive and highly significant relationship with awareness of farmers regarding climate smart agriculture.

Conclusion

The present study shows that, majority of the respondents in the present study were having education up to secondary level, and were having farming as their main occupation. It is also clearly observed that majority of the farmers belong to medium level of age, farming experience, cropping pattern, annual income, crop insurance, extension contact and risk orientation. Further it has been observed that majority of the respondents have bore as their main irrigation facility. And also, the respondents were highly innovative due to which majority of the respondents belong to high level of innovativeness category.

It has been found that education, occupation, land holding, cropping pattern, annual income, crop insurance, extension contact, innovativeness and risk orientation had positive and highly significant correlation with the awareness regarding climate smart agriculture. While innovativeness had positive and significant correlation with the awareness regarding climate smart agriculture. Whereas, age, farming experience and irrigation facilities had negative and highly non-significant correlation with the awareness regarding climate smart agriculture.

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