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A COMPARATIVE STUDY ON PERCEPTION OF AGRO-MET ADVISORY SERVICE (AAS) TOWARDS CLIMATE CHANGE

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ABSTRACT
The present investigation was conducted in chickballapur district of Karnataka where four villages were selected to assess the perception level of AAS (n=90) and non-AAS (n=90) farmers with the total sample size of 180 respondents selected using purposive random sampling method. Data was collected using structured interview schedule through personal interview method. Ex-post facto Research design was employed for the study. The results indicated that 35.56 per cent of AAS farmers and 13.33 per cent of non-AAS farmers belongs to high perception level. Nearly half (53.33%) of AAS farmers and 68.89 per cent of non-AAS farmers belonged to medium Perception level about climate change. About 11.11 per cent of AAS farmers and 17.78 per cent of non-AAS farmers belonged to category of low perception about climate change. There exists a significant (χ^2 = 12.25**, p<0.01) difference between perception level of AAS and non-AAS farmers towards climate change. Regarding the Perception on the parameters viz. rainfall, temperature and wind speed established significant difference (p<0.05) between AAS and non-AAS farmers among different climatic parameters considered for the study. It is also evident from the findings that the overall mean perception also established significant (t=3.19*, p<0.01) variation between AAS (56.40) and non-AAS farmers (55.48).

KEYWORDS: Climate change, Perception, AAS farmers, Non-AAS farmers and Rainfall.

INTRODUCTION

Climate refers to the temperature, humidity, atmospheric pressure, wind speed, direction, and precipitation in a region over a period of time. Climate is the primary determinant of agricultural productivity. Climate change is taking place globally. It is known to influence crop and livestock production, hydrologic balances, input supplies and other components of agricultural systems. The rise in average annual temperature by 1.3^0 c in the state of Karnataka during 1950 to 1990 has been observed. The mean annual rainfall trend from 1901 to 2000 has been reported as declining (Rajegowda *et al.*, 2009). In the year 1976, India Meteorological Department (IMD) started Agro-Meteorological Agricultural Advisory Service (AAS) from its State Meteorological Centers, in collaboration with Agriculture Departments of the respective State Governments. The advance information on likelihood of weather leads to the proper management of resources for agricultural operations to minimize the risk and facilitate the growth and realize the optimum crop yield. Hence, it emphasizes the need to study the perception of Agro-met advisory service farmers.

MATERIALS AND METHODS

The present investigation was carried out in Chickballapur district of Karnataka. Two villages Nayanahalli, Pattrenahalli were selected purposively with 90 farmers where Agro-met Advisory Services (AAS) were given and Parsdinne, hosudya were selected with 90 farmers where Services are not extended (non-AAS) with total sample size of 180 respondents for the study. Ex-post facto research design was employed for conducting the study. The important climate Parameters like Rainfall (8 statements), Temperature (6 statements), Cloud-cover (5 statements), Wind-speed (5 statements), Relative humidity (3 statements) and its impact on agriculture (7 statements) were included in the schedule developed for the study. Totally 34 statements were formed to assess the Perception level of respondents. The Scoring method followed to obtain the Perception comprising of Disagree (2 Score), Undecided (1 Score) and Agree (0 Score) for each of the statements under study if perceived as per the meteorological data otherwise score of Disagree (0 Score), Undecided (1 Score) and Agree (2 Score) will be given resulting with minimum score of zero and maximum score of 68 for each respondents. Data was collected by using a detailed interview schedule employing personal interview method. The responses were scored, quantified, categorized and tabulated using statistical methods like percentage, mean, standard deviation, chi-square and t-test.

RESULTS AND DISCUSSION

Profile of AAS and Non AAS Farmers

Table 1 depicts the classification of respondents by personal characteristics. It is evident from the findings that Nearly half (52.22%) of AAS farmers and 47.78 per cent of non-AAS farmers found in the middle age group. In general, the farmers of middle age are enthusiastic, more work efficiency and more family responsibility. The old age people will be having more experience hence having high knowledge with respect to climate change. The result

was on line with the findings of Babanna (2001), Kumara and singh (2003) and Sunil Kumar (2004).

It was observed that 44.44 per cent of AAS farmers had High school and PUC education whereas 57.78 per cent of non-AAS farmers had middle school level of education. However, 16.67 per cent of the AAS and 5.56 per cent of non-AAS farmers had Graduation and PG level of education. It is universal fact that education plays a key role in moulding and bringing desirable changes among human beings. As the majority of the farmers were educated, they were able to gather knowledge on climate change and also regarding its mitigation measures. The findings are on line with the findings of Meeran and Jayaseelan (1999) Dhamodaran and Vasanth Kumar (2001)

Table 1.Profile of AAS and Non AAS Farmers

(n=180)

Characters	Category	AAS farmers (90)		Non-AAS farmers(90)		χ^2 test
		Number	%	Number	%	
Age group (years)	≤ 35	12	13.3	19	21.1	1.91 NS
	36 – 50	47	52.2	43	47.8	
	> 50	31	34.5	28	31.1	
Educational level	Up to-primary	20	22.2	26	28.9	49.38**
	Middle	15	16.7	52	57.8	
	High school &PUC	40	44.4	07	7.78	
	Graduation	15	16.7	05	5.56	
Family-size (Members)	Small (< 4)	42	46.7	48	53.4	1.17 NS
	Medium (5 - 6)	37	41.1	30	33.3	
	Big (> 6)	11	12.2	12	13.3	
Land-holdings (acres)	Marginal (< 2.5)	30	33.3	30	33.3	0.00NS
	Small (2.5 – 5.0)	30	33.3	30	33.3	
	Large (> 5.0)	30	33.3	30	33.3	

NS: Non-Significant, **Significant at 1% level, X^2 (0.01, 2df) = 9.21

It could be seen that 46.67 per cent of the AAS farmers belongs to small family followed by medium and large family. In case of non AAS farmers, 53.34 per cent belongs to small size family followed by medium and large family. In rural area more joint families are reported instead of nuclear families. The findings are on line with Ingle and Dharmadhikari (1987).

For the study equal number of farmers with marginal, small and large land holding was selected. Farmers with varying land ownership can easily find changes in climate and the presence of knowledge; capital helps for adopting the recommended mitigation strategies to cope up with ill effects of climate change

Overall perception of farmers about climate change

Table 2: Overall Perception level of AAS and Non-AAS farmers with respect to climate change

(n=180)

Perception Level (Scores)	AAS farmers (90)		Non-AAS farmers (90)		χ^2 test
	Number	%	Number	%	
Low (<54.94)	10	11.11	16	17.78	
Medium (54.94-56.93)	48	53.33	62	68.89	12.25**
High (>56.93)	32	35.56	12	13.33	

** Significant at 1% level χ^2 (0.01, 2df) = 9.210

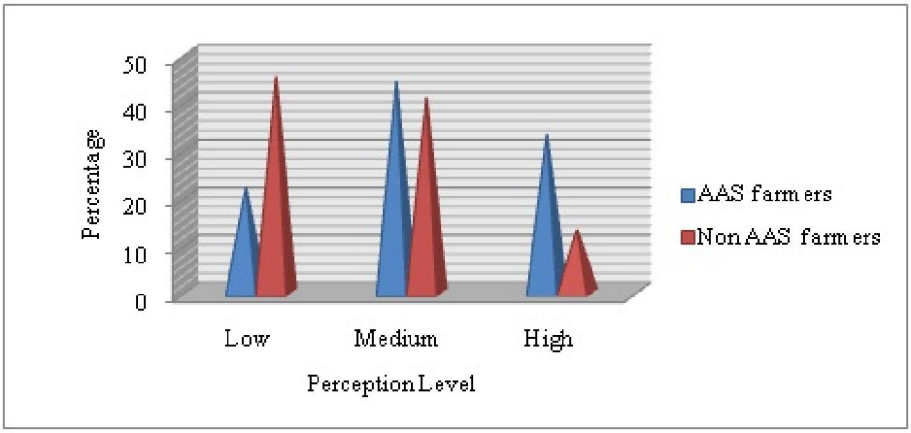

Fig.1: Overall Perception of AAS and non-AAS farmers towards climate change

Table 2 and fig.1 indicates the perception level of AAS and non-AAS farmers towards climate change. The result depicts that nearly half of AAS farmers (53.33%) had medium perception followed by high (35.56%) and low (11.11%) perception level whereas more than half of non-AAS farmers (68.89%) had medium perception followed by low (17.78%) and high (13.33%). There exists a significant (χ^2 = 12.25**, p<0.01) difference between perception level of AAS and non-AAS farmers towards climate change. This also indicates that the AAS farmers had higher perception than non-AAS farmers towards climate change. These results are in conformity with studies of Vernon (1994), Anonymous (2001), and Maddison (2006). They observed that, many farmers were aware about changes in climate especially rainfall and temperature since decades, but severe in recent days.

Perception of AAS and Non-AAS farmers with respect to climatic variables

Table 3: Perception of AAS farmers and Non-AAS farmers on climate change

(n = 180)

Parameters	Perception level (Scores)	AAS farmers (90)		Non-AAS farmers (90)		χ^2 test
		Number	%	Number	%	
Rainfall	Low (<13.72)	7	7.78	3	3.33	
	Medium(13.72-14.39)	68	75.56	84	93.34	11.28**
	High(>14.39)	15	16.66	3	3.33	
Temperature	Low (<9.81)	5	5.56	6	6.66	
	Medium(9.81-10.47)	68	75.56	79	87.78	7.45*
	High(>10.47)	17	18.88	5	5.56	
Cloud-Cover	Low (<7.7)	5	5.56	11	12.22	
	Medium(7.7-8.26)	81	90.00	76	84.44	2.55 NS
	High(>8.26)	04	4.44	3	3.34	
Wind-speed	Low (<7.87)	6	6.67	17	18.89	
	Medium(7.87-8.02)	78	86.66	70	77.78	6.69*
	High(>8.02)	6	6.67	3	3.33	
Relative-Humidity	Low (<3.68)	7	7.78	14	15.56	
	Medium(3.68-4.19)	79	87.78	75	83.33	4.23 NS
	High(>4.19)	4	4.44	1	1.11	
Impact of climate change on agriculture	Low (<11.43)	9	10.00	15	16.67	
	Medium(11.43-12.29)	74	82.22	71	78.89	2.38NS
	High (>12.29)	7	7.78	4	4.44	

** Significant at 1% level, χ^2(0.01, 2df) = 9.210 * Significant at 5% level, χ^2(0.05, 2df) = 5.99 NS Non-Significant

Climate plays a crucial game with agriculture, particularly rainfall. Agriculture basically depends on monsoon and other climate parameters, even narrow fluctuation in normal rainfall can affect the farming more severely. With this it is important to know the perception of farmers about climate change.

Table 3 revealed that 16.66 per cent of AAS farmers and 3.33 per cent of non-AAS farmers had high perception level about changes in the rainfall. The perception of AAS farmers about rainfall was on par with meteorological data. It indicated that more than half of the farmers having higher perceiving ability about changes in rainfall. These results are in conformity with studies of Vernon (1994) and Maddison (2006). Temperature also plays a crucial role in the crop production but the direct impact of temperature on crop yield is hidden factor on the farmers' perception. It can be observed that 18.88 per cent of AAS and 5.56 per cent of non-AAS farmers were having high perception of changes in the temperature. These results are in conformity with studies of Vernon (1994), Anonymous (2001). They opined that, average annual minimum and maximum temperature has been increasing by every decade.

Table 3 also revealed that 90.00 per cent & 84.44 per cent of AAS and non-AAS farmers had medium level of cloud-cover perception. Cloud-cover affects agricultural production by increasing relative-humidity and increasing pests. With respect to Wind-speed changes 86.66 per cent of AAS farmers, 77.78 per cent of non-AAS farmers had medium perception. It is observed that 87.78 per cent of AAS farmers and 83.33 per cent of non-AAS farmers had medium perception regarding Relative Humidity. With respect to Perception on Impact of climate change on Agriculture 82.22 per cent of AAS farmers and 78.89 per cent of non-AAS farmers had medium level of perception. AAS farmers are having good perception with all these parameters mainly due to the agro-advisory service bulletins they are receiving every week possessing information on all these aspects, regular consultation of field-assistants who were placed in their own villages and subject matter specialists who will visit beneficiaries fields and guide them twice in a week or in 15 days.

There was a significant difference (p<0.05) in the Perception level of AAS and non AAS farmers regarding Rainfall, Temperature and Wind-speed aspects.

Comparison of Mean Perception of AAS farmers and Non-AAS farmers

Table 3: Comparison of Overall Mean Perception Scores of AAS-farmers with non-AAS farmers

(n = 180)

Sample (n)	Maximum Score	Response (%)				't' value
		AAS farmers		Non-AAS farmers		
		Mean	SD	Mean	SD	
90	68	56.40	2.05	55.48	1.83	3.19**

** Significant at 1% level t(0.01, 178df) = 2.58

It is evident from table 4 that overall mean Perception of AAS farmers found to be 56.40 as compared to slightly less among non-AAS farmers (55.48). Further, the comparison of overall mean Perception between AAS and non-AAS farmers established significant result (t=3.19**, $p<0.05$). This shows the effectiveness of the agro-advisory services given to AAS farmers by Agro-meteorological department, UAS, Bangalore. This difference shows that there is good guidance and supervision from AAS service providers. Hence, we can conclude that the agro-advisory services provided will definitely help and assist the farmers to overcome from the ill-effects of climate change.

CONCLUSION

It can be concluded that there is a significant difference in the perception level of Agro-advisory service farmers and non-Agro advisory service farmers mainly due to the advisory services they are receiving from Meteorological department of UAS, GKVK, Bangalore. Hence, there is a greater need to extend these services to other villages also as climate change is a major issue greatly affecting the agriculture.

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