



EXPLORING THE ATTITUDE OF FARMERS TOWARDS WEATHER FORECASTING ADVISORY SERVICES: A STUDY IN MUZAFFARPUR DISTRICT OF BIHAR STATE, INDIA

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Abstract

Agriculture is the mainstay of Indian economy. Compared to various other sectors of economy, agriculture is unique, whose output is largely dependent on weather conditions. The degree of success of agriculture production and its economics is determined to a significant extent by how well weather conditions corresponding to the optimal requirements of the crop are best exploited to raise the crops. Dissemination of agromet advisories to the farmers through different multi-channel system of like All India Radio (AIR) and Doordarshan, private TV and radio channels, newspaper and internet, SMS and IVR (Interactive Voice Response Technology) etc. is being made on wider scale. The services helped the farmers not only in increasing the crop production but also reducing the losses due to inclement weather and other problems. The main objective of the study is to analyse the attitude of farmers towards the weather forecasting information disseminated by Dr. Rajendra Prasad Central Agricultural University / DRPCA (Pusa, Samastipur, Bihar State, India). 2 villages (Ballisaraiya and Bhagwatpur) from 2 blocks (Saraiya and Marwan) of Muzaffarpur district were selected for the exploring of attitude of farmers towards the Weather Forecasting Advisory Services disseminated by DRPCA. 30 respondents were selected from each of these two villages, so the total no. of respondents was 60. It was observed that majority of the respondents (65%) had favourable attitude towards weather forecasting information followed by 18.33% of the respondents had least favourable attitude and 16.67% of the respondents had highly favourable attitude towards weather forecasting information.

Key words: Attitude, weather, forecasting and services.

Introduction

Agriculture is the backbone of Indian economy. Compared to various other sectors of economy, agriculture is unique, whose output is largely dependent on weather conditions. The degree of success of agriculture production and its economics is determined to a significant extent by how well weather conditions corresponding to the optimal requirements of the crop are best exploited to raise the crops. Also, how effectively weather conditions, which cause moisture, thermal, wind, radiation and biotic stress impeding growth and development of crop are managed to minimise their adversity. For effective planning and management of agricultural practices such as selection of cultivar, sowing, need-based application of fertilizer, pesticides, efficient irrigation and harvest, weather forecasts in all temporal ranges are desirable. Weather forecast in short and medium ranges greatly contribute towards making short-term adjustments in daily agricultural operations which minimise losses resulting from adverse weather conditions and improve yield and quantity and quality of agricultural productions. Weather forecasting is the prediction of what the atmosphere will be like in a particular place by using

technology and scientific to make weather observations. It is a way of predicting things like cloud cover, rain, snow, wind speed and temperature before they happen.

Once a human-only endeavour based mainly upon changes in barometric pressure, current weather conditions and sky condition, weather forecasting now relies on computer based models that take many atmospheric factors into account. Human input is still required to pick the best possible forecast model to base forecast upon, which involves pattern recognition skills, teleconnections, knowledge of model biases. In accuracy of forecasting is due to the chaotic nature of the atmosphere, the massive computational power required to solve the equation that describe the atmosphere, the error involved in measuring the initial conditions, and an incomplete understanding of atmospheric process. Hence, forecasts become less accurate as the difference between current time and the time for which the forecast is being made (the range of forecast) increase. The use of ensembles and model consensus help narrow the error and pick the most likely outcome. Several organisations all over the world measure weather elements and forecast weather conditions. Indian Meteorological Department was established in 1875 with headquarter at

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Pune. The National Commission on Agriculture recommended establishment of principal Agromet Observatories in each of the Agricultural Universities.

Dissemination of agromet advisories to the farmers through different multi-channel system of like All India Radio (AIR) and Doordarshan, private TV and radio channels, newspaper and internet, SMS and IVR (Interactive Voice Response Technology) etc. is being made on wider scale. Under PPP mode, Reliance Foundation, Reuter Market Light, IFFCO Kisan Sanchar Limited (IKSL), NOKIA-HCL, Handygo, Mahindra Samriddhi, Kisan Sanchar, NABARD are disseminating agromet advisories in SMS and IVR format to the farming community. In addition to that number of Agromet Field Units (AMFU) has stated sending agromet advisories through SMS in collaboration with NIC, ATMA, KVKs, NABARD and internet. Agromet advisories are also being disseminated in both regional and English languages through 'Kisan SMS', a portal launched by the Ministry of Agriculture & Farmers' Welfare, Govt. of India. Weather forecast and advisories under alerts and warnings through SMS during extreme weather events are also issued which enable the farmers in planning of farming operations to minimise or control damage of crops under the adverse weather conditions. Indian Meteorological Department (IMD) in collaboration with Agromet Field Units (AMFUs) disseminates weather forecast and Agromet Advisories to the farming community in the country in both regional and English languages through farmers' portal. The services helped the farmers not only in increasing the crop production but also reducing the losses due to inclement weather and other problems. In order to increase the number of farmers in the Kisan Portal, a system of registration through IMD's website has been developed by IMD and NIC to provide weather based Agromet advisories to more number of farmers through free SMS. To avail this service, farmers are required to register their name and mobile number along with the crops.

Objectives of the study

The main objective of the study is to analyse as well as determine the attitude of farmers towards the weather forecasting information disseminated by Dr. Rajendra Prasad Central Agricultural University / DRPCA (Pusa, Samastipur, Bihar State, India). The objective in specific is- To explore the attitude of farmer respondents towards the weather forecasting information provided by DRPCA.

Methodology

This study was conducted in Muzaffarpur district of Bihar state in India. Muzaffarpur was selected purposively because a project from the Department of Agrometeorology of DRPCA has already been from 2012 to 2017 in this district. Out of 16 blocks of Muzaffarpur district, 2 blocks viz. Saraiya and Marwan were selected for the exploring of attitude of farmers towards the Weather Forecasting Advisory Services

disseminated by DRPCA. These two blocks were selected because 75% people are dependent on agriculture and allied sector for their livelihood production and these 2 villages were adopted by DRPCA, Pusa under NICRA Project. One village was elected from each block i.e. total no. of selected villages were 2. Two villages were Ballisaraiya (from Saraiya block) and Bhagwatpur (from Marwan block) and more than 70 per cent of villagers of these two villages are engaged in agriculture or agriculture related activities. 30 respondents were selected from each of these two villages, so the total no. of respondents was 60.

Attitude is basically the preparedness of people to respond in a certain way towards social object or phenomena. The variable was operationalised as the positive or negative mental predisposition of respondents towards the use of weather forecasting advisory services among farmers. Thirteen statements were selected and rated on a five-point continuum 'Strongly Agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly Disagree' with scores of 5, 4, 3, 2, 1 respectively for positive statements and the reverse for negative statements. Respondents were asked to choose from this five-point continuum.

The attitude of the respondents was further categorized under 'Highly Favourable', 'Favourable' and 'least favourable' by working out the arithmetic mean and standard deviation. If the obtained score is below (Mean-S.D), that respondent is placed in least favourable category. If the score is between (Mean-S.D.) to (Mean+S.D.), that respondent is placed in favourable category and if the score is above (Mean+S.D.), the respondent is placed in highly favourable category. Frequency, percentage, arithmetic mean and standard deviation were used as the statistical tools to measure the attitude of the respondents.

Results and Discussion

Attitude refers to the degree of positive and negative feelings of the respondents towards the crop weather forecasting messages received from the university. The responses were obtained on five point continuum viz. 'Strongly agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly disagree'. The scores of 5, 4, 3, 2, 1 were given to positive statements and scoring was reversed for negative statements.

Table-2 is showing that the statements agreed by the respondents were, nearly 73.33% of the respondents agreed that use of weather forecasting information is a way to increase the crop production, weather forecasting information increasing the farmers income (56.67%), uses of weather forecasting information increasing farming skills (46.67%), Frequency of weather forecasting is sufficient for agriculture (45%), Changing in the farming system by the use of weather forecasting information (60%), New technology is disseminated by the weather forecasting advisory services unit (33.33%), Weather forecasting information will provide benefit in your agriculture (70%), The use of weather forecasting

information is essential for production of high value crops (63.33%), weather forecasting information often save your crop from failure (68.33%), Accuracy of weather forecast information is correct (43.33%), Farmers can get timely weather forecast information (40%), Weather forecast information is location specific (28.33%), Language of weather forecast information is easily understood by farmers (48.33%).

Statements which undecided by respondents were nearly 20 per cent of the respondents undecided that weather forecasting information increases the farmers income, Weather forecasting information changing farming skill (30%), frequency of weather forecasting information is sufficient for agriculture (36.67%), New technology is disseminated by weather forecasting advisory services unit (40%), Accuracy of weather forecast information is correct (35%), Farmers can get timely weather forecast information (36.67%), Weather forecast information is location specific (40%), Language of weather forecast information is easily understood by farmers (21.67%).

The overall attitude of respondents towards weather forecasting information is depicted in the table 3. It was observed that majority of the respondents (65%) had favourable attitude towards weather forecasting information followed by 18.33% of the respondents had least favourable attitude and 16.67% of the respondents had highly favourable attitude towards weather forecasting information.

Conclusion and Recommendations

It was observed that majority of the respondents had favourable attitude towards the weather forecasting information. The possible reason might be the fact that considerable number of respondents had medium to high level of knowledge on weather forecasting information, resulted in favourable attitude. Majority of the respondents were literate and belonged to middle age group might influence favourable attitude. There are some relevant suggestions also. This study was conducted with a sample of 60 respondents. In order to have greater generalization of findings, such study should be conducted with large samples of respondents.

Table 1: Selection of respondents on the basis of villages and blocks

Name of the Blocks	Name of the villages	Number of respondents selected
Saraiya	Ballysaraiya	30
Marwan	Bhagwatpur	30
	Total	60

Study are should be increased also. This study indicated that farmers had medium attitude towards weather forecasting information. This is a good trend and this has to be still improved by conducting more awareness programmes and extending these services to other farmers also. There is an urgent need to improve the system which creates awareness among people about the climate change and also will provide early warning in order to avoid the ill effects in near future.

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Table 3: Overall attitude of farmers towards weather forecasting information

Sl.No.	Category	Farmers (n=60)	
		Frequency (f)	Percentage (%)
1.	Least favourable (<43.50)	11	18.33
2.	Favourable (43.50 to 53.94)	39	65
3.	Highly favourable (>53.94)	10	16.67
	Total	60	100

Mean=48.72, SD=5.22

Table 2: Distribution of farmers according to their attitude towards weather forecasting information

Sl. No.	Statements	Farmers (n=60)				
		Strongly agree	Agree	Undecided	Disagree	Strongly Disagree
		Frequency (Percentage)	Frequency (Percentage)	Frequency (Percentage)	Frequency (Percentage)	Frequency (Percentage)
1.	The use of weather forecasting information is a way to increase the crop production	14 (23.33)	44 (73.33)	1 (1.67)	1 (1.67)	0 (0)
2.	Weather forecasting information ncreasing the farmers income	12 (20)	34 (56.67)	12 (20)	2 (3.33)	0 (0)
3.	Weather forecasting information hanging farmers skill	11 (18.33)	28 (46.67)	18 (30)	3 (5)	0 (0)
4.	Frequency of weather forecasting information is sufficient for agriculture	5 (8.33)	27 (45)	22 (36.67)	6 (10)	0 (0)
5.	Changing in the farming system by the use of weather forecasting information	12 (20)	36 (60)	10 (16.67)	2 (3.33)	0 (0)
6.	New technology is disseminated by the weather forecasting advisory services unit	2 (3.33)	20 (33.33)	24 (40)	11 (18.33)	3 (5)
7.	Weather forecasting information will provide benefit in your agriculture	11 (18.33)	42 (70)	7 (11.67)	0 (0)	0 (0)
8.	The use of weather forecasting information is essential for production of high value crop	13 (21.66)	38 (63.33)	7 (11.67)	1 (1.67)	1 (1.67)
9.	Weather forecasting information often save your crop from failure	15 (25)	41 (68.33)	3 (5)	0 (0)	1 (1.67)
10.	Accuracy of weather forecast information is correct	6 (10)	26 (43.33)	21 (35)	6 (10)	1 (1.67)
11.	Farmers can get timely weather forecast information	10 (16.67)	24 (40)	22 (36.67)	4 (6.67)	0 (0)
12.	Weather forecast information is location specific	5 (8.33)	17(28.33)	24 (40)	8 (13.33)	6 (10)
13.	Language of weather forecast information is easily understood by farmers	12 (20)	29 (48.33)	13 (21.67)	1 (1.67)	5 (8.33)