Effectiveness of the SMS advisory service under Gramin Krishi Mausam Sewa (GKMS)

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ABSTRACT

Gramin Krishi Mausam Sewa (GKMS) was started by the Government of India under the Ministry of Earth Sciences for informing the farmers regarding adverse weather conditions so that they could take required steps and precautionary measures. In the present study among beneficiaries, 122 farmers were selected from five districts of Punjab who were contacted telephonically. The responses of the selected farmers were taken on parameters like need, timeliness, understandability and applicability of the information sent through SMSs to farmers under GKMS scheme regarding the forecast of weather. Information was reported to be needful and timely by 62.29 per cent of the farmers; 50.82 per cent of the farmers responded that the information was understandable up to medium level whereas 43.44 per cent farmers found the information medium applicable. The overall impact of the information was found to be high with 77.05 per cent of the farmers and effectiveness index was found to be high on 73.77 per cent of the farmers. It was observed that messages received should be in local language so that farmers could readily understand and comprehend the information. At the same time the terminology used in the message should always be farmer-friendly so that it is interpreted by the farmers as intended. The farmers were of the opinion that in the present scenario weather varies within small distances therefore it becomes imperative that the messages are location-specific to increase their worth.

Keywords: SMS advisory; GKMS; weather forecast; effectiveness; impact

INTRODUCTION

Weather plays a major role in determining the success of agricultural pursuits. Most field crops are dependent solely upon weather to provide life sustaining water and energy. Weather describes current atmospheric conditions such as rainfall, temperature and wind speed at a particular place and time. It changes from day to day. Adverse weather conditions can cause production losses especially if experienced during critical stages of growth (Vining 2007). Weather conditions during crop growing period play a significant role for increasing agricultural produce. A sudden change in any individual element of weather is weather variability. Variable and uncertain weather is a common factor for increasing crop loss every year (Das et al 2019). Among the weather parameters, rainfall and its distribution fluctuates greatly than other parameters. Any variability in the rainfall during the crop season such as delay in onset of monsoon, excessive rains and prolonged dry spells would affect the crop growth and finally the quality and quantity of the produce. Adoption of real time contingencies in crop management based on weather forecasts can minimize crop losses. Weather forecast is normally issued at three levels viz short range, medium range and long range. Long range weather forecasts provide guidelines for selection of crops best suited to the anticipated climatic conditions. The short and medium range weather forecasts help to advice the farmers on the actual and expected weather to make decision on day to day farming operations such as sowing, weeding, time of pesticide spray, irrigation scheduling, fertilizer application etc in crop management. Weather forecast and weather-based Agromet advisories help in increasing the economic benefit to the farmers with appropriate management practices (Ramachandrappa et al 2018). The emerging capacity to provide timely and skillful weather forecasts

offer the potential to reduce vulnerability to vagaries of weather (Hansen 2002).

Timely weather information allows farmers to plan their farm operations in such way that minimizes the costs and crop losses as well as helps in maximizing the yield gains. Knowledge or information about agro-meteorology is useful in several aspects of agriculture or crop production. It has practical utility in timing of agricultural operations so as to make the best use of favorable weather conditions and make adjustments for adverse weather. The dangers of crop production due to the pest and disease incidence, occurrence of prolonged drought, soil erosion, frost and weather hazards can be minimized. Weather support also provides guidelines for long range or seasonal planning of crops and cultivars most suited to anticipated climatic conditions. Agro-meteorological information can be used in land planning, risk analysis of climatic hazards, production and harvest forecasts and linking similar crop environments for crop adaptability and productivity. The adaptation and focus of rural information and education systems through information and communication technologies (ICTs) play important roles in capacity building and services to farmers (Rathore and Stigter 2007). Among the ICTs, mobile telephony has emerged as the technology of choice of majority of the urban and even the rural masses (Ansari and Yogeshwar 2009).

India Meteorological Department was established in 1875. It is the national meteorological service of the country and the principal government agency in all the matters relating to meteorology, seismology and allied subjects. It has different divisions such as upper air instrument division, surface instrument division, marine meteorology, agricultural meteorological division and many more (www.imd.gov.in). The prime objective of Agricultural Meteorology Division, India Meteorological Department (IMD), Pune, Maharashtra is to minimize the impact of adverse weather on crops and to make use of crop-weather relationships to boost agricultural production. The Agricultural Meteorology Division was established at Pune in 1932 and since its inception the division supports and participates in multi-disciplinary activities in this field. It is also the centre for research programmes in agricultural meteorology and has field units in various parts of the country. Besides this forecasts and advisories for farmers are issued by IMD's forecasting offices located at different state capitals. In order to minimize the adverse impact of malevolent weather, Gramin Krishi Mausam Sewa (GKMS) scheme was started by Agricultural Meteorology Division of India Meteorological Department which provides a very special kind of inputs to the farmers as advisories that can make a tremendous difference to the agriculture production. For combating the negative impact of extreme weather conditions, IMD has set up a network of about 130 agro-metreological field units (AMFUs) in the country which are multidisciplinary units responsible for preparation and dissemination of Agromet advisories under GKMS project. With this framework, there is a considerable scope for decreasing vulnerability of agriculture to increasing weather and climatic variability through weather forecast-based agro-advisories (Chattopathyay et al 2016).

The people are living in 21st century with the revolution of information and communication technology which is responsible for wide spread access of computer technology as well as mobile services into the social structure. The technology in turn influences the society, development and social environment (Dayal 2006).

Under GKMS project, weather forecast is sent to farmers through messages so that they are able to take required steps and precautions and save their crops from damage through adverse or extreme weather conditions which ultimately increase their production and productivity to fulfill market demands with securing better quality of life. There was a need to check the effectiveness of the programme to see how much success the programme had achieved. Needfulness is an important factor while studying effectiveness as it verifies the content sent through messages. For effectiveness, it was studied whether the messages contained required information, information sent was timely, understandable and applicable. Therefore for checking the effectiveness, the parameters like need, timeliness, understanding and applicability of the messages were studied. Effectiveness index is the degree to which something is successful in producing a desired result. Hence for checking the success of the programme, effectiveness index was also studied.

METHODOLOGY

Present study was conducted in Punjab state in 2018-19. Of the five agro-climatic zones of Punjab, five districts namely Amritsar, Gurdaspur, Faridkot, Ferozepur and Shri Muktsar Sahib were selected. A list of beneficiary farmers was obtained from regional research stations of PAU, Ludhiana, Punjab and from

the list, a total of 122 beneficiary farmers were selected randomly and contacted telephonically.

Ex-post facto design of research was used in the study. The indicators of the variables under study were need and timeliness of information, understanding of information and applicability of information sent through messages.

Effectiveness index (EI) was worked out as per below:

$$\text{Effectiveness index (EI)} = TS_o/MS$$

where TS_o = Total score obtained, MS= Maximum score

RESULTS and DISCUSSION

Impact of Gramin Krishi Mausam Sewa (GKMS) on beneficiaries was assessed and the results are given in Table 1 (Figs 1-5).

Need- and time-based information: The data indicate that information through messages was needful and timely for 62.29 per cent of the farmers whereas for 28.89 per cent it was needful but not timely. Only 5.74 and 3.28 per cent farmers reported that the messages were not needful but timely and not needful and not timely respectively.

Understanding of the message: About half of the farmers (50.82%) reported that the messages were medium understandable followed by 31.15 per cent who reported that these were highly understandable. Only 13.11 and 4.92 per cent of the respondents said that these were low and not understandable respectively. Some of the beneficiaries suggested that messages should be in local language so that farmers readily understand and comprehend the information. At the same time the terminology used in the message should always be farmer-friendly so that it is interpreted by the farmers as intended.

Applicability of the message: The information in the messages was fully applicable to 28.69 per cent of the farmers whereas it was of medium applicability to majority of farmers (43.44%). Only 19.67 per cent of the farmers reported that the information was partially applicable whereas 8.19 per cent said that it was not applicable to them.

Table 1. Distribution of respondents according to need- and time-based information of SMS advisory under GKMS (n= 122)

Component	Respondents	
	Frequency	Percentage
According to need- and time-based information		
Needful and timely	76	62.29
Needful and not timely	35	28.89
Not needful and timely	7	5.74
Not needful and not timely	4	3.28
According to understanding of the message		
Highly understandable	38	31.15
Medium understandable	62	50.82
Low understandable	16	13.11
Not understandable	6	4.92
According to applicability/usability of the message		
Fully applicable/usable	35	28.69
Medium applicable/usable	53	43.44
Partially applicable/usable	24	19.67
Not applicable/usable	10	8.19
On the basis of overall impact of GKMS		
Low (3-6)	6	4.92
Medium (6-9)	22	18.03
High (9-12)	94	77.05
According to effectiveness index		
Low (0.00-0.34)	2	1.64
Medium (0.34-0.67)	30	24.59
High (0.67-1.00)	90	73.77

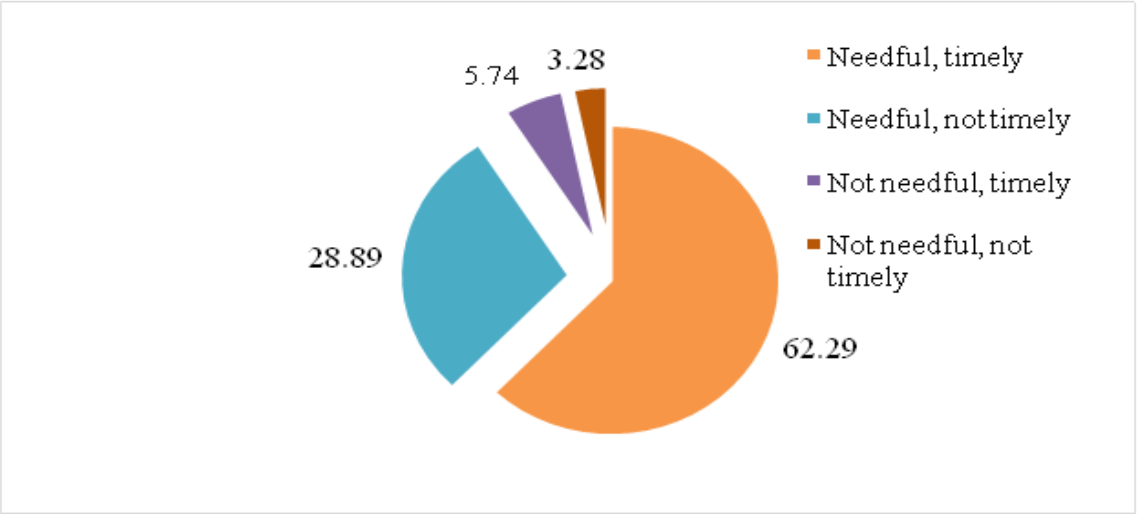

Fig 1. Distribution of respondents according to need- and time-based information of SMS advisory under GKMS (n= 122)

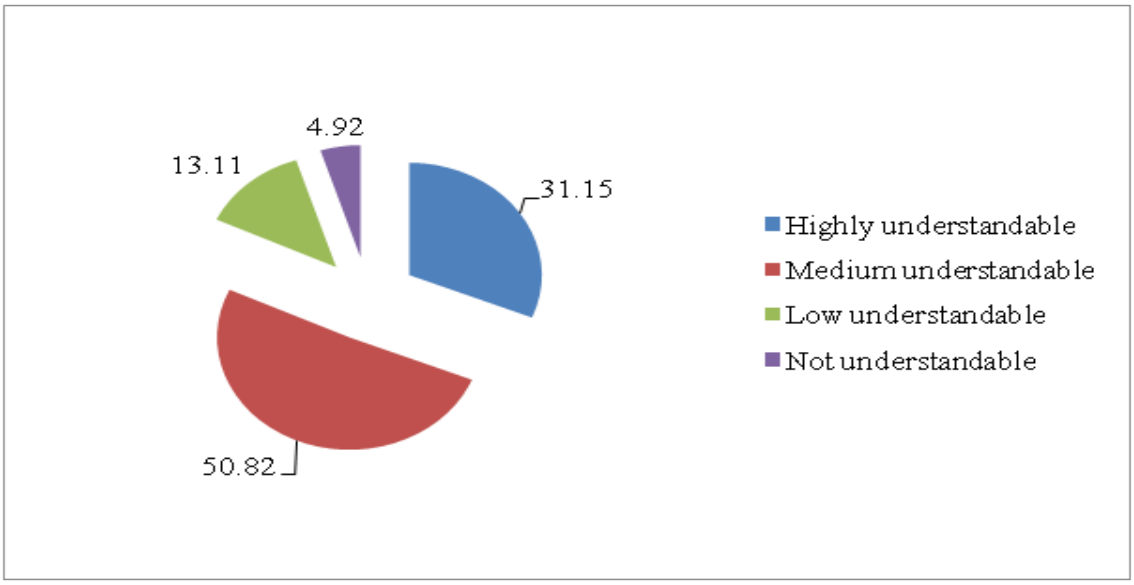

Fig 2. Distribution of respondents according to understanding of the message SMS advisory under GKMS (n= 122)

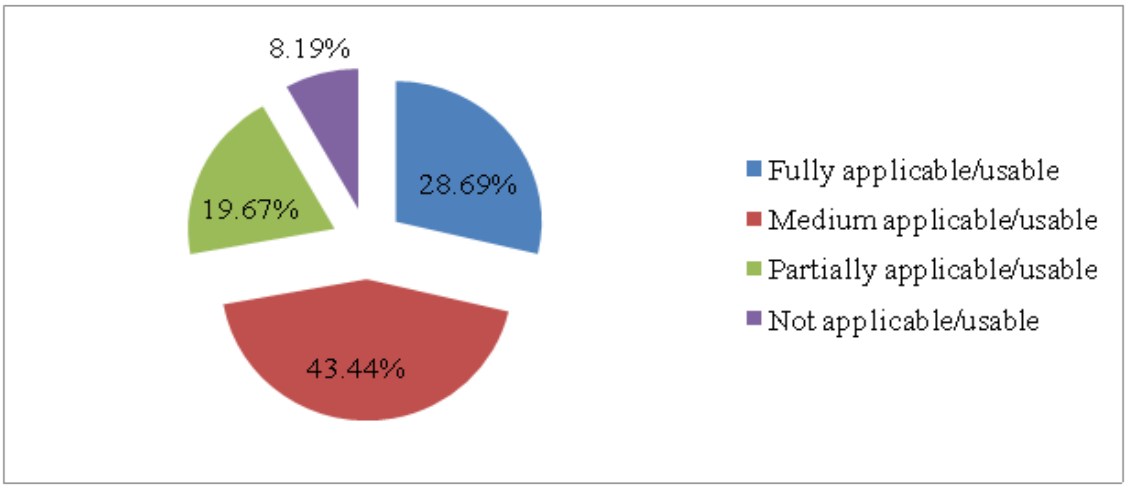

Fig 3. Distribution of respondents according to applicability/usability of the message SMS advisory under GKMS (n= 122)

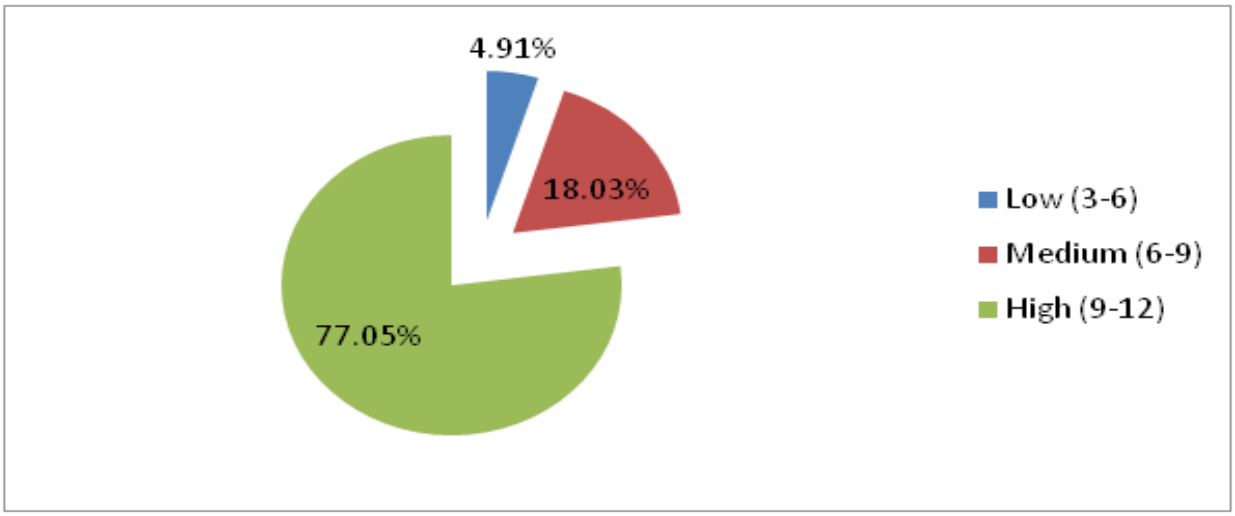

Fig 4. Distribution of respondents on the basis of overall impact of GKMS (n= 122)

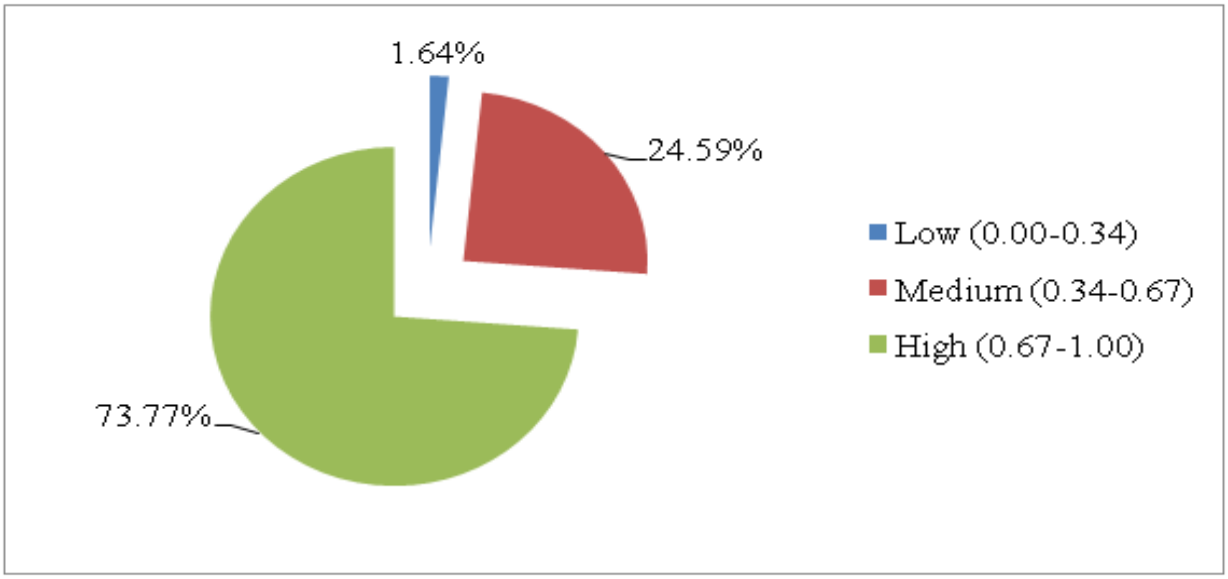

Fig 5. Distribution of respondents according to effectiveness index of the message SMS advisory under GKMS (n= 122)

Overall impact of information: It was found that there was high impact of the information on majority of the farmers (77.04%) whereas 18.03 and 4.92 per cent reported medium and low impact respectively on them.

Effectiveness index: Effectiveness index was found to be high for majority of the farmers (73.77%); it was medium for about one-fourth (24.59%) and low for 1.64 per cent of the farmers.

CONCLUSION

Information and communication technologies (ICTs) are proving very helpful these days in every field of life. The ICT like Gramin Krishi Mausam Sewa (GKMS) is proving an important tool of agricultural technologies and innovations and information is sent to farmers at crucial time.

Gramin Krishi Mausam Sewa (GKMS) was found having high impact on farmers and a novel step to transform the situation in which crops were damaged by the adverse weather conditions. It was revealed by the farmers during study that in the present scenario weather varies within small distances. Thus it becomes imperative that the messages are location-specific to increase their worth. However the farmers desired that the information should be in local language and farmer-friendly.

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