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Utilization Pattern of Weather Based Agro-advisory Services among the Farmers of Nellore District of Andhra Pradesh

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The success or failure of agricultural production is determined mainly by weather as it effect on every phase of crop growth, development and yield. Weather abnormalities during the crop season, would affect the crop growth and finally the quality and quantity of the yield. The advent of forecasting technologies and decision-making skills have not yet spread among small and marginal farmers who constitute major part of farming community in the country. Now a step further the Indian Council of agricultural Research (ICAR) and India Meteorological Department (IMD jointly planned to provide Agrometeorological Advisory Services (AAS) at block level in every district in both English and local language across the country for the benefit of farming community by setting up of District Agro-Meteorological Units (DAMUs) in the premises of KVKs to provide AAS to farmers. To understand the utilization pattern of the mobile AAS offered by the DAMU by the Krishi Vigyan Kendra (KVK), Nellore, Andhra Pradesh a survey was conducted. Sample size of 150 respondents was selected by employing proportionate random sampling method. The survey was carried out in terms of dimensions viz., technology adoption, information processing behaviour, information storage behaviour and information sharing behaviour. Results of the survey showed that nearly two-third of the respondents adopted Pest management practices and harvesting time information disseminated through agromet advisory system. Medium level of information processing behaviour was seen among the 66% of

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respondents, 48% of the respondents have medium information storage behaviour and around three-fourth (74%) of the respondents have medium level of information sharing behaviour.

Keywords: Adoption; mobile phone; information processing; information storage; information sharing.

1. INTRODUCTION

Agriculture and allied sectors are both the cause and vulnerable to the climate change. Increased weather variability patterns place enormous constraints on farmers' ability to make strategic decisions about agricultural practice [1]. With timely access to weather-based technical information, farmers can take action against extreme weather events. Both Central and State Governments are running many programmes to enable the farmers to get timely weather based technical information along with crop advisories [2]. However, district level advisories may not be useful for every farmer in the district, as the farmers have raised different crops and in different sowing window. In the view of above, India Meteorological Department (IMD) and Indian Council of Agricultural Research (ICAR) with multi-organisational collaboration implemented District Agro Meteorological Units (DAMUs) established under Gramin Krishi Mausam Sewa (GKMS) being flagship programme of Govt. of India for weather related services to the farmers at block level to address weather needs of farmers. This is a joint effort of various components and issuing crop and location specific weather based agro advisories for the benefit of farming community on every Tuesday and Friday and on occurrence of extreme weather [3].

Technologies and advisories reach end-users (farmers) primarily through field visits, kisan melas and training programs by personal contact with extension officers. However, these types of technology transfer consume much of time and success rate is very low. Now a days, the extension technologies have been improved along with the development in Information and Communication Technologies (ICT). ICT-based agricultural extension brings more opportunities and has the potential to enable empowering farming communities and thus extension practitioners are keen to experiment innovative e-agriculture initiatives in India [4,5]. Mobile phones being a low-cost ICT tool can able to deliver accurate, relevant and timely information and agromet advisories to farmers when compared totraditional methods of extension services [6]. Mobile phone also reduces the communication cost and can also be a game changer in small holder agriculture. Making use of the advancement in ICT, most of the technologies are being directly transferred to the farmers' mobile as SMS or WhatsApp messages. These methods are highly cost effective and quickly reach more populations on their own circulation among themselves. Keeping in this view, a survey was conducted to understand the utilization pattern of the mobile agromet advisories among the farmers sent through SMS and Whatsapp groups.

2. MATERIALS AND METHODS

The study was conducted in SPSR Nellore district of Andhra Pradesh considering vast coverage of farmers and technological solutions. Allur, Indhukurpeta and Podalakur blocks of Nellore district were selected for the study considering diversity in crop coverage and subscribers of the service. The study sample comprised of 150 farmers (50 from each block). The respondents from each block were selected by employing proportionate random sampling method. An ex-post facto research design was used and structured questionnaire was prepared and administered to collect data, by face-to-face interaction. Data were loaded properly, tabulated and analysed using statistical tools.

The utilization pattern of agromet advisory services has been studied focusing the following dimensions viz., Technology adoption, Information processing behaviour, Information storage behaviour and Information sharing behaviour as suggested by Prabha and Arunachalam (2014). The scoring patterns of the above dimensions are explained here under.

2.1 Technology Adoption

Technology adoption refers to the process of accepting, integrating, and using new technology in society. The process follows several stages, usually categorized by the groups of people who use that technology. There were three categories of respondents namely, 'fully adopted', 'partially adopted', and 'not adopted' with scores of 3, 2

and 1 respectively. Percentage analysis was done to get meaningful interpretation of the results.

2.2 Information Processing Behaviour

For information processing behaviour, the respondents were categorized after discussing with farmers, scientists and extension workers. There were three categories of respondents namely, 'often', 'sometime', and 'never' 'provided with scores of 3,2 and 1 respectively. By employing cumulative frequency method, the respondents were categorized as low, medium and high.

2.3 Information Storage Behaviour

For information storage behaviour, six statements were taken into consideration. The statements were finalized by using discussion with farmers, scientists and extension workers. There were three categories of respondents namely, 'often', 'sometime', and 'never' 'provided with scores of 3, 2 and 1 respectively. The scores for all items were summed up to get individual's total score. By employing cumulative frequency method, the respondents were categorized as low, medium and high.

2.4 Information Sharing Behaviour

It referred to the extent to which the recommendationas given through the mobile agromet based advisory services were recommended to others by the recipient farmers. To study the information sharing behaviour of the farmers, five statements were taken into consideration. The respondents were narrated about these statements enquiring whether they shared or not. There were three categories of respondents namely, 'often', 'sometime', and 'never' 'provided with scores of 3,2 and 1 respectively. The scores for all items were summed up to get individuals total score. By employing cumulative frequency method the respondents were categorized as low, medium and high.

3. RESULTS AND DISCUSSION

3.1 Technology Adoption by Farmers

The distribution of respondents according to technology adoption for the use of mobile agromet advisory services is shown in Table 1. From the results it could be seen that 50% of the respondents have 'partially adopted', followed by 28% of respondents 'fully adopted' and the rest of respondents have 'not adopted' (22%) the messages for the practice of selection of crops among the given technologies. Among the selection of varieties, 40% of the respondents have 'fully adopted' the practice, followed by 34% of respondents who have 'partially adopted' and the remaining (26%) of the respondents have 'not adopted' the practice of selecting the suitable varieties for the region as recommended by ANGRAU. In the case of nursery management practices, 40% of the respondents have 'fully adopted' followed by 36% of respondents have 'partially adopted' and the rest (24%) of the respondents have 'not adopted' nursery management practices. Around 50% of the respondents had partially adopted the recommended nutrient management practices, followed by 26% of the respondents have 'fully adopted' the practice and the rest 24% of the respondents have 'not adopted' the nutrient management practices which may increase the cost of fertilization. Among the intercultural operations, 44% of the respondents have 'partially adopted', 36% of the respondents who have 'not adopted' and the rest (20%) of the respondents have 'fully adopted' the intercultural operations as recommended by the ANGRAU. With regard to the irrigation management practices, majority (40%) of the respondents have 'partially adopted', followed by 38% of the respondents who have 'fully adopted' and 22% of the respondents have 'not adopted' as recommended irrigation practices. With regard to the pest management practices, nearly two-third (65.33%) of the respondents have 'fully adopted', followed by 22% of the respondents have 'partially adopted' and the rest 16.67% have 'not adopted' the pest management practices. In case of disease management practices availed by farmers, around half (48%) of the respondents have 'fully adopted', followed by 32% of the respondents who had 'partially adopted' and remaining 20% had 'not adopted' the disease management practices. As agromet advisories regard to harvesting practices, majority (70%) of the respondents have 'fully adopted', followed by 20% who have 'partially adopted' and remaining 10% of the respondents have 'not adopted' the harvesting practices. Among the post-harvest management practices, majority (42%) of the respondents have 'partially adopted', followed by 36% of respondents have 'fully adopted' and the rest (22%) of the respondents have 'not adopted' post harvesting management practices. This

finding is in conformity with that of Dash et al. [7] and Meena et al. [8] where they implied that the farmers were adopting recommended management practices and majority of the farmers have medium adoption level regarding improved management practices.

The above results revealed that the existence of wide variation in the adoption of the mobile based agromet advisories from farmer to farmer. The technologies viz., selection of varieties, nursery management, pest and disease management practices and harvesting practices were fully adopted by most of the respondents. Partial adoption was noticed with regard to the technologies viz., selection of crops, nutrient management practices, intercultural operations, irrigation management practices and post-harvest management practices. The practices viz., intercultural operations were not adopted by a markable portion of the respondents as the stage of the crop for different locations varies with the cropping pattern they adopt. The analysis of the above results showed that the trend of non-adoption was less among the respondents, the messages originated from DAMU had a high integrity value, which might be one of the reasons for the appreciate trend in adoption of practices as evident from the survey. Reasons expressed for non-adoption of agromet advisory services are due to their suitability of different farming situations, lack of timely availability of labour and farm machinery for intercultural operations, soil related problems and farmers un aware of technical names and depend entirely on trade names. The findings are in accordance with Prabha and Arunachalam [6] and Sandhu et al. [9].

3.2 Information Processing Behaviour of Farmers

From the data presented in Table 2 on information processing behaviour clearly shows that the nearly two-third (66%) of the respondents were with medium level of information processing behaviour on mobile agromet advisory services, followed by 24.% of respondents had low level and the rest 10% had high level of information processing behaviour. This finding is in accordance with the findings of Kalidasan and Satheesh [10] were majority of the farmers have medium level of information processing behaviour.

3.3 Information Storage Behaviour of Farmers

Distribution of respondents according to information storage behaviour is furnished in Table 2. The results in Table 2 indicates that nearly half (48%) of the respondents had medium level of information storage behaviour on mobile agromet advisory services, followed by 40 percent of the respondents had low level and the remaining 12 percent of respondents had high level of information storage behaviour. Hence, we could conclude that majority of the respondents possessed medium level of information storage behaviour which is a common among farming society. The findings are in accordance with Prabha and Arunachalam 2014, who reported that nearly two-third (61.50%) of the respondents had medium level of information storage behaviour, followed by 26.00 percent of the respondents with low level and the remaining 12.50 percent of respondents had high level of information storage behaviour.

Table 1. Distribution of respondents according to technology adoption

S. No.	Technologies availed	Utilization pattern					
		Fully adopted		Partially adopted		Not adopted	
		No.	%	No.	%	No.	%
1	Selection of crops	42	28	75	50	33	22
2	Selection of varieties	60	40	51	34	39	26
3	Nursery management practices	60	40	54	36	36	24
4	Nutrient management practices	39	26	75	50	36	24
5	Intercultural operations	30	20	66	44	54	36
6	Irrigation management practices	57	38	60	40	33	22
7	Pest management practices	98	65.33	33	22	19	12.67
8	Disease management practices	72	48	48	32	30	20
9	Harvesting practices	105	70	30	20	15	10
10	Post-harvest management practices	54	36	63	42	33	22

Table 2. Distribution of respondents according to information processing behaviour, information storage behaviour and information sharing behaviour

Respondent categories	Information processing behaviour		Information storage behaviour		Information sharing behaviour	
	n=150	%	n=150	%	n=150	%
Low	36	24	60	40	30	20
Medium	99	66	72	48	111	74
High	15	10	18	12	9	6
Total	**150**	**100**	**150**	**100**	**150**	**100**

3.4 Information Sharing Behaviour among Farmers

Distribution of respondents according to information sharing behaviour is furnished in Table 2. According to Table 2, 74% were found with medium level of information sharing behaviour on mobile agromet advisory services, followed by 20% of respondents had low level and a 10% of the respondents had high level of information sharing behaviour. This could be evidenced from the Verma et al. [11] that 30 percent farmers were always sharing livestock related information with family members followed by 21.7% with neighbours, equal numbers (9.2%) with friends and fellow farmers and 2.5% with Gram Pradhan. Similar response on information sharing behaviour on vegetable farming In Srilanka was also reported by Mahindarathne and Min Q [12].

4. CONCLUSION

This survey was conducted to examine the utilization pattern of mobile agromet advisory services among the farmers in Nellore district of Andhra Pradesh. Most of the farmers welcomed the mobile agromet advisory services as a part of transfer of technology system. Findings revealed that pest & disease management practices, nursery management practices and harvesting information have been the major aspects on which farmers have been found interested to get information. The location and crop specific agromet advisory services were more relevant to their situation. In case of information processing behaviour, information storage behaviour and information sharing behaviour farmers were seen with medium level. Farmers should be encouraged to communicate with crop experts, extension personnel, and other fellow farmers to clarify any unclear agricultural information. They ought to keep the knowledge on hand and disseminate it to other farmers, as this would facilitate the spread of technological easier in rural areas

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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