Usage of Agromet Advisory Services among the Farmers of Y.S.R. District of Andhra Pradesh.

ABSTRACT:AAS provides a very special kind of inputs to the farmer as an advisories that can make a tremendous difference to the agriculture production by taking the advantage of benevolent weather and minimize the adverse impact of malevolent weather. To understand the Usage pattern of the mobile AAS provided by the District Agromet Unit (DAMU) by the Krishi Vigyan Kendra (KVK), Utukur, Andhra Pradesh a survey was conducted. Sample size of 200 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. 75.0 % of the respondents have 'fully adopted', followed by 17.5% of the respondents have 'not adopted' and the rest 7.5 % have 'partially adopted' the pest and disease management practices. In case of disease management practices availed by farmers, 71% of the respondents have 'fully adopted', followed by 15% of the respondents who had 'not adopted' and remaining 14% had 'not adopted' the disease management practices. As agromet advisories in regard to harvesting practices, most (87.5%) of the respondents have 'fully adopted', followed by 10% who have 'partially adopted' and remaining 2% of the respondents have 'not adopted' the harvesting practices.

Keywords: Weather; Agromet Advisory Services; mobile advisories; information storage; information sharing.

1.INTRODUCTION:

Weather is one of the most important factors determining success or failure of agricultural production. It effects on every phase of growth and development of plant [1].While all other physical factors, inputs and agronomic practices can be manipulated, vagaries of weather cannot be controlled. However, adverse effects on crops can often be mitigated. Thus risk in agricultural operations can be minimized by the provision of weather information properly interpreted for their agricultural significance, containing advisories for farm operation and disseminated well in advance of the impending weather. In view of above, Agrometeorological Advisory Service (AAS) are being rendered by India Meteorological Department (IMD), Ministry of Earth Sciences (MoES) under Gramin Krishi Mausam Sewa (GKMS) scheme as a step towards contribution to weather information based crop/livestock management strategies and operations dedicated to enhancing crop production and food security. AAS provide a very special kind of inputs to the farmer as advisories that can make a tremendous difference to the agriculture production by taking the advantage of benevolent weather and minimize the adverse impact of malevolent weather.IMD is generating and issuing quantitative District / Block level weather forecast up to 5 days exclusively for agriculture. The products comprise of quantitative forecasts for major weather parameters viz., rainfall, maximum and minimum temperatures, wind speed and direction, relative humidity and cloudiness. These products are used by the AMFUs / DAMUs for the preparation of district / Block level agromet advisories twice a week, i.e. on every Tuesday and Friday and dissemination to the farming community to help them in taking appropriate decisions for day-to-day farm operation [2]. The agriculture sector must produce more food for a growing world population, which is expected to increase from 7 billion to about 9 billion by 2050. Most of the farmers in India are smallholder farmers often with limited access to technologies and resources which leaves them increasingly vulnerable to weather and climate fluctuations. Linking the climatic information with the available technologies and best farming practices is required. Customized, location and crop specific actionable information is the requirement of the small farmers

[3]. Inter and intra-seasonal variations in weather/climate carry considerable impact on the efficiency of agricultural operations such as planting, weeding and harvesting, and they also determine the efficacy of application of inputs such as fertilisers, insecticides and pesticides. Extreme meteorological events such as droughts and floods, with their potential to increase pest and disease infestations, can cause significant economic losses depending on the stage of crop growth during which they occur. Early forecasts of such events have the potential to help farmers take appropriate remedial measures that could help avoid or reduce economic losses. Timely availability of agrometeorological information and services could facilitate both strategic and tactical decisions in increasing and sustaining agricultural production [4].

Along with the public extension services, farmers access information from a variety of other sources. These sources can be divided into formal and informal information networks. The informal networks constitute face-to-face interactions with friends, relatives, other farmers, and extension agents among others. On the other hand, formal sources refers to information that is created specifically for farmers through media such as radio and television based agricultural programs, telecenters and mobile based information services. Farmers use a combination of these formal and informal modes of accessing information simultaneously, for different information. [5] highlighted limitations to these formal and informal networks and criticized their lack of knowledge or understanding of the farmer's perspective and need for information. It is important to understand the demand for information relating to the agricultural activity of the farmers. Most farmers have access to a variety of traditional information sources (television, radio, newspapers, other farmers, government agricultural extension services, traders, input dealers, seed companies and relatives), which they regularly access for agricultural information [6]. These traditional sources have been an important tool for several decades now. They disseminate scientific and technical agricultural knowledge to the farmers and also help improve adoption of technologies. They played an important role during the green revolution in the 1970s and 1980s [7]. The advancements in Information and Communication Technologies (ICTs) have brought a new opportunity for enhancing access to agricultural advisory and extension services [8]. Mobile phones promise to bring the ICT revolution to previously unconnected populations [9].An array of innovative practices has been developed to fill this gap in extension and advisory service delivery. Approaches that have been used include village-based intermediaries, farmer-to-farmer extension, farmer field schools or farmer field days, aimed at reaching as many farmers as possible with extension messages. The key difference with traditional extension approaches is the emphasis on participatory learning and action, with more tailor-made services, including facilitation of access to financial services and access to markets. However, the high cost associated with face-to-face extension constrains effective delivery of the service to the farmers, who are often widely distributed [10]. The mobile service is clearly more than capable of providing timely, relevant and accessible advice and is valued by those who have engaged with it, but there is need to make it more interactive and embed clear monitoring system to ensure the messages reach the intended audience [11]. Mobile phones being a low-cost ICT tool can able to deliver accurate, relevant and timely information and agromet advisories to farming community compared to traditional methods of extension services. 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. 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

Y.S.R. District is the south eastern district of Andhra Pradesh situated within the geographical co-ordinate of 14°9'40" and 16°0'57" of Northern Latitude and 78° 07'02" and 79° 59'58" Eastern Longitude. The mean sea level varies from 269 to 3787 meter~~s~~ above sea level. Y.S.R. district is located at Southern Agro-Climatic zone of Andhra Pradesh. Total Geographical area of the District is 15,379 Sq.k~~K~~m. District Level AgroMet Units (DAMU) for weather based Advisory services has been

established at KVK, Utukur, Kadapa during the year, 2019 for weather forecasting and weather based advisories to farmers. C.K.Dinne, Pendlimarri, Chennur and Khajipeta blocks of YSR district were selected for the study considering diversity in crop coverage and subscribers of the service. The study sample comprised of 200 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-not matching with the reference No.). 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, 2and 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 recommendationsas given through the mobile agromet based advisory services were communicated 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 42.5 % of the respondents have 'not adopted', followed by 30.5 % of respondents 'fullyadopted' and the rest of respondents have 'partially adopted' (27%) the messages for suitable sowing time. Among the

selection of varieties, 44% of the respondents have 'partially adopted' the practice, followed by 35 % of respondents who have 'fully adopted' and the remaining (21%) of the respondents have 'not adopted' the practice of selecting the suitable varieties for the region. In the case of nursery management practices, 49% of the respondents have 'fully adopted' followed by 30% of respondents have 'partially adopted' and the remaining 21% of the respondents have 'not adopted' nursery management practices. Around 50.5% of the respondents had fully adopted the recommended nutrient management practices, followed by 27% of the respondents have 'not adopted' the practice and the rest 22.5% of the respondents have 'partially adopted' the nutrient management practices which may increase the cost of fertilization. Among the intercultural operations, 42% of the respondents have 'not adopted', 35% of the respondents who have 'fully adopted' and the rest (23%) of the respondents have 'partially adopted' the intercultural operations as recommended by the ANGRAU. With regard to the irrigation management practices, majority (60%) of the respondents have 'fully adopted', followed by 24% of the respondents who have 'not adopted' and 16% of the respondents have 'partially adopted' as recommended irrigation practices. With regard to the pest management practices, 75.0 % of the respondents have 'fully adopted', followed by 17.5% of the respondents have 'not adopted' and the rest 7.5 % have 'partially adopted' the pest and disease management practices. In case of disease management practices availed by farmers, 71% of the respondents have 'fully adopted', followed by 15% of the respondents who had 'not adopted' and remaining 14% had 'notadopted' the disease management practices.As agromet advisories regard to harvesting practices, most (87.5%) of the respondents have 'fully adopted', followed by 10% who have 'partially adopted' and remaining 2% of the respondents have 'not adopted' the harvesting practices. Among the post-harvest management practices, majority (42%) of the respondents have 'fully adopted', followed by 30% of respondents have 'partially adopted' and the rest (28 %) of the respondents have 'not adopted' post harvesting management practices. Thisfinding is in conformity with that of [12]and [13]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 postharvest 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 [14]and [15].

3.2 Information Processing Behaviour of Farmers

From the data presented in Table 2 on information processing behaviour clearly shows that ~~the~~ nearly half of the (47%) respondents were with medium level of information processing behaviour on mobile agromet advisory services, followed by 29.5% of respondents had high level and the rest 23.5 % had low level of information processing behaviour. This finding is in accordance with the findings of [16] and ~~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 indicates that more than half (60%) of the respondents had medium level of information storage behaviour on mobile agromet advisory services, followed by 23 percent of the respondents had low level and the remaining 17 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 [14]who reported that nearly two-third (61.50%) of the respondents had medium level of information storage behaviour, followed by 26.0 percent of the respondents with low level and the remaining 12.5 percent of respondents had high level of information storage behaviour.

3.4 Information Sharing Behaviour among Farmers

Distribution of respondents according to information sharing behaviour is furnished in Table 2. According to Table 2, 52.5% were found with medium level of information sharing behaviour on mobile agromet advisory services, followed by 28.5% of respondents had high level and a 19% of the respondents low high level of information sharing behaviour.

Farmers indicated that they were convinced about the accuracy of the information, the main reason they shared with others. Smallholder farmers felt their knowledge had been increased and marginal farmers reported gaining yield benefits. Women were the most keen to continue to receive information but did not express an opinion on the quality of the service. Respondents gave a range of (free text) answers as to why they were more likely to share information. The reasons can be, benefits they gained or perceived future benefits, service accuracy and trustworthiness and continuing to receive such messages could do no harm [11].This could be evidenced from the [17]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 [18].

4. CONCLUSION

This survey was conducted to examine the usage pattern of mobile agromet advisory services among the farmers in Y.S.R district of Andhra Pradesh. Most of the farmers followed the mobile agromet advisory services as a part of transfer of technology. Survey revealed that pest & disease 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.

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Table 1. Grouping of respondentsbased on adoption of technologies

S.No	Technologies	Fully adopted		Partially adopted		Not adopted	
		Frequency	%	Frequency	%	Frequency	%
1	Sowing time	61	30.5	54	27.0	85	42.5
2	Selection of crops	70	35.0	88	44.0	42	21.0
3	Selection of varieties	90	45.0	72	36.0	38	19.0
4	Nursery management practices	98	49.0	60	30.0	42	21.0
5	Nutrient management practices	101	50.5	45	22.5	54	27.0
6	Inter cultural operations	70	35.0	46	23.0	84	42.0
7	Irrigation management practices	120	60.0	32	16.0	48	24.0
8	Pest management practices	150	75.0	15	7.5	35	17.5
9	Disease management practices	142	71.0	28	14.0	30	15.0
10	Harvesting practices	175	87.5	20	10.0	5	2.5
11	Post-harvest management practices	84	42.0	60	30.0	56	28.0

Table2.Distribution of respondents according to information processing, storage and information sharing behaviour.

Respondent categories	Information processing behaviour		Information storage behaviour		Information sharing behaviour	
	Frequency	%	Frequency	%	Frequency	%
Low	47	23.5	46	23	38	19
Medium	94	47	120	60	105	52.5
High	59	29.5	34	17	57	28.5
Total	200	100	200	100	200	100