



Knowledge Evaluation on Weather Forecast and Agro-advisory Services to Farmers in Srikakulam District of Andhra Pradesh, India

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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

Weather is the major factor for crop growth and yield. Farmers were more interested on the current real time weather parameters such as rainfall, humidity in air, air temperature, direction and speed of the wind. Knowing of weather forecast is useful to reduce the yield loss and to

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obtain more yield with high remunerative price. The precise real time data at exact time allows the farmers to plan field management practices like choosing of correct crops, land preparation, field operations like spraying of pesticides and herbicides, irrigation, fertilizer application, harvest, drying and post harvest operations to reduce the crop damage and economic losses. The District Agromet unit (DAMU) located at KVK, Amadalavalasa is sending timely weather advisories to farmers of Srikakulam district based on the forecast issued by IMD. A total number of 1080 Agro Advisory Service (AAS) bulletins were prepared by using DSS software and disseminated to the registered farmers through whatsapp and other social media during 2022-2023. A random sample survey was conducted to study the impact of agro-advisory services to farmers based on weather forecast issued by DAMU, Srikakulam. The sample size was 60 farmers belong to different villages of Amadalavalasa and Srikakulam blocks of Srikakulam district. The study Results revealed that spotlight on illiterate farmers is much more significant and dispersal of advisories in audio or visual format is more comfortable and easy to understand. The results of the survey exposed that among the total farmers the farmers follow for sowing are 45 percent, for spraying operations are 11 percent, for harvest and drying are 62 per cent. Finally this study confirms that the farmers were more concentrate on sowing, harvest and drying related to weather forecast. Hence finally realized that farmers should follow forecast data of weather from choice of crop and its management practices to after harvest operations to get enhanced productivity and also superior net returns.

Keywords: Weather forecast; evaluation; agromet advisory services.

1. INTRODUCTION

The important parameter of crop production in agriculture based country like India is weather. The gain or loss from agriculture is extremely reliant on real time weather parameter like, temperature, rainfall, relative humidity, hail. and wind speed [1] The short and long term decisions in the crop management practices were highly influenced by weather in order to exploit the maximum profit from the crop [2]. To keep away from crop damage losses due to un suitable weather, there is a need to more concentrate on weather based agro advisory services to augment the farmers income [3]. Agro-meteorological information viz., weather forecast, stage wise crop pest and disease warning and control measures is realinput for proficient farming. Farmers can plan in progress on crop cultivars, fertilizer application, weed management, pest and diseases management and make planning accordingly to reduce the risk of failure If exact real time forecast is available. [4]. The Gramin Krishi Mausam Sewa (GKMS) programme implemented by India Meteorological Department (IMD) under which District Agromet unit (DAMU) are established at Krishi Vigyan Kendra (KVKs), to provide block level advisory to farmers.

The weather based agro advisory bulletins were prepared at block level in DSS software by experts after conducted meeting with the KVK scientists and State Agricultural department for

discussion about major crops , stages and incidence of pest or disease in the district on every Tuesday and Friday. These bulletins were prepared in both English and regional language (Telugu) and disseminated to farmers through different medial like Newspaper, Short Message Services (SMS), WhatsApp, m-Kisan, E-mailsto State Agriculture Department, Research Stations, NGOs and FPOs. To decrease the losses due to aberrant weather, the farmers utilize the services of agro advisory to decide and follow the timely crop management activities which in turn resulted to get increased crop yield as well as net returns. [5]. From this extension study it is planned to evaluate the impact level and acquired knowledge of agro advisory services based on weather forecast to the farmers of Srikakulam district.

2. MATERIALS AND METHODS

Srikakulam district of north coastal Andhra Pradesh is situated in North coastal zone of Andhra Pradesh. The geological location of the district is 18.296974N latitude and 83.896782E longitude. The weather conditions of district are moderate. The summer months are normally very hot with average of 37.8°C. The winter average temperature is normally 19.5°C. Normally the annual rainfall of the district is 1150 mm. In Srikakulam district normally south west monsoon is the major rain causing with 65 % of the rainfall followed by North east monsoon with 35 % of rain fall.

The major agriculture in the district is mainly depends on monsoon rains and if any event of the failure or late arrival of monsoon crops faces drought conditions. Srikakulam district comprises of 30 blocks namely Ichapuram, Kaviti, Kanchili, Sompeta, Mandasa, Palasa, Meliaputti, V.Kothuru, Nandigam, Tekkali, Santhabommali, Kotabommali, Pathapatnam, Narasannapeta, Polaki, Jalumuru, Saravakota, Srikakulam, Gara, Etcherla, Amadalavalasa, Ranasthalam, Laveru, G.Sigadam, Ponduru, Burja, Kothuru, Hiramandalam, Sarubujjili.L.N.Peta (Fig. 1). A Project DAMU i.e. District Level Agro Met Units for dissemination of weather forecast and agro advisories has been established at KVK, Srikakulam. A Total of 1080 AAS bulletins were prepared and disseminated to the farmers during 2022-2023. Throughout the year 46 Farmers awareness programmes on Megdhooth and damini APP popularization was conducted to 1335 farmers and weather forecast and advisory bulletins were disseminated to 10650 farmers through various modes [6].

For in acquiring significant information from a large group of people, Survey is the most important and effective method. Rathore *et al.*, (2008) .Two phases of random sample Survey was conducted with 60 farmers from different villages of Srikakulam and Amadalavalasa blocks of Srikakulam district. The Phase I survey intended to study the knowledge on weather-based agro advisory and services under DAMU to mitigate the abnormal weather conditions and to sustain the farmers income. Phase II survey designed to study the Agromet advisory services and its economic impact on farmers. The questionnaire was prepared in bilingual language (English and Telugu) with 24 questions in optional type which is an uncomplicated comprehensible one.

3. RESULTS AND DISCUSSION

The results of the survey discovered that 43.8 per cent are in the middle age followed by old age (30.6 per cent) and young age (25.4 per cent) group. It was also noticed that age had a notable rapport in acquiring knowledge on forecast of weather and agro advisory services. It is also observed from this study that 36 per cent of middle age group farmers were recurrently verify the weather forecast to take choice on farm operations next by old age (24 per cent) and young age (15 per cent). The level of education by the farmers also played a serious role in this

survey where the higher secondary level of qualification show highest percent of 50 followed by diploma/degree holder and later illiterate farmer (25 per cent) (Fig. 2). In the total of 60 farmers 15 farmers with degree level of education, 27 of 30 farmers at Higher secondary level of education qualification and 4 illiterate farmers. Out of 15 answered yes and have the knowledge to check the weather forecast [7]. Hence it is clearly indicated that education plays an important role in receiving knowledge to check weather forecast to make proper decisions on farm operations. Finally from the above two factors it has been clearly observed that, age and education influenced the farmers to know the proper technologies which are suitable in the changing weather conditions and accordingly helped the farmers to follow suitable management practices and adopt proper technology [8].

3.1 Source of Weather Information

To disseminate innovative technologies i.e. Mass media, Television, whatsapp Radio M-kisan portals, weather based Apps, Internet are efficiently utilized by to cover larger group of people. [6]. From the above survey results indicated that 66.7 per cent of farmers follow weather information by Television, 16.7 per cent farmers by Television + Newspaper 11.7 percent of farmers received by mobile.

From the above study it is clearly revealed that, weather based agro advisories dissemination by television reached is more benefitted to both literate and illiterate farmers [9]. It is also came to know that Newspapers were more easily available and understandable and convenient to read for farmers at low cost [10]. At this consequence depending on modern gadgets like smart phones, internet, tabs and computers, farmers can easily and updated information [11]. Out of total 60 farmers, 52 percent prefer to get weather information in morning and 45 percent farmers prefer in evening time and remaining 3 per cent peoples in afternoon times in their regional language [12,13].

From the above study it is concluded that the majority of the farmers felt they depend on weather majorly in their daily crop management practices. For efficient scheduling of farm activities the timing and accuracy of weather is more important. Based on the data it is possible to decide different agricultural operations which may be done or postpone.



Fig. 1. Srikakulam Block map

Source: https://colab.research.google.com/drive/1jLv_09M_srHYzq2KMe-u-ZmOUeEd6yYG

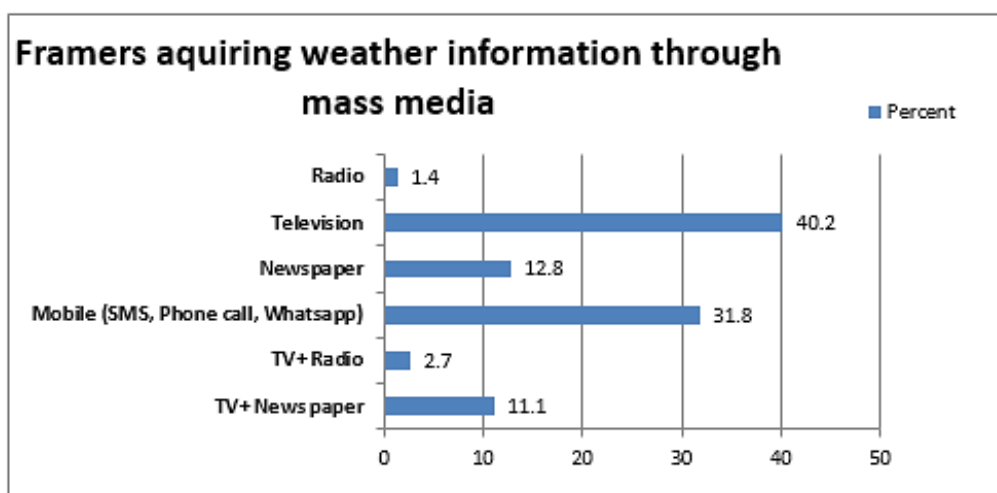


Fig. 2. Farmers gathering weather information through mass media

Table 1. Farmers response on weather based agro advisories

S. No	Observations	Farmers opinion	
		Frequency	Per cent (%)
1	Weather forecast influence on taking decision on farm operation	48	80
2	Planning for farm operation based on weather effects	46	76
3	Preferable Languages of weather forecast -telugu	60	100
4	Irrigation depend on Weather forecast	29	48
5	Insecticides/ pesticides/ Fungicides sprayings	39	65
6	Advisories related to animal husbandary- benefits	19	31

Finally this study revealed that 62 percent farmers check for forecast before going for spraying, 54 percent follow for irrigation, 20 per cent follow for animal husbandry (Table 1). By following the weather forecast it is observed reduction in cost of cultivation, save in time and labour in all agricultural practices. It was varied among the respondents for the preference for time of forecast. Out of total respondents short range forecast was required by 52 per cent of farmers, need for Medium range forecast was 26 per cent and now cast was needed for 10 per cent and finally 32 per cent farmers need Long-range forecast. It is also observed that among all 50 per cent farmers expect two times in a week for forecast and 25 per cent respondents needs daily and remaining part of 25 per cent expect only once in a week.

4. CONCLUSION

In Srikakulam district knowledge evaluation on weather forecast and agro advisories will sustain farmers on making correct decision and decrease the crop loss due to aberrant weather. The farmers who were educated have more attention on weather forecast. To remain them to follow weather forecast and agro advisories for agricultural practices focus on non educated farmers is much more significant, in spread of weather forecast based advisories in audio or visual form is more convenient. The farmers expect precise forecast in different crop stages and for livestock and expect to get it two time sin week. Presently DAMU scheme operating at KVK, Srikakulam sending weather forecast and advisories twice in a week to farmers for various crop stages. By following the real time weather mainly irrigation, spraying are planned by the farmers. Now the farmers apprehend to follow forecast based crop management in selection of crop to post harvest to get superior yields and higher net returns for that awareness is to be created

Farmers also need forecast and advisory services up to village level is also a major success of forecast. They also remain reduced their risk of crop loss by following the correct guidance. In Srikakulam district literate farmers have more consciousness real time advisories and forecast .So spotlight on uneducated farmers are much more essential, and disseminating the weather advisories in audio or visual form to follow agricultural practices. The timely and precise predict at different stage of crops, horticulture and for animal

husbandry and farmers expect weather forecast two times in a week, by DAMU scheme operating at KVK, Srikakulam. The farmers were felt they reduce the crop loses and increase the economic returns by utilizing the weather forecasts and agro advisories. They were much more satisfied by the services of DAMU.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Arul Prasad, Vijaya Santhi.VA. Impact assessment on knowledge of weather based agro-advisory services among farmers in tiruvallur district, Tamil Nadu. 2020. *Current Journal of Applied Science and Technology*. 2020;39(36):96-101. DOI:10.9734/CJAST/2020/v39i3631077
2. Khobragade AM, Ade AU, VaseemAhmedMG. Usefulness of agro advisory services (AAS) regarding climate change in selected villages of AICRPAM-NICRA project for Marathwada region. *Journal of Agroecology and Natural Resource Management*. 2014;1(3):127-129.
3. Arpitha SN, Naresh NT, Munawery A, Shambhavi S, Rajath HP. Utility and impact of Agromet advisory services among farmers in Mandya District. *Karnataka. Int. J. Environ. Clim.* 2022;12: 168–172. DOI: 10.9734/ijecc/2022/v12i930751
4. Manjusha K, Nitin P, Suvarna D, Vinaykumar HM. Exposure, perception and advantages about weather based agro-advisory services by selected Farmers of Anand district, India. *Int. J. Curr. Microbiol. App. Sci.* 2019;8(5):1934-1944.
5. Singh M, Ghanghas BS, Sharma V, Sharma BC. Minimize weather risk in agricultural planning and management through agromet advisory services in Rural Areas; 2020.
6. Venkatasubramanian K, Tall A, Hansen J, Aggarwal P. Assessment of India's integrated agrometeorological advisory service from a farmer perspective; 2014.
7. Valujeva K, Freed EK, Nipers A, Jauhiainen J, Schulte RP. Pathways for governance opportunities: social network analysis to create targeted and effective

- policies for agricultural and environmental development. J. Environ. Manag. 2023; 325:116563.
DOI: 10.1016/j.jenvman.2022.116563
8. Ziro JS, Kichamu-Wachira E, Ross H, Palaniappan G. Adoption of climate resilient agricultural practices among the Giriama community in south East Kenya: implications for conceptual frameworks. Front. clim. 2023;5:1032780.
DOI: 10.3389/fclim.2023.1032780
 9. Lazo JK, Morss RE, Demuth JL. 300 Billion served: Sources, perceptions, uses, and values of weather forecasts. Bulletin American Meteorological Society; 2008.
DOI: 10.1175/2008BAMS2604
 10. Harshini A, Babu KM, Reddy CVG, Suhasini K. Awareness of Farmers on Weather Based Agro Advisory Services in Telangana State, India. International Journal of Environment and Climate Change. 2023;13(10):355–365.
Available:<https://doi.org/10.9734/ijecc/2023/v13i102648>
 11. Baran SJ. Introduction to mass communication, media literacy and culture. Philip A. Butcher Publisher. 2004;65-70.
 12. Johnson D, Almaraz M, Rudnick J, Parker LE, Ostojka SM, Khalsa SDS. Farmer adoption of climate-smart practices is driven by farm characteristics, information sources, and practice benefits and challenges. Sustain. For. 2023;15:8083.
DOI: 10.3390/su15108083
 13. Rathore LS, Maini P. Economic impact assessment of agro-meteorological advisory service of NCMRWF. National Centre for Medium Range Weather Forecasting, Ministry of Earth Sciences, GOI; 2008.

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