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Awareness on Weather Based Agro-advisory Services among Farmers of Tamil Nadu, India

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

The production and productivity of different crops are impacted by the weather. Farmers will be better able to prevent crop failure and obtain high yields with greater financial returns if they are aware of real-time weather factors such temperature, relative humidity, wind speed, wind direction, and rainfall. Farmers may better plan agricultural activities, from crop selection to post-harvest handling, by having the proper weather information at the right time. This helps them reduce crop losses. To study the awareness of weather based agro-advisory services, a random sample survey was conducted from 60 farmers from blocks of Andanallur and Musiri block of Tiruchirappalli district and for this study descriptive research design is used. The findings showed that targeting illiterate farmers is far more crucial, and that it is preferable to disseminate weather forecasts in audio or video format to encourage them to adapt their agricultural methods to the weather. The survey revealed that 72.00 per cent of farmers had medium level of awareness, about 95.00 per cent of the farmers check the weather forecast before going for irrigation and pesticide spray, 60.00 per cent farmers are receiving SMS through District Agro-Met Units. Apart from crops, weather forecasts also help with taking care of livestock, which includes animals reared on farms. Just like plants, animals also need the right weather to stay healthy and give good results. This is why

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accurateweather forecasts matter a lot for both farming and looking after livestocks. Wise use of weather and climate information can help to make better-informed policy, institutional and community decisions that reduce related risks and enhance opportunities, improve the efficient use of limited resources and increase crop, livestock and fisheries production [1]. Our study revealed that the farmers had medium level of awareness. Additionally, awareness needs to be raised so that people understand that in order to increase production and income, weather forecasts must be followed from the time a crop is chosen until harvest.

Keywords: Weather; agro advisory services; Gramin Krishi Mausam Sewa; District Agro-Met Units.

1. INTRODUCTION

India is an agrarian nation where the weather is crucial. The government spent a significant amount of money to provide the most accurate and useful weather forecast possible, especially for farmers. A weather forecasting system designed to function in the event of unfavorable weather, specifically in regard to agriculture. One of the areas that is most susceptible to weather and climate change is agriculture. One of the main variables influencing crop yield and agricultural output is the weather. The use of a real-time contingency plan in crop management can effectively mitigate crop loss in response to weather forecasts. Rathore [2] study about the economic impact in minimum weather based agro advisory services. Weather factors including temperature, precipitation, wind speed, relative humidity, and hail have a significant impact on agricultural production success or failure. In order to maximize the benefits in terms of crop production quantity and quality, weather has an impact on both short-term (tactical) and long-term (strategic) decisions. In order to prevent crop failure due to shortened weather conditions, the India Meteorological Department (IMD) began providing meteorological services to farmers in 1945. Later, in 1976, Agromet Advisory Services (AAS) was launched. To improve farmers' lives, the federal and state governments are focusing more on weather-based agricultural advising programs. Real input for effective farm management includes agro-meteorological information, such as weather forecasts, soil status data, and agro-advisory. If an accurate weather forecast is available, the farmer can lower the chance of failure by planning ahead and selecting crop cultivars, applying fertilizer at the right time, controlling weeds, pests, and diseases, and making the required preparations.

The Gramin Krishi Mausam Sewa (GKMS) program is carried out at 130 district-level centers across all states by the India Meteorological Department (IMD). Jagriti [3]. The State Agricultural/Animal Husbandry Universities, Krishi Vigyan Kendras (KVKs), Colleges, or Research Stations are the organizations that create these Agromet Field Units (AMFUs). The technical officer at each AMFU is a university scientist who oversees the preparation of weather-based agricultural advisories at the district level. District Agro-Met Units (DAMU) were introduced in nine districts of Tamil Nadu to give farmers block-level advice. With assistance from KVK scientists and the State Agricultural Department, Krishi Vigyan Kendra prepares advisory bulletins at block level on Tuesdays and Fridays regarding the district's primary crops. The bulletin is sent by WhatsApp, M-Kissan, newspapers, short message services (SMS), email through the State Agriculture Department, research stations, GKMS, and web portals. Ramachandrappa [4] studied about the usefulness of the agro met advisory services. It is available in both English and regional languages. By using the services, farmers may make informed decisions and adhere to timely cultivation techniques, increasing crop output and minimizing weather-related losses. However, it is uncommon for all farmers to receive weather forecast information, and smart phones are necessary for weather-based agro advising services. The purpose of this study is to examine farmers' understanding of weather-based agro advice services and the district of Tiruchirappalli's weather information sources.

2. MATERIALS AND METHODS

2.1 Area of Study

The Tiruchirappalli District is situated in the middle of Tamil Nadu, between latitudes 10° and 11°30' north and longitudes 77°45' and 78°50' east. Ariyalur in the North East, Pudukkottai in the South East, Thanjavur in the East, Namakkal in the North West, Salem in the North, Karur in the South West, and Dindigul in the South encircle the district. In the northeast are Ariyalur, in the south-east are Pudukkottai, in the east are

Thanjavur, and in the south are Dindigul. At 4403 sq. km, the district's overall geographical area is 3.39 percent of Tamil Nadu's total area. One of Tamil Nadu's 38 districts, Tiruchirappalli District is situated alongside the Kaveri River in India. Almost exactly in the geographic center of the state of Tamil Nadu, Tiruchirappalli is located in central-south-eastern India. There are fields of agriculture all around Tiruchirappalli. The summers of Tiruchirappalli are dry, with little variation in temperature from summer to winter. High temperatures and low humidity are typical characteristics of the climate. The city has the highest average temperature in the state, with an annual mean of 28.9°C (84.0 °F) and monthly averages ranging from 25°C (77°F) to 32°C (90°F). The city sees frequent dust storms throughout the warmer months of April through June. The existence of the two rivers, Kaveri and Kollidam, has been blamed for the city's high temperatures. Tiruchirappalli experiences exceptionally warm and dry days due to its location on the Deccan Plateau, while the evenings are characterized by chilly winds originating from the southeast. The city has a temperate climate with frequent thunderstorms and heavy rain from June to September. The north-east monsoon winds cause the most rainfall between October and December, and the weather is chilly and damp from December to February. The yearly rainfall average is 841.9 mm (33.15 in), which is little less than the state average of 945 mm (37.2 in). Dew and fog are uncommon and only happen in the winter. Tiruchirappalli is district in Tamil Nadu state of India. Andanallur, Lalgudi, Mannachanallur, Manigandam, Manapparai, Marungapuri, Musiri, Pullambadi, Thiruvarumbur, Thottiyam, Thuraiyur, T.Pet, Uppiliyapuram, and Vaiyampatti are the fourteen blocks that make up Tiruchirappalli. In order to provide farmers with appropriate advisory services based on weather forecasts, district level agro-met units for weather-based advisory services have been developed in KVK, Sirugamani, Trichy.

2.1.1 Sampling techniques and methods

In social science research, the research has been carried out with a research design, in this study descriptive research design is used is a kind of study strategy that seeks to gather data in a methodical way to characterize a situation, population, or phenomenon. More precisely, it assists in addressing the research problem's what, when, where, and how inquiries rather than its why. Surveys are the most crucial and useful tool for gathering pertinent data from a sizable population. Sixty farmers belonging to the villages of Andanallur and Musiri block in Tiruchirappalli district were selected using the basic random sample approach. The purpose of the survey is to determine public knowledge of the weather-based agro-met services offered by district agro-met units. Well structured interview schedule was prepared and the survey was taken place in Tiruchirappalli district and the data was analyzed using percentage analysis and correlation method.

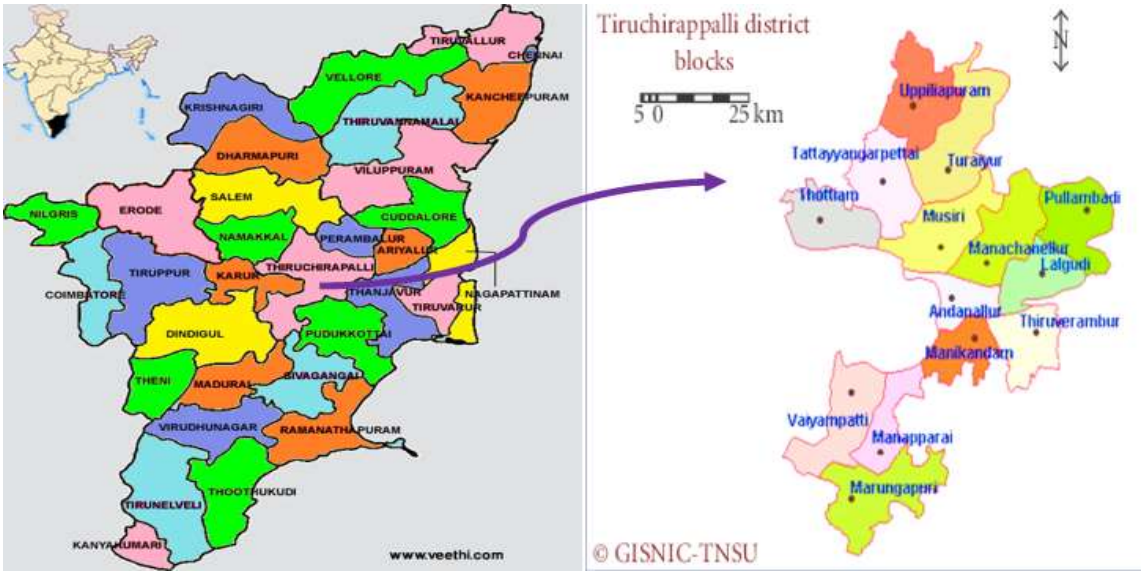

Fig .1. Study map

3. RESULTS AND DISCUSSION

3.1 Demographic Expression

The survey's findings showed that 48.00 percent of farmers were middle-aged, followed by old age (40.00 percent) and young age (12.00 percent). The survey also found that the highest percentage of farmers had a secondary education, at 25.00 percent, followed by middle education (18.00 percent), higher secondary education (17.00 percent), primary education and illiterate people (13).00 percent, diplomas and collegiate education (7.00 percent). It is evident from these two factors that the farmers' age and educational status affected their ability to choose appropriate technologies that are suitable for the changing weather conditions and, as a result, assisted them in adhering to appropriate cultivation practices and technologies. With 70.00%, farming is the only occupation held by farmers. This is followed by farming + animal husbandry (17.00%) and farming + business (13.000%). In addition, the farmers' experience in farming is a significant factor in weather prediction and the use of weather-based agro advisory services; 60.00 percent of the farmers had more than twenty years of experience, followed by 32.00 percent with ten to twenty years and 8.00 percent with less than ten years.

3.2 Source of Weather Information

Out of 60 farmers, it was found that 40 received information from DAMU, 10 were viewed through mobile apps, and 8 were accessed through websites. Weather-based agro advisory services are offered through a variety of platforms, and farmers are utilizing these platforms to access information. Li et al. [5] stated that a positive attitude toward technology also significantly influences technology adoption behaviors. The study also indicated that all the selected fifteen characteristics acted as cause to bring 68.30 per cent variation in adoption of DAMU service. As a result, KVK is crucial in spreading weather-based agricultural advisory services in areas where the DAMU scheme is in place. It has also been noted that using the mass media to distribute these services has a greater impact on farmers because they can access them through a variety of media outlets. WhatsApp was only used by 66.6 percent of the respondents, with internet use coming in second at 13.3%. This could be the case since 40% of the farmers were older than 50 and not very interested in learning how to use technology, even if using digital technology requires some expertise to fully utilize its potential.

Despite the fact that the majority of respondents (87%) only had a primary education and could read and write, more than half of respondents (60%) used newspapers to obtain weather forecast information for farming. Tiruchirapalli KVK sent farmers mobile SMS updates about weather-related technologies, and 55% of farmers used these services. Table 1 shows that all respondents (100%) used television to obtain weather-related information and farming technology. This could be because all respondents owned televisions, which have the advantage of providing audio and visual content that is easy for them to understand. Manjusha et al. [6] also stated that various advantages of weather based agro advisory services.

Table 1. Demographic description

Items	Categorize	Number of respondents	Percent
Age classification	Small (Up to 35)	7	11.66667
	Medium (36-50)	29	48.33333
	High (Above 50)	24	40
Educational status	Illiterate	8	13.333333
	Functionally Literate	0	0
	Primary Education	8	13.333333
	Middle Education	11	18.333333
	Secondary Education	15	25
	Higher Secondary Education	10	16.666667
	Diploma	4	6.6666667
	Collegiate Education	4	6.6666667
Occupation	Only Farming	42	70
	Farming + Animal Husbandry	10	16.6666667
	Farming + Business	8	13.3333333
	Farming + Services	0	0

Table 2. Mass media utilization *N= 60

S.NO	Mass Media	Frequency	Percentage
1	WhatsApp - Messenger	40	66.6
2	Internet	8	13.3
3	Television	60	100
4	Newspaper	36	60
5	Mobile SMS	33	55
6	Leaflets/Folders/Pamplets	3	5

List 1. Relationship between profile characteristics and awareness in farmers

S.NO	Variable	‘ r’ Value
1	Age	- .186
2	Education	-.027
3	Occupation	.097
4	Size of land	-.204
5	Farming Experience	-.198
6	Source of Information	.677**
7	Mass Media Utilization	.782**

*** Significant at 1 per cent level* Significant at 5 per cent level*

Consequently, compared to other mass media, it is evident that weather advisories were distributed via television to farming populations that were both literate and illiterate. With the advent of new generation media like computers, the internet, and smartphones, farmers had the advantage of receiving information accurately and on time. Farmers also preferred to read newspapers since they were inexpensive.

The survey also revealed that 72.0 percent of farmers had a high level of awareness of the weather-based agricultural warning, compared to 21.0 percent who had a moderate level and 21.00 percent who had a high level. Because of these seasonal variations, farmers need to be made more aware of the importance of weather-based agro advisory services. Mwangi et al [7] indicated that perception of farmers towards a new technology is a key precondition for adoption to occur. More trainings on this topic should be held, and farmers themselves need to understand the value of agro advisory services in the current context.

4. CONCLUSION

The utilization of agro-met advisory bulletins, which are based on current and forecasted weather, is a helpful tool for increasing crop productivity and respondents' income. Farmers receive real-time weather-based agro-advisories for major agricultural crops, horticulture crops, including vegetable crops, and livestock. AAS is delivered for five days and includes eight weather parameters, including maximum temperature, minimum temperature, rainfall, maximum RH, minimum RH, cloud cover, wind speed, and wind direction. Agro meteorological Field Units (AMFU) distribute agro-met advisories on Tuesday and Friday. Farmers in the Tiruchirappalli district who are educated and have access to mass media are more likely to be aware of weather forecasts, so it is important to focus on illiterate and less media-savvy farmers in order to encourage them to adopt weather-based agricultural practices. Farmers expect weather forecasts to be timely and accurate at different stages of the crop cycle, and the DAMU scheme currently in place at KVK, Sirugamani, provides weather-based agro advisory services twice a week. For now, farmers in the district are able to make informed decisions and lower crop risk. Farmers tend to concentrate more on weather-based irrigation and spraying operations. Shankar et al. [8] indicated in their study that major suggestion expressed by the farmers that details were on improving infrastructure, like installing rain gauges, observatories and other weather tools at village level. However, farmers also need to be made aware that, in order to maximize productivity and profit, weather forecasts should be followed in all aspects of farming operations, from crop selection to post-harvest technologies.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Chattopadhyay N. Weather and climate based farm advisory services. Journal of Agrometeorology. 2021;23(1):1-2.
2. 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.
3. Rohit Jagriti, Beevi Anshida CN. A framework to study farmers decisions on adoption of agromet advisories services for risk management: Insights from theory of planned behavior. Bhartiya Krishi Anusandhan Patrika. 2022;37(1): 66-70.
4. Ramachandrappa BK. Usefulness and impact of agro met advisory services in eastern dry zone of Karnataka Indian Journal of Dry land Agricultural Research and Development. 2018;33(1):32
5. Li Hui, Diejun Huang, Qiuzhuo Ma, Wene Qi, Hua Li. Factors influencing the technology adoption behaviours of litchi farmers in china. Sustainability. 2020;1:271.
6. Manjusha K, Nitin P, Suvarna D, Vinaykumar HM. Exposure, perception and advantages about weather based agroadvisory services by selected Farmers of Anand district, India. Int. J. Curr. Microbiol. App. Sci. 2019;8(5):1934-1944.
7. Mwangi M, Kariuki S. Factors determining adoption of new agricultural technology by smallholder farmers in developing countries. Journal of Economics and Sustainable Development. 2015;*6*(5).
8. Shankar K Ravi, Nagasree K, Venkateswarlu B, Maraty Pochaiah. Constraints and suggestions in adopting seasonal climate forecasts by farmers in South India. The Journal of Agricultural Education and Extension. 2011;17(2):153 — 163.

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