

Farmers' Awareness Towards TNAU -AAS Web Cum Mobile App for Western Agro Climatic Zone (ACZ) of Tamil Nadu

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Abstract

A survey was conducted in Coimbatore, Western ACZ of Tamil Nadu purposively with 240 farmers using well-structured interview schedule by convenient sampling method to assess the utility behaviour of smart phones. The frequency and percentage analysis was used to analyse the data. Age and education influenced the farmers to know about the appropriate technological interventions in agriculture. Easy access to updated information was higher with smart phones (83 %) and 80 % respondents use mobile app to know about weather forecast. Regarding the App handling skill, 92% could download the app from the play store, 83 % could enter the basic details, 74 % could enter the crop details, 67 % could access the message delivered and 59 % could follow up the messages in the app respectively. The overall satisfaction of AAS was realized by 79 % of the respondents in the study area. Harnessing the full potential of ICT-enabled solutions in agriculture was made possible by the current study.



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Introduction

Early warnings and climate forecasts have a great potential to prevent weather-related losses and damage to agriculture. Due to global warming, it is predicted that farm income will decrease by 15 to 25 percent, and economic losses will get worsen as temperatures rise.¹ The sensitivity to climate change makes it more difficult to achieve food security and


the Sustainable Development Goals (SDG), primarily because it has a diverse range of effects on the most vulnerable.²

Tamil Nadu recorded with the highest frequency of droughts during the past century.³ Due to the lack of a monsoon, the semi-arid state experienced major damage from drought in the most recent years,

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2002–2003, 2009 2016 and 20194. Tamil Nadu's weather-based hazards, which include hereditary geo-location risks, transferrable risks, and risks that can be reduced by the introduction of technology to crop yield, are distinct from those in most other Indian states.⁵

In developing nations, mobile phone technology has given farmers a good platform to exchange knowledge and information with one another on the move, such as market rates and weather information.^{6,7} Men and women now have easier access to information thanks to mobile phones, raising their level of living.^{8,9}

The Automated Weather-based Agro Advisory Service (AAS) from TNAU is the best alternative for responsive farming and promoting sustainability in farming amid climate variability and climate change. This web cum mobile app was developed by the

Scientists of Tamil Nadu Agricultural University, Coimbatore. Given that all agricultural operations depend on the weather, AAS is regarded as a blessing for the farming sector. AAS is weather-smart and understands the needs of farmers.¹⁰

With this background, an analytical study was taken up with the objective of to know the farmers' perception awareness about the TNAU-AAS – Web cum Mobile App in western Agro Climatic Zone of Tamil Nadu.

Materials and Methods

Study Area and Period

The current investigation was purposefully carried out in selected blocks viz., Anamalai, Thondamuthur, Annur, Karamadai, Pollachi North of Coimbatore and Pongalur block from Tiruppur from March 2021 to March, 2022 (Figure1).

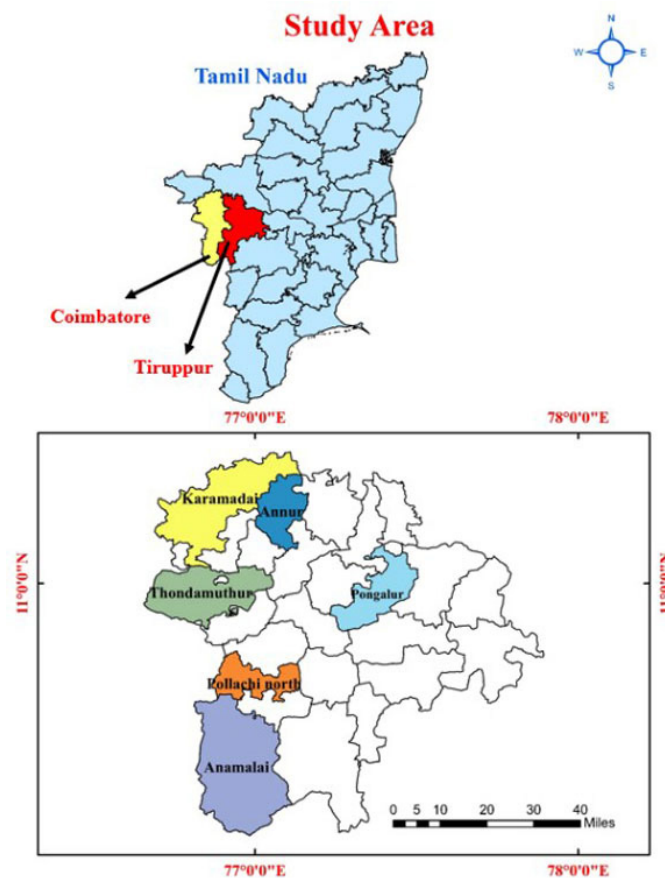


Fig. 1: Study Area for Survey

TNAU-AAS App

The block-level Automatic Weather Station (AWS) placed at Tamil Nadu will continuously sense the weather data and communicate with the central server of the Tamil Nadu Agricultural University. Using regional climate models (WRF), the block level weather forecast with a lead-time of 6 days will be created and stored on the server. The weather data from the previous six days and the six-day prediction will be combined to create weather-based agro

advisories at the block level, which will be distributed to farmers via mobile SMS for the important crops. These 54 weather windows can be used to produce agro advisories for specific crops to be distributed to farmers in a domain area under automated agro advisory services with certainty and can be seen in aas.tnau.ac.in (web page) and mobile app. Through social media, the farmers are aware of the agriculture portals which helps the farmers to know and share the weather based agro advisories.



Fig. 2a: Web Page of TNAU AAS

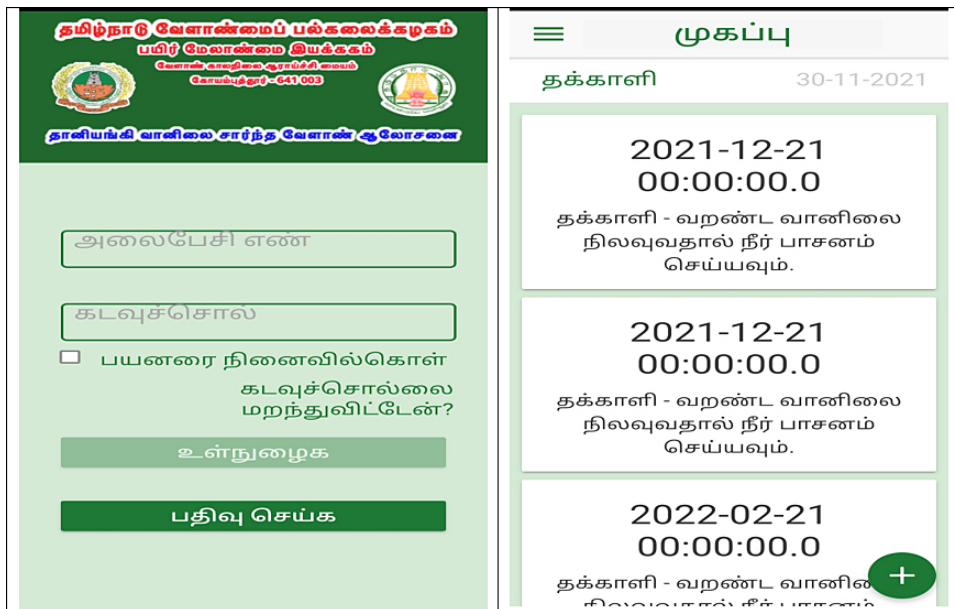


Fig. 2b: Android Mobile App of TNAU AAS

Farmers' Survey and Interviews

In the context of the agricultural information sources that were accessible in the study area, the current study considered the usage of mobile phones for information transfer. A random sample of 40 farmers was selected from each representative blocks of the study area. The frequency and percentage analysis were employed to assess the farmer's knowledge and perception about agromet advisory services. The convenience sample approach was used for getting the information regarding the access to internet on mobile phone. Due to pandemic situation prevailed during the study period (March

2021- March 2022), all the required details were collected using telephonic survey from the respective blocks. During pandemic period the data were collected through telephonic conversation with 180 farmers and through WhatsApp group. During post pandemic period, survey was conducted with 60 farmers. All together 240 samples were collected for the study. But no variations were observed in the farmer's response during the above said periods. The data also include information on farmer's perception towards Agromet Advisory Services in the Western Agro Climatic Zone of Tamil Nadu.

Table 1: Socio-economic characteristics of farmers in Western ACZ of Tamil Nadu(n=240)

S. No	Particulars	TNAU-AAS -App registered farmers		
		Category	Frequency	%
1	Age(Years)	Young(<35)	84	35
		Middle(>36-45)	103	43
		Old(>46)	53	22
2	Education	Secondary	43	18
		Higher Secondary	106	44
		Graduation	91	38
3	Gender	Male	175	73
		Female	65	27
4	Farming experience	Low (up to 15 years)	67	28
		Middle (16 to 25 years)	99	41
		High (> 25 years)	74	31
5	Land Holding (ha)	Marginal & Small (< 2.5 acre)	35	14
		Medium ((>2.5 to 5 acre)	165	69
		Large (> 5 acre)	40	17

Results and Discussion

Socio-Economic Characteristics of Farmers in Western ACZ

The socio-economic characteristics of farmers in the Western ACZ of Tamil Nadu is given in Table 1. Considering the age, the respondents from middle age was 43 per cent followed by young age with 35 per cent. The educational status of the farmers inferred that 44 per cent completed Higher Secondary graduation followed by 38 per cent of the respondent's completed graduation. 73 per cent of the respondents were male while 27 per cent were female. In the WACZ, 41 per cent of the respondents

had 16 to 25 years while 31 per cent had more than 25 years of farming experience respectively. The land holding information inferred that 69 per cent of the respondents hold medium size of land holding while 17 per cent of the respondents had large farm size. TNAU- AAS app requires knowledge to input the basic information given in the app and continuous follow up in receiving the SMS is needed for the successful weather based information. Since, 44 per cent of the respondents had Higher Secondary school of education and majority had middle age group, whom were more interested in handling this app. A line of confirmation with this study was given.¹¹

Farmers Access to Information Source on New Technology

Farmers in the study had potential access to smart phones and this was in accordance who reported that the third generation of mobile phones were widespread among farmers.¹² Smart phones (83 %) had an easy-to-use features and applications and act as widely used source of information acquisition due to its high frequency of utilization.¹³ This was followed by Progressive farmers (78 %)

by which face to face interaction was possible due to geographical proximity of the fields. Parallely, Newspapers (75 %) have separate page for farming community to discuss the important topics related to agriculture (Figure 3). Farmers are said to adopt and utilise mobile phones more frequently for agricultural purposes since they are better equipped to do a number of tasks, like receiving SMS and downloading web-based applications, on smartphones.^{14,15}

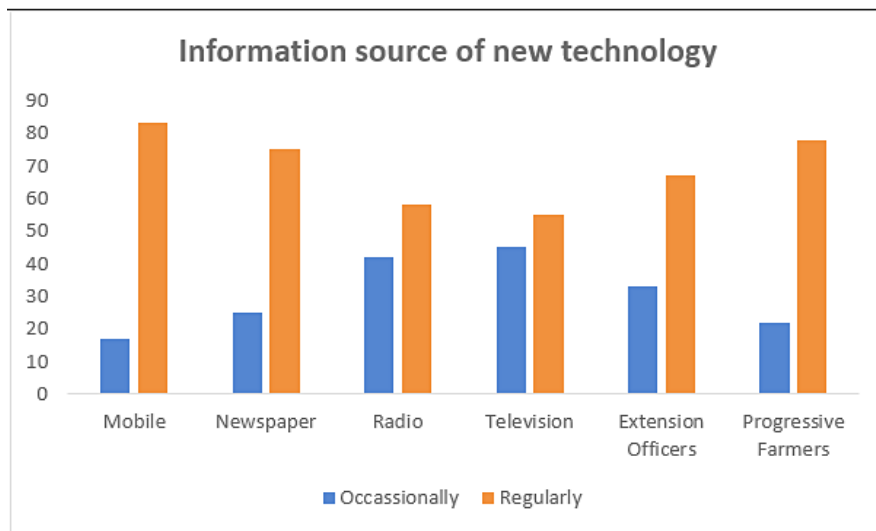


Fig. 3: Information source of new technology

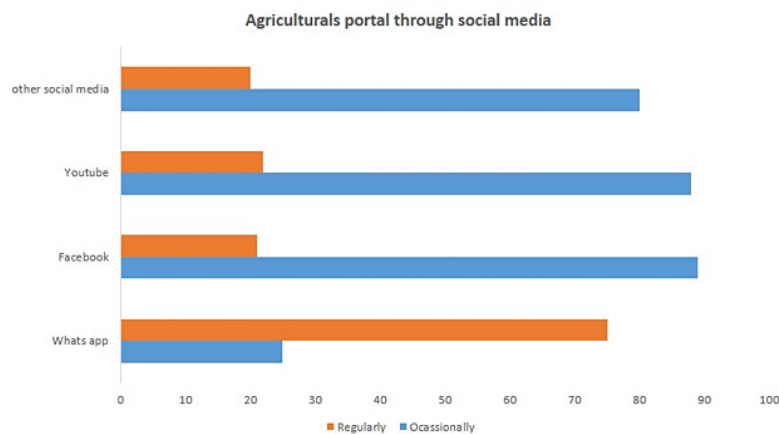


Fig. 4: Agricultural portal through social media

Farmers Access to Agricultural Portals Through Social Media

The smart phones were widely used by the farmers as a source and medium to obtain information

regarding farming to make better decisions. 75 per cent of respondents used Whats app to know about agricultural portals through social media (Figure 4) Since, most of the respondents in the study area

comes under middle and young age group, they were familiar in creation of whats app group and sharing of the farm new practices.

Farmers Exposure to Weather Forecast

Among the different modes of exposure to weather forecast, 80 per cent respondents use mobile app to know about weather forecast (Figure 5). Many

weather apps are available in the smart phones which ease the farmers to know about the weather forecast locally. Moreover, SMS from TNAU were accessed regularly by more than 60 per cent of the respondents to take up the tactical farm decisions. Another study in line found that farmers preferred to get weekly weather-based agricultural advise services from TNAU agricultural specialists.¹⁶

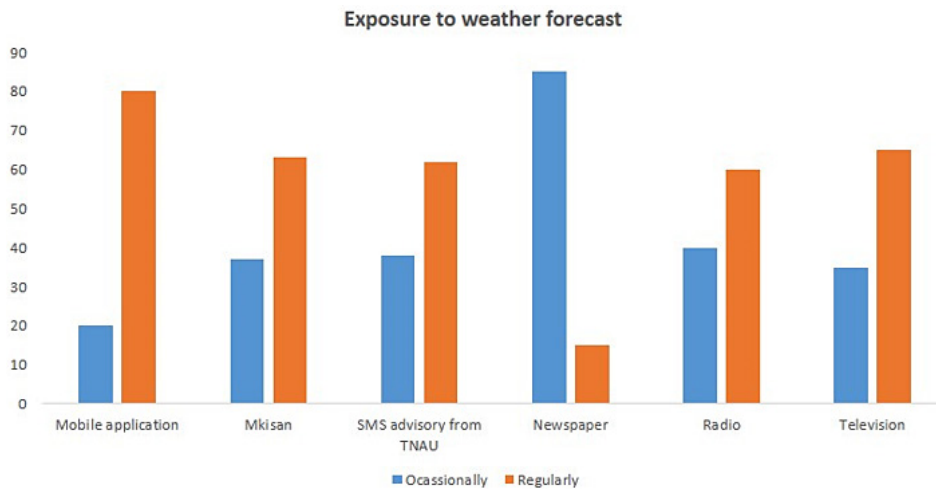


Fig. 5: Exposure to weather forecast information

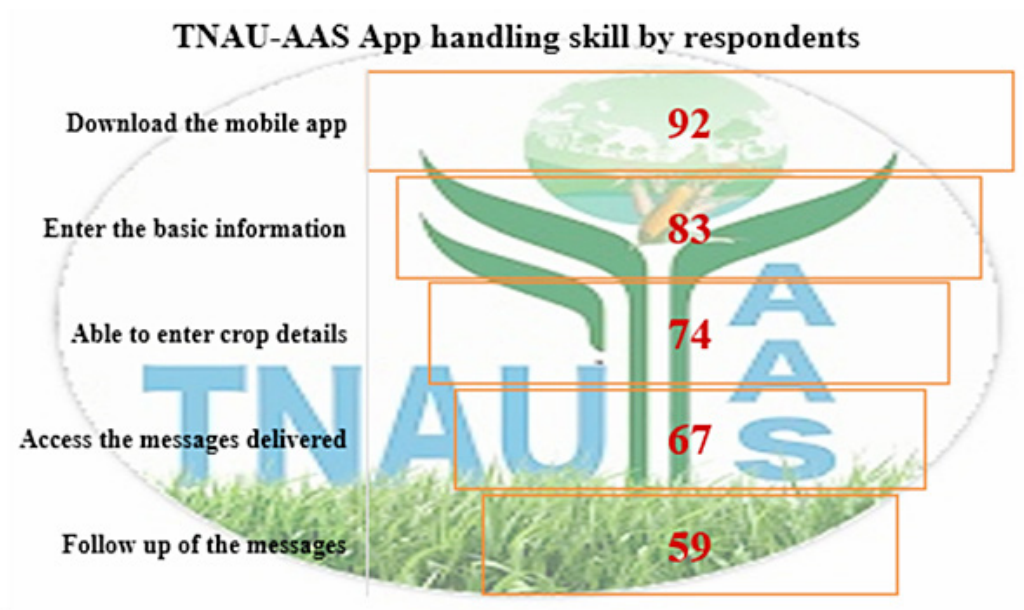


Fig. 6: TNAU App handling skill by respondents

Farmers Response to TNAU-AAS App Handling skill

Through the telephonic survey and creation of Whats app group, registration of farmers in TNAU AAS app was done with smart phones. 92 per cent of the respondents could download the app from the play store, 83 % respondents could enter the details required by the app, 74 % respondents could enter the crop details in the app, 67 % respondents could access the message delivered in the app. 59 % respondents could follow up the messages in the app (Figure 6). Awareness should be created to realize that the farmers need to follow the advisories from the sowing to harvest to achieve better productivity and good income.

Registered Farmer's Perception Towards Agromet Advisory Services

The perception about the Agro Advisory services (AAS) was rated as good by 45 per cent and average by 40 per cent of the respondents (Table 2). The quality of the information disseminated

from the AAS was rated as good by 38 per cent and average by 51 per cent of the respondents. The willingness to pay for the AAS inferred that 65 per cent were not ready for the paid services while 15 per cent responded positively for the paid services and 20 per cent responded they were unable to give a clear picture towards payment structure. The advantage and requirement of AAS towards farmers' need revealed that the AAS given during spraying operations against plant protection (94 %) followed by general farm operations (85%) and irrigation scheduling (83%). A parallel information on spraying operation importance on AAS in Tiruvallur district was reported.¹⁷ The overall satisfaction of AAS was realized by 79 per cent of the respondents in the study area. This information collected from the respondents throws light to further improve the quality of the AAS by working out permutations and combinations of different weather combinations to the crops listed in the App.

Table 2: Registered Farmer's perception towards AAS in Western ACZ of Tamil Nadu

S. N	Farmers Perception statements	Frequency	%
1	Perception about AAS		
	Good	108	45
	Average	95	40
	Not Satisfactory	37	15
2	Quality of AAS disseminated		
	Good	91	38
	Average	122	51
	Not Satisfactory	27	11
3	Willingness for pay based services		
	Yes	35	15
	No	156	65
	Not decided	49	20
4	Advantage of AAS		
	General Farm operation	205	85
	Irrigation scheduling	200	83
	Intercultural operations	125	52
	Spraying of chemicals	225	94
	Post -harvest operations	165	69
5	Overall satisfaction from AAS		
	Yes	189	79
	No	51	21

Conclusion

Information and communication technologies are becoming more prevalent in developing nations for the advancement of various people, including educators and farmers. The awareness level and adoption of TNAU-AAS Web cum Mobile App in the western ACZ of Tamil Nadu was explored in the current study. The app handling skill of the farmers were assessed in the present study to improvise the app for easy handling by the farmers. The feedback obtained based on the perception of this AAS provides an insight to improve the efficacy of the contents in the app to reduce the risk of the farmers due to various weather vagaries. To assure the quality, timeliness, and reliability of information, it is crucial to fully utilise the potential

of information distribution made possible by mobile telephony coupled with supporting infrastructure and capacity building among farmers.

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Conflict of Interest

There is no conflict of interest in the manuscript.

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