

Original Research Article

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Assessment of Tamil Nadu Agricultural University (TNAU) Mobile Apps among Mobile User Group in Tiruvallur District

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ABSTRACT

Currently lot of Information and Communication Technology (ICT) tools are available for Transfer of Technology (TOT) this ICT tools are gradually replacing the traditional method of TOT, and personnel contacts methods. It act as an expert in diagnosing, analyzing and problem solving in all areas (Agriculture, Medicine, Animal husbandry, etc.). In order to popularize ICT tools among farmers the Krishi Vinyan Kendra (KVK) located in Tirur village of Tiruvallur district taken a novel initiative. Three type of treatments among paddy growing farmers such as Farmers own experience, Farmers using existing extension methods for getting information on paddy (Extension officers and dealers) and Farmers using TNAU mobile apps for getting information on paddy were taken for assessment purpose. TNAU Mobile app was uploaded to 10 farmers. Demonstration on the use of Mobile apps was given to the beneficiaries. In case of mobile app the knowledge gained on new technologies is high and in case of their own experience it is nil. Adoption of new technologies is about 70% in case of mobile app utilization and 40% and 30% in case of conventional extensional services and farmers own experience respectively.

Keywords

Farmers, ICT, Information, Mobile app

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Introduction

Currently lot of Information and Communication Technology (ICT) tools are available for Transfer of Technology (TOT) this ICT tools are gradually replacing the traditional method of TOT, and personnel contacts methods. It acts as an expert in diagnosing, analyzing and problem solving in all areas (Agriculture, Medicine, Animal husbandry, etc.). But these technological

tools are generated and practiced only in research system and public extension system. An expert system (ES) is a computer programme that is designed to emulate the logic and reasoning processes that an expert would use to solve a problem in his/her field of expertise, using artificial intelligence technology (Waterman 2004). The expert system purpose is not to replace the human expert yet to build their insight knowledge, experience and permit expert system to work

better. (Tripathi 2011). ICT can be used to provide farmers with reliable information and services, thereby promoting a more remunerative agriculture development (Raghuprasad *et al.*, 2012). Dhaka and Chayal (2010) stated from their study that larger proportion of the farmers utilized ICT for assessing price of the farm produce followed farmers getting information about crop production practices plant protection measures. Huge efforts were taken by the government to bring this technological tools to farmer's usage but lack of awareness and source of technology on latest innovative technologies on crop production is noticed among the farming community. In order to popularize ICT tools among farmers the Krishi Vinyan Kendra (KVK) located in Titur village of Tiruvallur district taken a novel initiative. Among the large number of available ICT tools the TNAU mobile apps (Expert system) is one of the best visual

diagnostic and problem solving tool. Out of the six TNAU mobile apps (5 crop oriented and 1 Animal husbandry oriented) the paddy expert system is popularized among the farmers of Tiruvallur district. TNAU Paddy expert system is a mobile app for paddy that covers cultivation practices, nursery management, irrigation, crop nutrition, pest and disease management, harvest and postharvest technologies, schemes and marketing information and also it provide advisories to the farmers. This paddy expert system was developed by mobile seva and released on January 24, 2017.

Materials and Methods

Selection of study area

The basic details of Tiruvallur district based on the analysis made by the KVK during 2016-17 is summarised below:

- (i) Major farming systems/enterprises prevailed in Tiruvallur District is given in following table.

S. No	Farming system/enterprise
1.	Irrigated Rice-Rice-Rice Rice-Rice-Groundnut Pulses-Rice-Groundnut Sugarcane-Sugarcane (Ratoon)
2.	Rain fed Rice-Groundnut-Millet/Pulses Groundnut-Minor millets-Pulses

- (ii) Description of Agro-climatic Zone & major agro ecological situations (based on soil and topography)

S. No	Agro-climatic Zone	Characteristics
1.	North Eastern Zone	The district lies between 12° 10' and 13° 15' Northern latitudes and 79° 15' and 80° 20' Eastern longitudes. The average annual precipitation is 1104.4 mm with 52 per cent benefit from North-East monsoon and 41 per cent from South-West monsoon and the remaining 7 per cent from summer showers and winter rains respectively. The mean maximum and minimum temperatures are 37.9°C and 18.5°C respectively. The area has semi-arid tropical climate. The hot climate prevails during the month of March-April and the slightly cold climate from December to February, the rest of years belong to humid climate. Tanks are the most important source of irrigation in this zone closely followed by wells. . Due to

		tank and well irrigation, wetland and garden land cropping systems are in vogue though major area is under dry land agriculture. The underground water potential in this region is assessed to be good and this zone stands foremost in lift irrigation from wells with large number of agricultural pump-sets.
2	Hill Ecosystem	Shallow to moderately deep (with rock phases) red soils of eastern ghats, loamy to clayey with gravels, hot moist semi arid to dry semi arid transition (rainfall (750-1000 mm) with LGP 150-180+ days.
3	Plain Ecosystem	Moderately deep to deep, gravelly loam and gravelly clay red and lateritic soils of plains, moist semi arid ecosystem (rainfall 1000-1500 mm with LGP 180-210 days)
4	Coastal Ecosystem	Deep to moderately deep, sandy soils of narrow coastal plain and gravelly clay and gravelly loam soils of inland plain, hot moist semi arid to dry subhumid transitional ecosystem (rainfall 1000-1500 mm) with LGP 210+ days.

iii) Soil types

S. No	Soil type	Characteristics	Area in ha
1	Coastal Sandy	Deep to very deep solum, colour varies between dark yellowish brown to dark brown. Sandy textured, single grained; excessively drained soils. pH varies between 7.3 to 7.8.	8,346
2	Coastal Alluvium	Deep, light brownish gray to dark brownish gray coloured; sandy loam to sandy clay loam textured; pH varies from 8.0 to 8.3	8,702
3	River Alluvium	Deep solum, grayish brown to yellowish brown; sand to sandy loam textured; pH varies from 6.1 to 6.3 Deep solum, yellowish brown to dark yellowish brown; sandy clay to clay textured; pH varies from 7.9 to 8.3	15820
4	Red soil	Moderately deep, colour varies between dark brown to dark reddish brown; loamy sand to sandy clay loam textured; pH varies from 6.6 to 7.3	106799
5	Lateritic soil	Moderately deep, red coloured; sandy clay loam to clay textured; pH varies from 5.1 to 6.0 Moderately shallow, yellowish red coloured; sandy clay loam to sandy clay textured; pH varies from 5.5 to 5.7	15048
6	Miscellaneous land types	Hillocks in Tirutanni	8,649
7	Forest		19,736

(iv) Area, Production and Productivity of major crops cultivated in the district

S. No	Crop	Area (ha)	Production (Tonnes)	Productivity (kg /ha)
1	Paddy	102657	419227	4121
	Millets			
2	Cumbu	710	1740	2450
3	Ragi	323	891	2760
4	Maize	14	112	8000
	Pulses			
5	Redgram	184	166	900
6	Blackgram	1240	868	700
7	Green Gram	9188	8270	900
	Oilseeds			
8	Groundnut	7816	24230	3100
9	Gingelly	914	689	754
10	Castor	28	8	276

11	Sugarcane	7211	721100	100000
12	Banana	2026	99486	49104
13	Mango	9944	35348	3250
14	Guava	623	6793	10904
15	Brinjal	261	2790	10690
16	Bhendi	120	903	7525
17	Coconut	1387	6141636	44281
18	Cow pea	116	87	1500
19	Horse gram	17	13	1736

(v) Weather data

Month	Rainfall (cm)	Temperature ° C		Relative Humidity (%)
		Maximum	Minimum	
April '17	0.0	39.0	26.1	4.3
May'17	2.0	39.6	27.3	24.7
June'17	62.0	37.1	27.5	70.1
July'17	140.0	35.4	26.4	53.6
August'17	225.0	33.9	25.1	65.4
September'17	51.8	33.3	25.3	83.0
October'17	328.0	32.6	24.6	86.9
November'17	269.0	30.4	21.4	85.7
December'17	72.0	29.2	20.7	83.4
January'18	26.0	29.7	18.8	78.8
February'18	0.0	31.8	19.4	75.7
March'18	0.0	34.9	21.9	74.0

(vi) Production and productivity of livestock, Poultry, Fisheries etc. in the district

Category	Population	Production/day	Productivity
Cattle			
<i>Crossbred</i>			
<i>Indigenous</i>	2,37,868	97812	4lit/day/animal
Buffalo	56,397	36,746	6.5lit/day/animal
Sheep			
Crossbred			
<i>Indigenous</i>	74780	--	--
Goats	187984	--	--
Pigs			
<i>Crossbred</i>			
<i>Indigenous</i>	2418	--	--
Rabbits	2889	--	--
Poultry			
Hens			
<i>Desi</i>	180866	--	--
<i>Improved</i>	152000	--	--
Ducks	--	--	--
Turkey and others	--	--	--

Category	Area	Production	Productivity
Fish			
<i>Marine</i>	25.73 sq.km	2995	--
<i>Inland</i>	14841 ha	4076	--
Prawn	--	--	--
Scampi	--	--	--
Shrimp	159.36 ha	--	--

**vii) Block details of Tiruvallur district
Blocks / Panchayat Unions (14) & Village Panchayats (526)**

Sl.No	Block / Panchayat Union Name
1.	Ellapuram
2.	Gummidipoondi
3.	Kadambathur
4.	Minjur
5.	Puzhal
6.	Poonamallee
7.	Pallipet
8.	Poondi
9.	R.K. Pet
10.	Sholavaram
11.	Tiruvallur
12.	Thiruvallangadu
13.	Tiruttani
14.	Villivakkam

Since the area for paddy cultivation was high among the cereal crops in Tiruvallur district the paddy crop was selected and paddy farmers from Minjur, Poondi and Pallipatti blocks of Tiruvallur district were taken for the experiment to assess the TNAU mobile app (Paddy expert system) since they were many paddy farmers found in this block. Thirty farmers were selected randomly for this study, out of which ten farmers were selected randomly for each treatment. Among the large number of available ICT tools the TNAU mobile apps (Expert system) is one of the best visual diagnostic and problem solving tool. Out of the six TNAU mobile apps (5 crop oriented and 1 Animal husbandry

oriented) the paddy expert system is popularized among the farmers of Tiruvallur district. Three type of treatments among paddy growing farmers such as Farmers own experience, Farmers using existing extension methods for getting information on paddy (Extension officers and dealers) and Farmers using TNAU mobile apps for getting information on paddy were taken for assessment purpose

Results and Discussion

For Assessing the Tamil Nadu Agricultural University (TNAU) Mobile Apps among Mobile User Group in Tiruvallur District we

have decided to do the experiment by splitting into three treatments. The details of the treatment were given in the below table.

The experiment was conducted to observe the factors (Time spend, Knowledge gained, Credibility, dependability and Adoption of technology) among the three treatments and the observations are recorded in the table below.

The average time spend by the farmers who used TNAU mobile app (Paddy expert system) for seeking information on paddy cultivation was quick 7 minutes whereothers farmers spends 30 minutes to 4 hours to fetch information from the Extension officers and dealers. The farmers with own experience spends 1 hour to seek information over paddy cultivation.

The farmers using paddy expert system believes the source as highly credible (75%) compared to the other farmers who believes the conventional extension methods (50%) and the farmers with own experience (50%).

In case of mobile app (Paddy expert system) the knowledge gained on new technologies is high while in case of their own experience it is nil and the farmers procure information from the extension officers and dealers seems that the information given by them are not new but repeated

one.

Adoption of new recommendations/ technologies is about 70 per cent in case of mobile app utilization and 40 per cent and 30 per cent in case of conventional extensional services and farmers own experience respectively.

The rate of adoption was fast among the farmers who used the mobile app (Paddy expert system) because that application made the technologies easily accessible and also user friendly in nature where in other two cases it is difficult to access the information.

From the table it is indictable that dependability of technology source is high to the farmers following own experience and mobile app but in case of conventional method it is moderate.

It is evident that the (To3) Farmers using TNAU mobile app (Paddy expert system) for getting information on paddy cultivation seems to more efficient that others because by using the mobile application they can easily access through to get the credible information and new innovations about paddy cultivation instantly on their own without the help of others by spending minimum time. The farmers who used the TNAU Mobile app (Paddy expert system) gave feedback that the app was efficient in terms of dissemination of advance technologies in crop production.

Table.1 Details of the Experiment

S.No.	Treatment
To:1	Farmers own experience
To:2	Farmers using existing extension methods for getting information on paddy (Extn.officers and dealers)
To:3	Farmers using TNAU mobile apps for getting information on paddy

Table.2 Assessment of the TNAU mobile apps

S.No	Observation Factors	To1	To2	To3
1.	a) Time spent over seeking information on Paddy cultivation. b) Average time spent	Nil 1 hr	30 mins- 4hrs 2hrs	5 mins – 15 mins 7 mins
2.	Credibility over source of information gained.	High(50%)	Moderately credible (50%)	Highly credible (75%)
3.	New knowledge gained	Nil	(Repeated) Nil	Newly gained (50%)
4.	Adoption of new recommendations/ Technologies	30%	40%	70%
5.	Ease of access to technology	Moderately accessible	Difficult to access	User friendly easier to access
6.	Dependability of source	Highly dependable Informal source (Neighbors)	Moderately dependable Formal source(Extension officer/dealers)	Highly dependable Mobile App source (Paddy expert system)

In conclusion the ICT can be used to provide farmers with reliable information and services, thereby promoting a more remunerative agriculture development. The study that depicts that the farmers utilizing the mobile app had more efficient paddy cultivation practices. The extension workers can demonstrate and train the mobile users in handling and using different useful mobile apps on expert system created by TNAU or other authentic sources which could increase the efficiency of the cultivation practices, improve the knowledge level and adoption of new technologies by the farmers which would lead to improved livelihood.

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