

## FACTORS DETERMINING ADOPTION OF SCIENTIFIC DAIRY FARMING WITH SPECIAL REFERENCE TO FARMER'S CALLCENTRE OF TAMIL NADU

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Scientific dairy farming in India is gradually being adopted by farming community due to the overriding effect on increased milk yield. This study examined the socio economic determinants of dairy farmers and their relationship with adoption of scientific dairy farming practices in Tamil Nadu State, South India. Data were collected from 150 randomly selected respondents in the study area and was analyzed using Statistical Package of Social Science (SPSS) software. The results revealed that education status, herd size, frequency of contact, information utilization pattern and information seeking behaviour are significantly correlated with the scientific dairy farming among dairy farmers of Tamil Nadu. It was recommended that adequate awareness should be created by the State Agricultural Department to generate the interest of farmers towards the use of instant information sources like Farmer's Call Centre (FCC) for clean milk production and enhanced milk yield. Efforts should also be made to strengthen the centre with trained staffs and advanced communication facilities like tele and video conferencing so that a reasonable number of farmers can be reached with scientific dairying information.

**Keywords:** Scientific dairy farming, farmer's call centre, socio economic determinants, correlation co-efficient, regression, Tamil Nadu.

### INTRODUCTION

India is home for the largest milch animal population in the World. It became world's largest milk producer after implementation of Operational Flood – A National Dairy Development Board project implemented in three phases, Phase I (1970-80), Phase II (1981-85) and Phase III (1986-96) for facilitating the farmers adopt new methods in case of cattle in animal husbandry, changing the composition of ingredients in different proportions and fixing of different costs according to standards of wealth. As the country is marching towards self-sufficiency in milk production, sustaining is always a great challenge. As most of the part in the southern peninsulas especially Tamil Nadu depends on monsoon rain, the state is prone to drought if monsoon fails. When nature disappoints farmers and farming, the area is governed by climatic factors like high relative humidity and extreme temperature fluctuations which jointly have a limiting factor on milk production in animals that are quite productive. Because of low milk yield, and poor productive performance of animals, one of the most effective things required by a farmer for raising milk productivity is talking with the experts using advanced devices like telephones and mobile technologies, seeking information on scientific dairy farming and adopting the same at ground level to keep pace

with this loss (Ashish *et al.*, 2011; Hamza *et al.*, 2011; Abdulkareem *et al.*, 2012). Hence the study was taken to assess the socio-economic determinants of dairy farmers of Tamil Nadu who obtained information on scientific dairy farming practices from farmer's call centre (FCC).

### MATERIALS AND METHODS

The study was conducted in five districts of Tamil Nadu namely Coimbatore, Vellore, Tiruvannamalai, Tiruvallur and Kanchipuram due to high call intensity to FCC from dairy farmers and high population of livestock animals and productive milch breeds (Statistical handbook 2011). The research design formulated in this study consisted of 150 randomly selected respondents who were practicing dairy farming and who had consulted farmer's call centre (FCC) to seek information on scientific dairy farming. The data for the study was collected with a well-constructed interview schedule and the analysis was carried out using Statistical Package of Social Science (SPSS) software. To determine the relationship between the socio economic determinants and adoption of Scientific Dairy Farming Practices, correlation co-efficient was worked out. To assess the impact of socio economic variables towards adoption of

Scientific Dairy Farming Practices (SDFPs) 'z' test was applied.

$$\text{Correlation co-efficient} = \frac{\Sigma xy - \frac{(\Sigma x)(\Sigma y)}{n}}{\sqrt{\left(\Sigma x^2 - \frac{(\Sigma x)^2}{n}\right)\left(\Sigma y^2 - \frac{(\Sigma y)^2}{n}\right)}}$$

Where, n = Sample size,  $\Sigma xy - (\Sigma x)(\Sigma y)/n$  = Sum of products of xy,  $\Sigma x^2 - (\Sigma x)^2/n$  = Sum of squares of x,  $\Sigma y^2 - (\Sigma y)^2/n$  = Sum of squares of y

## RESULTS

**Socio-economic characteristics of respondents:** The results from Table 1 revealed that, three-fourth (78.67%) of the respondents were males with one-third (38.67%) was educated upto High School and 46.00 per cent practicing scientific dairy farming on full time basis. About 42.67 per cent of the respondents had own land upto 2.5 acres and were found cultivating fodder. Findings proved that 70.67 per cent of the respondents possessed medium herd size ranging between 5 – 15 animals and produced milk ranging between 10.19 – 27.20 litres per day (69.33%). With the quantity of milk produced from their herd, 72.00 per cent of the respondents were found to earn an annual income ranging between 45,280 – 1, 53,054 respectively. Friends were the main localite channel from where respondents got the number of FCC to call experts and enquired about scientific dairy farming. Among cosmopolite channel is concerned, it was found that the respondents had exposure towards melas, newspapers and television where FCC's number was advertised. About 64.67 per cent of the respondents contacted FCC to obtain information about scientific dairy farming and among that, 49.33 per cent of the respondents were regular interactors. Among those who contacted FCC, 68.67 per cent of the respondents expressed their credibility towards FCC in providing information about scientific dairy farming. Fig.1 which represented Information utilization pattern of the respondents revealed that, about 54.67 per cent of the respondents fully utilized scientific dairy farming information from FCC on the aspects of feeding, followed by 64.67 per cent of them on fodder production and 42.00 per cent of the respondents' utilized information on management. Other information utilized by the respondents from FCC were milk marketing through dairy co-operatives by 38.67 per cent and value added milk product and by-product making by 31.33 per cent. Overall it was found that; 66.67 per cent of the respondents had high information utilization.

**Extent and Level of adoption of the respondents on scientific dairy farming through FCC:** The extent of adoption of improved dairy farming practices by dairy farmers would give an indication about the changes taken

place in the study area due to the intervention of FCC. In the

**Table 1. Distribution of respondents by selected personal characteristics influence on their socio economic status**

Variable description	Respondents (n = 150)	
	Frequency	Percentage
Sex		
Males	118	78.67
Females	32	21.33
Educational status		
Illiterate	13	8.67
Primary school	20	13.33
Middle school	35	23.33
High school	52	34.67
Degree and above	24	16.00
Occupation		
Dairying alone	38	25.33
Dairying cum Agriculture	69	46.00
Agriculture cum dairying	25	16.67
Other business and dairying	18	12.00
Operational land holding		
Landless	41	27.33
Upto 2.5 acres	64	42.67
2.6 – 5.0 acres	27	18.00
5.1 – 10 acres	5	3.33
Above 10 acres	13	8.67
Herd size		
Small (upto 5 animal)	20	13.33
Medium (6 – 15)	106	70.67
Large (Above 15)	24	16.00
Milk Production		
Low (<10.19 litres / day)	16	10.67
Medium (10.19 – 27.20)	104	69.33
High (>27.20 litres / day)	30	20.00
Total Annual Income		
Low (Less than Rs 45280)	16	10.67
Medium (Rs 45,280 - 1,53,054)	108	72.00
High (Above Rs 1,53,054)	26	17.33
Source of information		
Personal localite		
Friends	106	70.67
Neighbours	38	25.33
Fellow farmers	6	4.00
Personal cosmopolite		
Melas	89	59.33
Newspaper	39	26
Television	22	14.67
Frequency of contact and their credibility		
Farmers Call Centre	42	28.00
• Level – I	97	64.67
• Level – II	11	7.33
• Level – III		

**Note:**

- Level – I: Basic call centre interface with high quality band width and local language proficient agricultural graduate
- Level – II: Subject Matter Specialist on concerned field such as agriculture, horticulture animal husbandry etc.
- Level – III: Management group to monitor the two levels (I & II) and ensure smooth progress in work.

present study also, adoption was calculated using adoption index formula originally developed by Meena (1999) with suitable modification which is as follows:

$$\text{Adoption index} = \frac{\text{Obtained score}}{\text{Maximum obtainable score}} \times 100$$

Further, to assess the extent of adoption of different categories among respondents and their ranks 'z' test were used. The results of Table 2 and Fig. 2 depicted that, feeding (62.40 %), management (56.49 %) and fodder production (52.19 %) were found to have greater extent of adoption among the respondents. Mean adoption level of scientific dairy farming practices of the respondents presented in Table 3 revealed that, 66.67 per cent of the respondents had medium level of adoption. The results were in line with the findings of (Devi, 2013) who stated that majority farmers belonged to medium level in adoption in scientific dairy farming practices.

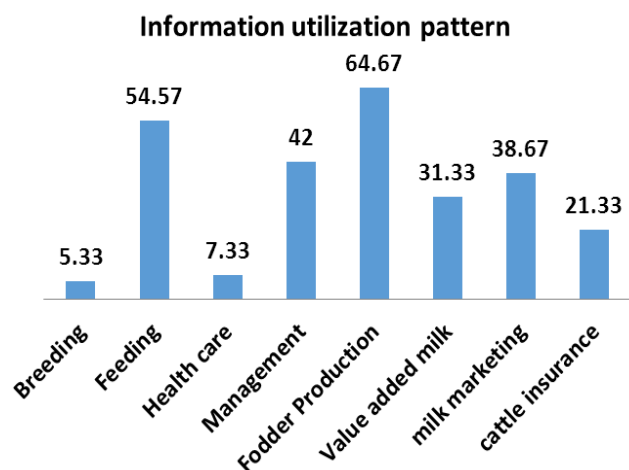


Figure 1. Information utilization pattern of the respondents

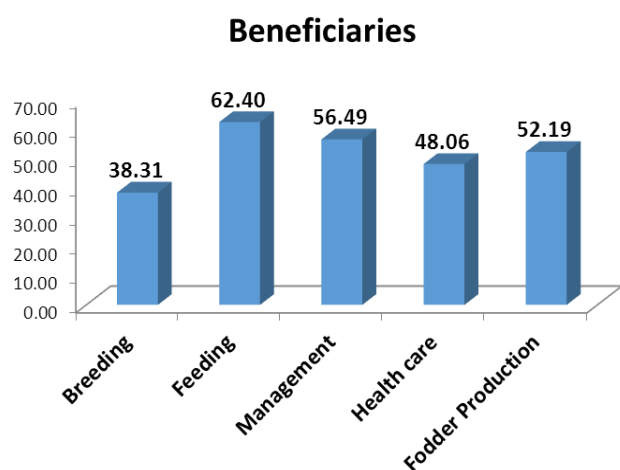


Figure 2. Extent of adoption of Scientific Dairy Farming Practices delivered through FCC

Table 2. Overall extent of adoption of scientific dairy farming practices

Categories	Beneficiaries		
	Mean	%	Rank
Breeding	5.74	38.31	V
Feeding	9.36	62.40	I
Health care	8.47	48.06	IV
Management	14.21	56.49	II
Fodder Production	12.52	52.19	III

Table 3. Mean adoption level of scientific dairy farming practices of the respondents

Categories	Beneficiaries (n = 150)
Small (<35.05)	22 (14.67)
Medium (35.05 – 53.92)	100 (66.67)
High (>53.92)	28 (18.67)

**Relationship with adoption of scientific dairy farming and socio economic characteristics of the respondents using Pearson's correlation co-efficient:** The correlation coefficient between the extent of adoption and selected independent variable as shown in Table 4 indicated the type of relationship variables had with extent of adoption. The educational status, source of information, source credibility, information utilization pattern and information sharing behaviour exhibited significant and positive relationship with adoption of improved dairy farming practices recommended by FCC.

Table 4. Relationship between adoption and selected characteristics of respondents in the study area using Pearson's correlation co-efficient

Independent variables	Extent of Adoption (r)
Gender	0.037
Educational status	0.259**
Occupational status	0.068
Operational land holding	-0.028
Herd size	-0.034
Milk production	-0.036
Total annual income	-0.032
Source of information	0.605**
Frequency of contact	0.034
Information utilization pattern	0.611**
Information sharing behaviour	0.538**

## DISCUSSION

From the results it was evident that, farmers who had contacted Farmer's Call Centre (FCC) and enquired about scientific dairy farming practices had utilized its recommendations greatly. The timely delivery of information and its trustworthiness among clients might

have stimulated the information utilization pattern of the farmers and increased their extent of adoption on scientific dairy farming practices. On the other side, it is suggested that awareness should be stressed upon farmers to utilize video conferencing, voice mailing and SMS facilities that are available with FCC. Training programme can be organized for the farmers on how to operate such facilities and obtain maximum benefits. Provoking farmers like this will spread the information and invite more farmers to contact FCC. Results from source of information and gratification pattern revealed that, none of the farmers were provided the information about the existence of FCC by university officials working in different districts of the State. Hence university officials working in research station, Krishi Vigyan Kendras of different district should also spread the information about Kisan Call Centre to the farmers.

The study revealed that, FCC played a supportive role in providing recommendations on scientific dairy farming practices even without having many Subject Matter Specialists (SMSs) in the level – II centre. The positive impact among FCC beneficiaries on the extent of adoption was mainly attributed to SMSs for the whole state who had handled maximum calls from the farmers related to animal husbandry and dairying query. In order to further improve the service of FCC, more SMS should be appointed to help farmers in more comprehensive manner. Since at present the whole world is behind the concept of empowering women in agriculture, the study showed that participation of women in contacting FCC was much lower as compared to males. Hence women folks need to be motivated through personal extension contact and focus group discussions. The best way to involve women in availing FCC services is to approach them through Self Help Groups (SHGs) and the Panchayat Raj Institutions. This findings are on-line with the findings of (Gupta and Tripathi, 2006). On a whole, it could be justified that, FCC has just got its momentum right and it has a long way to establish a recognition and standard to its name. So far, it is an excellent scheme for the farmers known for its dedicated service. Hence, more awareness needs to be spreaded among farmers to make it an unbeatable initiative of Government of India.

**Conclusion:** From the study it is concluded that adequate awareness should be created by the State Agricultural Department to generate the interest of farmers towards the use of instant information sources like Farmer's Call Centre (FCC) for clean milk production and enhanced milk yield. Efforts should also be made to strengthen the centre with trained staffs and advanced communication facilities like tele and video conferencing so that a reasonable number of farmers can be reached with scientific dairying information. Few innovative ideas can also be adopted from other developing countries such as Tanzania where a dairy company called Tango Fresh had established a concept called Bulk SMS and Radio Farmer Extension where,

weekly bulk SMS were provided to its members through a special application software called My Phone Explorer Software and weekly 30 minutes radio shows were performed to create awareness among farmers about this provisions (source: [www.ictforag.adobeconnect.com](http://www.ictforag.adobeconnect.com)). In India, especially awareness on existence like FCC schemes shall be informed through community radio services where even illiterate farmer can also be made aware. Mobile phones are the best source of communication. Hence facilities like texting the information to the farmers can also be adopted by the officials rather than communicating them verbally. Advantage of texting is that, the message will stay in the inbox of the farmers forever and he can use it whenever he/she needs it. Since certain symptoms cannot be explained through phone, especially health symptoms of the animals, some innovations could be made in FCC such as installation of mobile application shortly called "apps". TCIL can collaborate with IT companies to develop such innovation and farmers can be trained upon how to use such technologies through their mobiles. The application should have two way communications between farmer and FCC officials. It should also contain provisions such as tethering the specimen photo taken by a farmer in his farm to show it to the officials for better recommendation. This might help the future farmers greatly. Overall it was evident that, farmers who had contacted Farmers Call Centre (FCC) and enquired about improved dairy farming practices had utilized its recommendations greatly when compared to non-beneficiaries, which differentiated their farming among other villagers. Hence, it could be concluded that, timely delivery of information from FCC and trustworthiness among its clients might have stimulated the information utilization pattern of the farmers and increased their extent of adoption on improved dairy farming practices.

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