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### Farmer's participation in Krishi Vigyan Kendras of Tamil Nadu: A footfall analysis

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#### Abstract

The Krishi Vigyan Kendras (KVKs) in Tamil Nadu play a pivotal role in disseminating agricultural knowledge and innovations to farmers. This study focuses on analyzing the footfall of farmers in KVKs to gauge their participation and engagement levels. By examining data from various KVKs across the state, the research aims to identify trends, patterns, and factors influencing farmer participation. The study focuses on consolidating and digitizing the current database of farmers managed by 14 ICAR Krishi Vigyan Kendras (KVKs) affiliated with Tamil Nadu Agricultural University (TNAU). Through a systematic analysis of farmer profiles and documentation of the technological assistance they have received, the research aims to map the extent of KVK interventions across the region. The study involves a comprehensive review based on gender, caste, land holding and age. By digitizing these records, the project will enhance data accessibility and facilitate better decision-making. The analysis will uncover patterns and trends in farmer engagement, providing insights into the effectiveness of KVK services. The findings will culminate in a set of recommendations aimed at improving KVK service delivery, thereby enhancing the overall support provided to the agricultural community in Tamil Nadu. This digitized and analytical approach will enable more efficient and targeted interventions, ultimately contributing to the advancement of sustainable agricultural practices in the region.

**Keywords:** Krishi Vigyan Kendra, Farmers Participation and Tamil Nadu

#### Introduction

Krishi Vigyan Kendras (KVK), are an integral part of the National Agricultural Research System (NARS), aims at assessment of location specific technology modules in agriculture and allied enterprises, through technology assessment and demonstrations. At present there are 731 KVKs in the country and in Tamil Nadu, out of 38 districts, 31 ICAR KVKs are functioning in Tamil Nadu. The KVKs are functioning with the mandates are Technology Assessment and Demonstration for its Application and Capacity Development (Lyton *et al.*, 1990) <sup>[9]</sup>. Teaching by practicing and acquiring knowledge by doing is the cornerstone of KVK's mission to provide skill-oriented training (Bar *et al.*, 2014) <sup>[2]</sup>. KVK functioning as a knowledge and resource center for agricultural technologies (Kavad *et al.*, 2015) <sup>[8]</sup>. To effectively implement the mandate, the following activities are planned for conducting on-farm testing to evaluate the suitability of agricultural technologies for different farming systems in specific locations, carrying out frontline demonstrations to showcase the production potential of these technologies on farmers' fields and developing the capacity of farmers and extension personnel by enhancing their knowledge and skills related to modern agricultural technologies to support governmental, business, and nonprofit endeavors aimed at enhancing the district's agricultural sector and using ICT along with other media channels, provide agricultural advisories on a range of topics that will be of interest to farmers (Sahoo *et al.*,

2021) <sup>[10]</sup>.

In addition, KVKs produce quality technological products (seed, planting material, bio-agents, and livestock) and make it available to farmers, organize frontline extension activities, identify and document selected farm innovations and converge with ongoing schemes and programs within the mandate of KVK (Bamne *et al.*, 2023) <sup>[1]</sup>. Out of 33 KVKs, 15 ICAR Krishi Vigyan Kendras (KVKs) are functioning under the administrative control of TNAU and the remaining KVKs are functioning under the control of TANUVAS, TNJFU, Deemed Universities and NGOs. KVKs are taking up frontline demonstration activities in their respective districts, with a need-based Action Plan every year, reaching farmers in their respective district (Kar *et al.*, 2020) <sup>[7]</sup>. In addition, through convergence, KVKs reach farmers through line departments namely Agriculture, Horticulture, Agricultural Engineering, Animal Husbandry, Rural Development, NGOs and other farmer groups. For an organization to improve and to be relevant, it is imperative to evaluate the reach, nature of activities, target audience and the impact of interventions (Bashir, 2014) <sup>[3]</sup>. As part of it, the study on "Footfall Analysis of farmers in ICAR Krishi Vigyan Kendras (KVKs) of TNAU through farmers' database for invigorating the technology delivery" was conducted between 2019 to 2022 to understand the footfall of farmers to KVK and their participation in various activities. The objective of the study is to consolidate & digitize the database of farmers being maintained at 14

ICAR KVKs of TNAU; and to analyze the profile of farmers and to document the technological support availed by farmers from KVKs and to map the horizontal reach of farmers by KVK through interventions; and finally, to provide suggestions to KVKs to improve their service delivery through their interventions.

### Research Methodology

An *Ex-post* study was undertaken in the research study in 14 ICAR KVKs through analysis of Farmers database being maintained in all the 14 ICAR KVKs under the administrative control of TNAU. The 14 ICAR KVKs in Tamil Nadu that were functioning under the administrative control of TNAU during 2020 was selected for the study. Besides, interview and focused group discussions were conducted among select farmers to obtain their feedback on benefits received from KVKs. The farmer's database being maintained with all the selected 14 KVKs of TNAU are

obtained and digitized with 15 parameters in google sheets and the database was consolidated. The data is collected through secondary data that is through the Farmers database available with 14 ICAR KVKs of TNAU as of December, 2021. The digitized farmer's database in google sheets are analyzed using Tableau software and Microsoft Excel. Focused group discussions were conducted with select farmers and data was collected.

### Findings and Discussion

The footfall of farmers visiting KVKs are being captured in the farmer's database by KVKs. The farmers visited KVKs for participating in various awareness programmes, training programmes, exposure visits, exhibitions, and to participate in Frontline demonstrations, On Farm Testing and other interventions. The data captured by KVKs are digitized and the findings are presented in Table 1.

**Table 1:** Farmers footfall as per farmer's database in 14 KVKs of TNAU

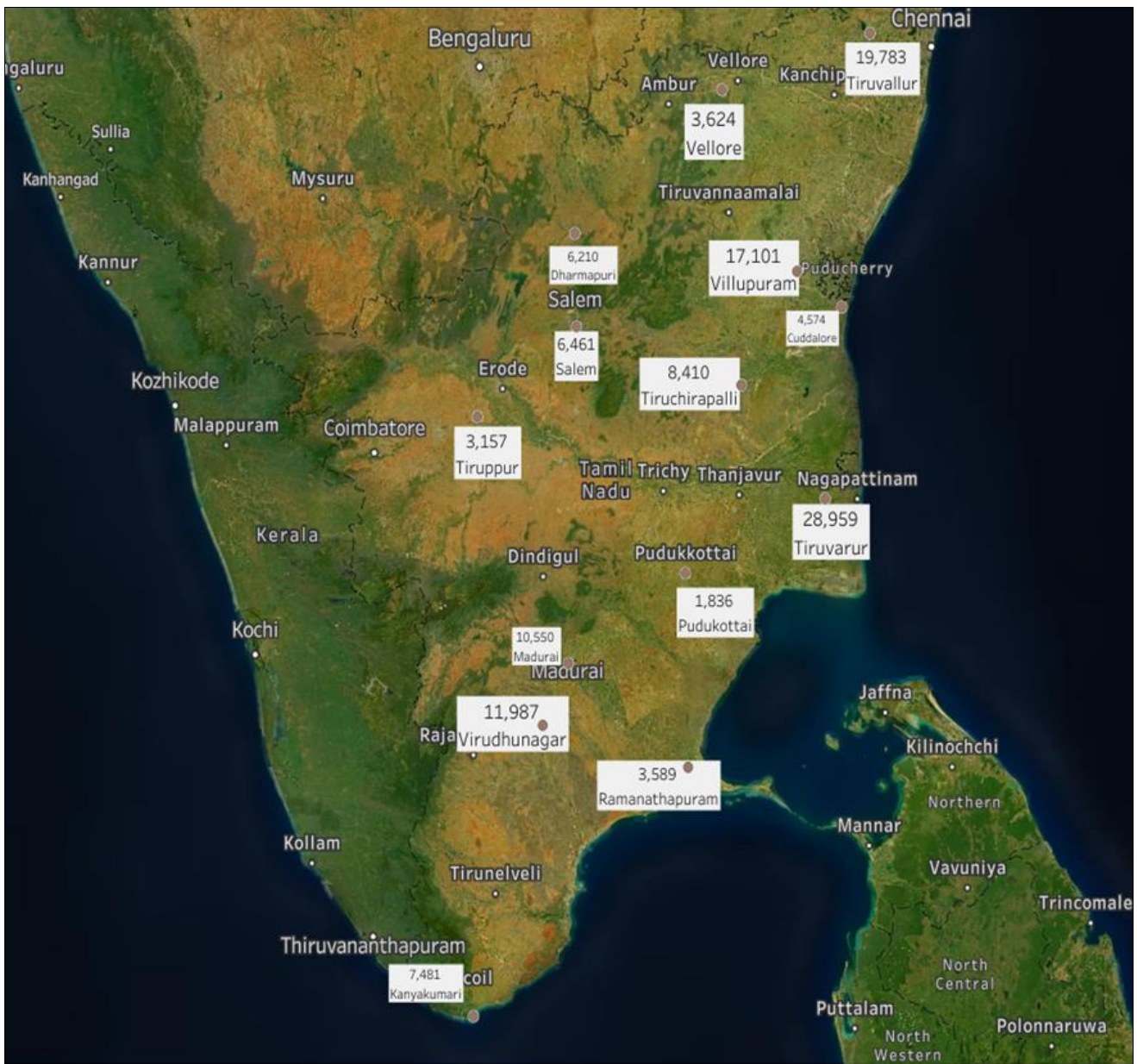
S. No.	District/ KVK	No. of Blocks	Total Number of Farmers	Percent to the total
1.	Cuddalore	13	4574	3.4
2.	Dharmapuri	10	6210	4.6
3.	Kanyakumari	9	7481	5.6
4.	Madurai	13	10550	7.9
5.	Pudukottai	13	1836	1.4
6.	Ramanathapuram	11	3589	2.7
7.	Salem	20	6461	4.8
8.	Tiruchirapalli	14	8410	6.3
9.	Tiruppur	13	3157	2.4
10.	Tiruvallur	14	19783	14.8
11.	Tiruvarur	10	28959	21.7
12.	Vellore	19	3624	2.7
13.	Villupuram	13	17101	12.8
14.	Virudhunagar	11	11987	9.0
	Total	183	133722	100

The analysis of available farmer's database as of December, 2021 from all the 14 ICAR KVKs of TNAU revealed that a total of 1,33,722 farmers had visited 14 KVKs of TNAU. Though, majority of the KVKs were started during the year 2004, except KVKs of Salem, Tiruchirapalli, Cuddalore which were started in the year 1994 and Tiruppur during 2021, the database was created and maintained only after year 2017 and 2018. Also, the KVK interventions / facilitation provided to the line departments in off-campus

were also not recorded in the farmer's database. Hence, the actual number of farmers benefitted might be higher than the results obtained. Based on the analysis, the results showed that KVKs of Tiruvarur, Tiruvallur, Villupuram, Virudhunagar and Madurai had recorded more number of farmer's footfall. This might be due to the interventions of the KVKs and also active capturing of the farmers into the farmer's database.

**Table 2:** Distribution of farmers based on gender

S. No.	District	No. of farmers	Male		Female	
			No.	Percentage	No.	Percentage
1	Cuddalore	4574	4053	88.6	521	11.4
2	Dharmapuri	6210	4936	79.5	1274	20.5
3	Kanyakumari	7481	3854	51.5	3627	48.5
4	Madurai	10550	8660	82.1	1890	17.9
5	Pudukottai	1836	1462	79.6	374	20.4
6	Ramanathapuram	3589	1975	55.0	1614	45.0
7	Salem	6461	6029	93.3	432	6.7
8	Tiruchirapalli	8410	6128	72.9	2282	27.1
9	Tiruppur	3157	2469	78.2	688	21.8
10	Tiruvallur	19783	19263	97.4	520	2.6
11	Tiruvarur	28959	21794	75.3	7165	24.7
12	Vellore	3624	3129	86.3	495	13.7
13	Villupuram	17101	14867	86.9	2234	13.1
14	Virudhunagar	11987	8986	75.0	3001	25.0
	Grand total	133722	107605	80.5	26117	19.5



Total no. of farmer's footfall in 14 KVKs of TNAU – 1.33 lakhs

**Fig 1:** KVK wise farmer's footfall in Tamil Nadu (Farmers in nos)

It could be inferred that KVKs should develop an action plan for increased engagement and participation of women in KVK interventions. The findings on the footfall of farmers based on gender (Male / Female) revealed that majority of the male farmers visited KVKs i.e., 80.5% of the farmers visited KVK were male, and only 19.5% of the female farmers visited / participated in the KVK interventions. This might be due to the fact that majority of the male farmers own lands and also engage themselves in off farm visits and activities. Further the table 2 revealed that the KVKs of Kanyakumari and Ramanathapuram had more footfall of female farmers 48.5% and 45.0% respectively. Social participation, literacy and land ownership of women from Kanyakumari district might be the reason for more participation of women that other districts. The distribution of farmers based on gender is presented in Table 2.

An analysis was made to understand the footfall of marginalised communities namely SC/ST to KVKs. It could

be observed from the table 3 that the overall reach of SC/ST farmers from all the 14 KVKs is only 10%.

Further, it could be inferred from the footfall from Table 3 that among the 14 ICAR KVKs of TNAU, the footfall of 21% of SC/ST farmers from KVK Salem, followed by KVK Virudhunagar (18%), KVK Pudukkottai (17%), Tiruchirapalli (14%), Tiruvallur (13%), Tiruvarur and Vellore (10%). It is evident that the participation of SC/ST farmers has to be encouraged by KVKs through SCSP programme and through other strategies.

The farmer's footfall according to age and land holding pattern was analysed and presented in table 4. It could be observed that the average age of farmers visiting KVK is 45 years and the average land holding pattern of farmers is 2.24 acres. The results clearly reflect the demography of farmers in Tamil Nadu and also reflects the land holding pattern as majority of the farmers visited KVK are marginal and small farmers.

**Table 3:** Distribution of farmers based on Caste (SC/ST/Others)

S. No.	District	No. of farmers	SC/ST		Others	
			No.	Percentage	No.	Percentage
1	Cuddalore	4574	90	2	4484	98
2	Dharmapuri	6210	54	1	6156	99
3	Kanyakumari	7481	688	9	6793	91
4	Madurai	10550	359	3	10191	97
5	Pudukottai	1836	307	17	1529	83
6	Ramanathapuram	3589	190	5	3399	95
7	Salem	6461	1346	21	5115	79
8	Tiruchirapalli	8410	1189	14	7221	86
9	Tiruppur	3157	186	6	2971	94
10	Tiruvallur	19783	2645	13	17138	87
11	Tiruvarur	28959	2767	10	26192	90
12	Vellore	3624	362	10	3262	90
13	Villupuram	17101	1426	8	15675	92
14	Virudhunagar	11987	2151	18	9836	82
	Grand total	133722	13760	10	119962	90

**Table 4:** Distribution of farmers according to landholding and age

S. No.	District	No. of farmers	Land holding (ac.)	Average Age	Overall Average Land holding (ac)	Overall Average Age
1	Cuddalore	4574	3.96	42	2.24 ac.	45 years
2	Dharmapuri	6210	-	42.5		
3	Kanyakumari	7481	-	46.22		
4	Madurai	10550	0.32	46.18		
5	Pudukottai	1836	-	43.6		
6	Ramanathapuram	3589	2.64	43.95		
7	Salem	6461	1.84	41.03		
8	Tiruchirapalli	8410	0.49	46.39		
9	Tiruppur	3157	4.8	46		
10	Tiruvallur	19783	2.44	50.61		
11	Tiruvarur	28959	1.03	46.5		
12	Vellore	3624	1.07	43.32		
13	Villupuram	17101	3.5	42.7		
14	Virudhunagar	11987	2.5	48.74		
	Grand total	133722				

The digitized farmer's database of 14 ICAR KVKs of TNAU had a total footfall of 1.33 lakh farmers as of December 2021 and all 14 KVKs together had covered 183 blocks in Tamil Nadu.

An analysis of the profile of farmers revealed that average age of the farmers visiting KVK is 45 years' old, out of 1.33 lakh farmers 80.5% were male and 19.5% were female, average SC/ST population covered by KVKs - 10%; Others - 90%, and average landholding of farmers - 2.24 ac respectively.

The footfall of farmers revealed that 4.5% of the farmers visited KVK availed technological support through participation in FLDs & OFTs, 56% of farmers participated through various training programmes and the remaining 39.50% of farmers participated in exhibitions/other extension programmes of KVKs.

#### Suggestions to KVKs to improve technology delivery

- The KVKs may take up the following actions/ activities to improve the technology delivery:
- The KVK interventions shall be planned /taken up in blocks, where ever least interventions are made especially in the blocks that are far away from KVK.
- Emphasis to be given in KVK programmes to target marginal and small farmers, women farmers, and SC/ST farmers, so as to increase their participation

- To further increase the horizontal spread of KVK interventions, programmes may be planned in convergence with line departments

#### Conclusion

The farmer's database and the feedback from farmers revealed that the Krishi Vigyan Kendras (KVKs) are effectively reaching the farmers through their mandated interventions. However, the farmer's database, also reveals the demography, gender, caste, the landholding pattern, nature of benefits obtained by the farmers, villages covered etc., This data and insights will help the KVKs in redefining their strategies in reaching the farmers effectively and efficiently.

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