



## **Analytical Study on Crop Status and Farmers' Preference towards Crop Varieties and Hybrids in Namakkal District of Tamil Nadu**

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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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### **ABSTRACT**

Tamil Nadu is one of the pioneer states in India, which is Farmer centric and has brought revolutionary initiatives in Agriculture to propel the productivity and production of major crops. The use of good quality seeds of improved high yielding varieties and hybrids is the master key for productive agriculture. Hence, the study was taken up in Namakkal district with an aim to assess the preference of using the varieties and hybrids and to identify the constraints of in adopting it. In Namakkal district, Thiruchengode block was purposively selected based on area of cultivation. A sample of 30 respondents were selected using simple random sampling method and Participatory Rural Appraisal method was used for data collection. Percentage analysis and Cumulative frequency methods were used for data analysis. The study revealed that, the most of the farmers cultivated varieties like Sorghum (CO 30), Ragi (GPU 28), Blackgram (Vamban 4), Greengram (Vamban 2), Groundnut (TMV 7), Tapioca (MVD 1), Pomegranate (Bhagawa), Guava (Lucknow 49). The preferences expressed by the farmers for cultivating the above mentioned varieties and

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hybrids were high yield, highly suitable for all season, drought tolerant and less water consumption. In general, the farmers faced few constraints like, lack of awareness and knowledge about recent varieties, hybrids and technologies, monsoon failure, high labour cost, dry land area, lack of storage go-down facilities and farmers are not getting real returns of the crops due to climatic factor.

*Keywords: Hybrids; varieties; preference of farmers; constraints of farmers.*

## 1. INTRODUCTION

Indian economy is primarily an agricultural economy. The very existence of economic activities of the entire people is bound up with the state and health of this sector. In India, about 70 per cent of the people are engaged in agricultural pursuits and about 50 per cent of the national income originates from agriculture [1-4]. Hence the level of efficiency and productivity in agriculture more or less determines the efficiency of Indian economy. In India, people and their entire totality are so much bound up with the fortunes of agriculture that the pace of life and the pattern of activities do no more than mirror all that happens in this sector. Since agriculture is the contributor of the largest amount of goods and services to the development of the country, it becomes essential and responsible on the part of the Government to regulate and control the marketing system of Agricultural produce [5,1].

The geographical area of Tamil Nadu is 13.00 million ha of which the cultivable area is 7.00 million ha and within this area, dryland farming is practiced in 3.10 million ha. The total dryland area is distributed in the seven agro-climatic zones of Tamil Nadu and the per cent distribution is 26.00 per cent in North Eastern zone, 24.00 per cent each in North Western and Southern zones, 12.00 per cent in Western zone, seven per cent in both in High rainfall and High altitude and hilly zones and six per cent in Cauvery delta zone [6].

Agriculture in Tamil Nadu is largely influenced by timely onset of South West and North East Monsoons, Opening of Mettur reservoir and adequate storage in major reservoirs. During 2015-2016, there was a slow progression of South West Monsoon besides delayed opening of Mettur dam (09.08.2015) which affected the prospects of Kharif crops. This had resulted in less coverage of paddy, millets, oilseeds and sugarcane. However, the excess rainfall received during summer gave a fillip to Kuruvai paddy

especially in the filter point areas of delta districts where the ground water table had increased comfortably.

A review of the research and development activities of ICAR system during the first two years of the 10<sup>th</sup> five year plan has one if its weakness as the inadequate emphasis on the needs of dryland areas which account for over 60.00 per cent of cultivated area. The approach paper for the 11<sup>th</sup> five year plan indicated that the entire agriculture sector is in crisis and is not limited to small and marginal farmers. Also, second green revolution should focus more on dryland areas [4].

India has about 47.00 million ha of drylands out of 108.00 million ha of total rainfed area. Drylands contribute 42.00 per cent of the total food grain production of the country. These areas produce 75.00 per cent of pulses and more than 90.00 per cent of sorghum, millet, groundnut and pulses from arid and semi-arid regions.

Dryland areas contribute about one-half of India's production of coarse grains, cereals, pulses, oilseeds and cotton. In order to meet the targeted food grain production of 240.00 million tonnes production from dryland has to be increased to 60.00 per cent [8].

The use of good quality seeds of improved high yielding varieties and hybrids is the master key for productive agriculture. The Government established an exclusive agency like Tamil Nadu State Seed Development Agency (TANSEDA) during 2015-2016 with a revolving fund of Rs.50 Crore to take up seed / seedling production and distribution of seed / seedlings of all agricultural crops like Paddy, Millets, Pulses, Oilseeds, Cotton and Coconut.

Nearly three-fourth (74.00%) of the holdings are below one hectare in size and most (90.00%) of them are below 2 ha. Productivity is decelerating for most of the crops from 1990s onwards at low levels of average productivity compared to world average [9].

## **2. METHODOLOGY**

In Tamil Nadu, Namakkal district was purposively selected as study area. Namakkal comes under North Western Agro-climatic zone of Tamil Nadu. In this district, out of 15 blocks, Thiruchengode block was selected purposively based on highest area of cultivation (17236 ha) and also this block alone is placed under Western Agro-climatic zone. A Sample of 30 respondents were selected from three villages by using simple random sampling method. To identify the crop growing season and institutional Linkage, Seasonal Calendar and Venn-diagram (PRA) methods were used respectively. Researcher conducted this PRA method in the respective block. Farmers did seasonal calendar and Venn diagram with facilitation of researcher. Pre-tested and well-structured interview schedule was used to collect information about Farmers' preferences and constraints of using varieties and hybrids. Ex-post facto research design has been used for this study. Percentage analysis and cumulative frequency methods were used for analyzing the data.

## **3. RESULTS AND DISCUSSION**

### **3.1 Profile of the Farmers**

It is important to analyze the profile of the farmers to study the preferences towards Varieties and Hybrids. The results about the profile of the respondents are presented in Table 1.

From the Table 1 it could be revealed that, majority (80.00%) of the respondents were under the old age category (Above 45 years) followed by middle age category (13.33%) and less than half of them (43.33%) had higher secondary education. Regarding Farm size, little less than two-thirds (63.30%) of the respondents were big farmer followed by small (26.70%) and marginal farmer (10.00%).

More than three-fourths (76.66%) of the farmers had more than five years of experience in farming followed by less than five years (13.34%) and 5-10 years (10.00%). The lack of employment opportunities during those days with a reasonable salary and the secondary level of education also made farmers to take up farming as their occupation. This could be the possible reason that the farmers had more than five years of farming experience.

Less than two-thirds (60.00%) of the farmers were under medium level of social participation and little more than half (53.30%) of the respondents possessed medium level of mass media exposure. The reason behind their medium level of social participation was that the respondents in the study area enrolled as member and some of them were holding leadership position in regulated market, co-operative society and farmer's association. Due to their active membership, they were able to avail loan for agriculture and also they got better price for their produce.

### **3.2 Farmers' Preferences towards Varieties and Hybrids**

The data collected from the respondents regarding farmer preferences towards varieties and hybrids are presented in Table 2. In addition to that, reasons for preferring varieties and hybrids by the farmers are discussed below.

From the above table it could be inferred that in sorghum, most of the farmers cultivated CO30 and K8 because CO30 is a dual purpose variety and it can be used for dry fodder. K8 is high yielding variety and also suitable for drought condition. It is very quiet interesting that, the farmers cultivated traditional variety in sorghum i.e. Senchulam. It is suitable for all the seasons, mainly cultivated for cattle feed and the seeds can be used for next sowing season.

It could be revealed that in Ragi, GPU28, GPU26 are cultivated by the farmers. The reason behind that is both the variety can be used for irrigated, rainfed season and also it's a high yielding variety. GPU 26 is also suitable for late sowing season and better yielder than other variety.

In Groundnut, TMV7, TMV 10 are cultivated by the farmers. The possible reason might be TMV 7 is rainfed variety and kernal bold with dormancy for 10 days. This dormancy may avoid the climatic changes in monsoon failure. TMV10 is high yielding variety and it has high oil content.

In black gram, Vamban 4, Vamban5, CO6 are mostly cultivated by the farmers. The reason behind that is all the varieties are high yielding. CO6 is a short duration variety and resistant to yellow mosaic and spotted pod borer.

In green gram, Vamban2, Vamban3 and CO6 are cultivated by the farmers. The possible reason behind that all these varieties are resistant to yellow mosaic virus and suitable for dry land condition.

**Table 1. Profile of the farmers**

S. no	Variables	Category	No	Percent
1	Age	Young (upto 34 years)	2	6.70
		Middle (upto 45 years)	4	13.33
		Old (Above 45 years)	24	80.00
2	Educational status	Middle	4	13.33
		Secondary	7	23.33
		Higher secondary	13	43.34
		Collegiate	6	20.00
3	Farm size	Marginal farmer (Up to 2.5 ac)	3	10.00
		Small farmer (2.5-5 ac)	8	26.70
		Big farmer(Above 5 ac)	19	63.30
4	Farming experience	Less than 5 years	4	13.34
		5-10 years	3	10.00
		More than 5 years	23	76.66
5	Social participation	Low	6	20.00
		Medium	18	60.00
		High	6	20.00
6	Mass media exposure	Low	2	6.70
		Medium	16	53.30
		High	12	40.00

n=30

In sugarcane, CO86032, CO Si(sc) 6 (Manjula) are cultivated by the farmers. The CO86032 was released in 1995. The farmers are cultivating this variety because of suitable for all soil type, extremely well in garden land condition, good quality cane, higher yield, multi rationing capacity, self detaching in nature and it grows throughout the year. In Thiruchengode block, one sugarmill is present. These cultivated canes are sold to this sugar mill. This sugarmill also prefers good quality cane. CO Si(sc)6 was released from 2005. This variety is also preferred by the farmers. The reason behind that is drought tolerant variety, high yielder, high quality cane and moderately resistant to red rot.

### 3.3 Horticultural Crops

In tapioca, MVD1 variety is preferred by the farmers. This MVD1 variety is released from Muluvadi research station, Salem in 1983. Now a days, there are lot of varieties from other research stations, still the farmers are preferring this variety because the farmers prefer more branching type variety in Tapioca. This branching type gives shade to the root zone area. This helps to improve the tubersize, quality and starch content.

Manavarikuchi is a traditional variety cultivated by the farmers. Other than this, farmers prefer Rose, Burma hybrids in their field. The reason is that both the hybrids give high yield and also disease resistant. In Salem and Namakkal district, more number of sago industries are

present. So the farmers are selling the tapioca to this industry and to local market also.

In Guava, Lucknow variety is cultivated by the farmers in their field. The reason for using this variety is that the number of seeds is less in fruit and rough surface. This quality is most suitable for marketing purpose. In this block, this guava seedling is given to farmers through high tech scheme (25 seedlings per farmer).

In pomegranate, Bhagawa hybrid is cultivated by the farmers in their field. The reason for using this variety is high yielder, better market price than Ganesh variety, better keeping quality, suitable for both table and processing purpose.

## 4. PARTICIPATORY RURAL APPRAISAL FINDINGS

To identify the linkage between the institution and farmers, Venn diagram method was used. Venn diagram is used to know the linkages between farmers and institutions. The farmers are closely linked with Primary Agricultural Cooperative Bank, Fertilizer, Agricultural office, Horticultural office, District cooperative bank, Sugar factory, Storage go-down, Veterinary hospital, Panchayat office, Revenue office. Another PRA method Seasonal calendar was used to identify the season wise crop grown in this block. Seasonal calendar findings are presented in Table 3.

**Table 2. Distribution of respondents according to the farmers' preference towards varieties and hybrids**

S.no	Crops	Preference of varieties	Preference of hybrids
1	Sorghum	CO30, K8, Sencholam	-
2	Ragi	GPU28, GPU26	-
3	Groundnut	TMV7, TMV10	-
4	Blackgram	Vamban4, Vamban5, CO6	-
5	Greengram	Vamban2, Vamban3, CO6	-
6	Sugarcane	CO86032, CO Si (SC)6	-
7	Tapioca	MVD1	Rose, Burma
8	Guava	Lucknow 49	-
9	Pomegrante	-	Bhagawa

(n= 30\*) \*Multiple responses obtained

**Table 3. Seasonal calendar findings**

S. No	Month	Crops grown
1	Chithirapattam (April-May)	Tapioca, Sorghum, Groundnut
2	Adipattam (June- July)	Black gram, Sorghum, Green gram, Groundnut, Ragi
3	Puratasipattam (September- October)	Black gram, Sorghum, Green gram, Tapioca, Ragi, Sugarcane
4	Markazhlipattam (December- January)	Black gram, Green gram,
5	Thai pattam (January- February)	Sorghum

**Table 4. Distribution of respondents regarding constraints in using of varieties and hybrid**

S. No	Constraints in using of Varieties and Hybrids	No.	Per cent	Rank
1	Lack of awareness about recent varieties and hybrids	25	83.33	IV
2	Lack of knowledge about recent varieties and hybrids	26	86.00	II
3	Failure of monsoon	20	66.67	VII
4	Unable to get subsidy in time	23	76.67	VI
5	Labour cost is high due to programme of Mgnrega	20	66.67	VII
6	Only rainfed variety yields high because of dry land area	28	93.34	I
7	Lack of storage godowns	15	50.00	X
8	Climatic factor reduces the crop yield	17	56.67	IX
9	Price fluctuation	20	86.00	II
10	Less availability of seed	25	83.33	IV

(N =30\*)

#### 4.1 Constraints Faced by the Respondents by Using Varieties and Hybrids

The data collected from the respondents regarding constraints faced by the respondents by using Varieties and hybrids are presented in Table 4.

From the above table, it could be inferred that majority (93.34%) of the farmers expressed their constraints were only rainfed variety yields high because of dry land area followed by 86.00 per cent of farmers said their constraints as lack of knowledge about recent varieties and hybrids and price fluctuation.

It is observed in the field that some farmers felt that lack of awareness about recent

varieties and hybrids (83.33%) followed by less availability of seeds (83.33%) were their constraints. This has been mainly due to using traditional varieties and lack of awareness about seed depot.

More than three-fourths (76.67%) of the respondents felt that, Unable to get subsidy in time followed by the same percentage of farmers (66.67%) said their constraints as Labour cost is high due to programme of MGNREGA and Failure of monsoon.

#### 5. CONCLUSION

Farmers are cultivating TNAU released varieties when compared to hybrids in agricultural crops like Sorghum, Greengram, Blackgram, and Groundnut. In horticultural crops, farmers are

cultivating hybrids in Tapioca and Pomegranate. Awareness about recent varieties is very low among the farmers. From survey it has been noted that, farmers are also using traditional varieties in Sorghum and Tapioca like Senchulam, Manavarikuchi.

## 6. STUDY IMPLICATIONS

- ✓ During survey, there is lack of awareness about varieties and hybrids released by research institution. In order to overcome this, specific training can be given to farmers about varieties and hybrids released by research institution.
- ✓ Arrange training to Agricultural Officers and Assistant Agriculture Officers to know about recent improved packages and practices. Because of field level worker who is contacting the farmers frequently.
- ✓ Farming system (Wet, Dry, Garden land) and Local context analysis based training should be given to farmers (include all the stakeholders).
- ✓ In study area, accessibility of seed is one the main constraints. To overcome this, Increase the number of seed depot, which increase the seed availability and accessibility among the farmers.

## CONSENT

As per international standard, Farmers' written consent has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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