

A Study on Agricultural Problems Faced by the Growers in Thanjavur District

***Mrs. S. Shankari , **Dr. D. Supalakshmi, ***Dr. B. Kayathiribai**

Doctoral Research Scholar, Sengamala Thayaar Educational Trust Women's College (Autonomous) (Affiliated to Bharathidasan University, Tiruchirappalli), Mannargudi-614016, Tamil Nadu, India.

Research Advisor and Guest Lecturer in Commerce, Government Arts and Science College (Affiliated to Bharathidasan University, Tiruchirappalli), Karambakkudi, Pudukkottai District, Tamil Nadu, India.

Co-Supervisor, Head & Assistant Professor, PG & Research Department of Commerce, Sengamala Thayaar Educational Trust Women's College (Affiliated to Bharathidasan University, Tiruchirappalli), Mannargudi-614016, Tamil Nadu, India.

Abstract

Thanjavur District, popularly known as the "Rice Bowl of Tamil Nadu," occupies an important position in the agricultural economy of the Cauvery delta. The present study examines the major agricultural problems faced by growers in Thanjavur District, with particular emphasis on problems relating to saplings and tubers and agricultural loans. The study identifies major constraints associated with the availability and cost of planting materials, productivity, quality, insects and diseases, and access to agricultural credit. Garrett's Ranking Technique was employed to rank the problems faced by the growers, while the Chi-square test was used to examine the association between selected factors and the identified problems. The findings reveal that the menace of insects and diseases was the foremost problem relating to saplings and tubers, followed by the non-availability of saplings and tubers in time and low productivity. In the case of agricultural loans, inadequacy of finance for crop cultivation emerged as the major problem, followed by delays in extending loans and higher interest rates. The analysis also indicates significant associations between selected agricultural characteristics and certain problems faced by growers. The study suggests strengthening agricultural support services, improving timely availability of quality inputs and credit, providing modern cultivation training, and enhancing marketing and irrigation facilities to improve agricultural productivity and growers' livelihood.

Keywords: Agricultural Problems, Growers, Thanjavur District, Saplings and Tubers, Agricultural Loans, Garrett's Ranking Technique, Chi-square Test, Agricultural Development.

Introduction

Thanjavur being the foremost district of the Cauvery delta, occupies an important position in the agricultural map of Tamil Nadu. Since its formation, the district is called as the rice bowl of Tamil Nadu. It was bifurcated and a new district named Nagapattinam was formed during 1993. Nagapattinam district was also bifurcated into Nagapattinam and Thiruvarur districts during 1997. Thus the erstwhile district of Thanjavur had been trifurcated into Thanjavur, Nagapattinam and Thiruvarur. The District is bounded on the north by the Coleroon which separates it from Perambalur and Tiruchirappalli district, and on the East it is bounded by the Thiruvarur and Nagapattinam districts and on the South by the Palk Strait and Pudukkottai district and on the West by Pudukkottai and Tiruchirappalli districts. The geological formation of Thanjavur district is made up of cretaceous, Tertiary and Alluvial deposits and the major area is occupied by the Alluvial and Tertiary deposits. The cretaceous formations occur as a small patch in West and South-West of Vallam. These formations have a very thick lateritic cap consisting of impure lime stones and sand stones of silt, clay calcareous and argillaceous variety. In the coast, these formations are overlaid by Cuddalore sand stone of tertiary age.

Agricultural and allied sectors such as agricultural marketing, horticulture, agricultural engineering, animal husbandry, and fisheries are the sectors to be covered under NADP. Besides these, special programmes for water conservation and repair and maintenance of canal, tank and small irrigation structures are also proposed to

be taken up under the NADP. The main focus will be on repairing the canal irrigation systems to prevent seepage loss of water, soil conservation work, water management and water harvesting works are given much importance in the district.

Thanjavur being the foremost district of the cauvery delta occupies an important position in the agricultural map of Tamil Nadu as 70 percent of the population is engaged in Agriculture and allied activities for their livelihood. The district has a Geographical area of 3.39 L.Ha with a gross cropped area of around 2.69 L.Ha. Since its formation, the district is called as the “Rice bowl of Tamil Nadu”. The geological formation of Thanjavur district is made up of cretaceous, Tertiary and Alluvial deposits with major area occupied by the Alluvial and Tertiary deposits. Thanjavur has all along been one of the districts with a creditable performance in agricultural production with the farmers relatively more responsive and receptive to new technologies. They also innovative in adopting modern technologies and High Yielding varieties. The district is constituted with 3 Revenue Divisions, 9 Taluks, 14 Blocks and 906 Revenue Villages.

Review Of Literature

Recent studies indicate that agricultural growers in Tamil Nadu, particularly those in the Cauvery Delta region, continue to face a combination of production, financial, irrigation, labour, technological and marketing-related constraints. Logesh et al. (2023) examined the constraints faced by organic farmers in the Cauvery Delta Zone of Tamil Nadu, covering Thanjavur, Thiruvarur, Nagapattinam, Mayiladuthurai and Tiruchirappalli. The study identified several categories of constraints, including labour, technical and extension services, input supply, credit and economic conditions, environmental factors and marketing. The findings indicate that inadequate availability of agricultural inputs, labour-related difficulties, insufficient institutional support, financial constraints and marketing problems continue to affect agricultural activities in the Cauvery Delta. The study suggested strengthening extension services and institutional support to improve farmers’ productivity and sustainability. Mohanraj et al. (2023) studied the risk behaviour of small and marginal farmers in the Cauvery Delta Zone of Tamil Nadu. The study emphasized that farming decisions are strongly influenced by farmers’ attitudes towards production and financial risks. Small and marginal farmers are particularly exposed to production uncertainty, price fluctuations and resource constraints, which influence their willingness to adopt new agricultural practices and technologies. The findings highlight the importance of institutional support, risk management mechanisms and appropriate agricultural interventions for improving the resilience of farmers in the Cauvery Delta.

Research on rice cultivation has also highlighted significant production-related constraints. A study on the constraints faced by rice growers in adopting TNAU modern rice varieties in the Cauvery Delta Zone found that farmers encountered several difficulties in adopting improved varieties and recommended strengthening agricultural extension and support systems. The study covered major rice-producing districts including Thanjavur, Thiruvarur, Nagapattinam and Mayiladuthurai, demonstrating the continued importance of technology adoption and extension support in the region. Jegadeesan and Miyazaki (2024) examined agricultural stagnation and migration in Tamil Nadu using evidence from villages in Thanjavur and Thiruvarur districts. The study reported that erratic rainfall, declining groundwater levels, soil degradation, increasing cultivation costs, market volatility and limited access to modern technologies have affected agricultural productivity and rural livelihoods. Water scarcity and rising cultivation costs were identified as important factors encouraging rural households to explore non-farm employment opportunities. The study recommended comprehensive rural development, skill development and employment-oriented interventions to strengthen rural livelihoods. Nair (2024) examined cropping decisions under water stress in the Cauvery Delta region using survey information from farm households in paddy-producing villages. The study showed that water availability is an important factor influencing farmers’ cropping decisions and livelihood strategies. Water stress creates resource constraints and affects decisions regarding crop varieties and alternative crops. The study therefore demonstrates the importance of reliable irrigation and water-resource management for sustaining agricultural production in the Cauvery Delta.

Studies focusing specifically on traditional paddy cultivation in Thanjavur have further highlighted production and marketing challenges. Recent field research in the district examined the problems experienced by traditional paddy farmers in both production and marketing. The study is particularly relevant to the present research because it demonstrates that agricultural problems in Thanjavur are not limited to cultivation alone but extend to post-production and marketing activities. Water resources constitute another major concern for agricultural growers in the Cauvery Delta. Research on groundwater abstraction in the Cauvery Delta has examined the effects of groundwater pumping, changing cropping patterns and saltwater intrusion on groundwater resources. The findings demonstrate that increasing pressure on groundwater resources can create long-term challenges for agricultural sustainability. Therefore, effective irrigation management and conservation of groundwater resources are essential for maintaining agricultural production in the delta region. Recent evidence also demonstrates the continuing importance of climate and water-related problems in the region. A 2024 study reported that declining water availability and rainfall deficiencies affected paddy cultivation in the Cauvery Delta, with farmers experiencing reductions in cultivated area and crop yield. Such conditions demonstrate how inadequate irrigation and climatic variability can directly affect farm productivity and income. More recent research on Thanjavur has also examined agricultural drought using rainfall and satellite-based indicators and found spatial and temporal variations in drought conditions, highlighting the vulnerability of agricultural areas to rainfall variability and limited irrigation infrastructure. Soil and water quality are also important components of agricultural productivity. Selvaraj (2025) examined the nutrient status of soil and water bodies in Palayapatti and surrounding areas of Thanjavur District. The study reported variations in soil nutrient levels and water quality, indicating the need for appropriate soil and water management practices. Such findings are important because deterioration or imbalance in soil and water resources can affect crop productivity and increase the challenges faced by growers. The recent literature also points towards the importance of financial and institutional support for farmers. Studies on climate-smart agriculture and agricultural technologies indicate that farmers may face financial barriers, inadequate access to information and difficulties in obtaining appropriate inputs and services. These constraints can limit the adoption of improved technologies and sustainable agricultural practices. The availability of timely and adequate institutional credit, together with extension support and technology transfer, therefore remains important for improving farmers' productive capacity.

Overall, the reviewed literature shows that agricultural growers in the Cauvery Delta and particularly in Thanjavur District face interconnected problems relating to water availability, irrigation, cultivation costs, agricultural credit, labour, input availability, pests and diseases, technology adoption, soil and water quality, productivity and marketing. Existing studies have examined individual aspects of these problems, such as organic farming constraints, rice-variety adoption, water stress, groundwater depletion, climate variability and agricultural stagnation. However, there is comparatively less integrated research that simultaneously identifies and ranks the broad range of problems faced by agricultural growers in Thanjavur District and examines their association with selected characteristics of growers. Hence, the present study attempts to fill this gap by systematically analysing the major agricultural problems faced by growers in Thanjavur District using Garrett's Ranking Technique and Chi-square analysis, thereby providing an integrated understanding of the constraints affecting agricultural development and suggesting appropriate measures for improving growers' livelihood and agricultural productivity.

Research Gap

The recent literature shows that agricultural growers continue to experience multiple and interconnected problems involving labour, agricultural credit, irrigation and water availability, cultivation costs, technology, inputs, climate variability and marketing. Existing studies have examined these constraints either from a specific perspective, such as organic farming, climate-smart agriculture or agricultural stagnation, or across broader geographical regions. Although some recent research has specifically covered Thanjavur and the Cauvery Delta, there is scope for a comprehensive study that simultaneously identifies and ranks the different problems experienced by growers and examines their association with selected characteristics of the growers. Therefore, the present study focuses specifically on the agricultural problems faced by growers in Thanjavur District, using

Garrett's Ranking Technique and Chi-square analysis to provide an integrated assessment of the major constraints.

Statement of the problem

Thanjavur District has been a renowned centre for agri production. The various crops it produces are without parallel in variety, beauty, fragrance and export value. Though Thanjavur District is known for various crops production since time immemorial it still maintains its uniqueness in the various crops industry in the southern part of Tamil Nadu.. The demand for various crops is increasing day by day. In spite of all these, the various crops market Thanjavur District still remains under developed. There is no special area earmarked for a various crops market in Thanjavur District. The present various crops market is operating at a place covering area of 25 Percents devoid of facilities like electricity, cold storage, proper toilets, water taps, weighing arrangements and waiting sheds. There is no protection from rain or shine for the traders. In the absence of cold storage facilities and seasoning facilities, it has been found very difficult to protect various cropss from dehydration. Further, in spite of the popularity gained by Thanjavur District for the production and marketing of various crops, no effort has so far been made to introduce new technologies like shade-Net cultivation and the Green House Technology that have been used effectively in foreign countries. Green houses are nothing but covered structures in transparent materials which facilitate various crops production under a controlled environment. The investigator is very much burdened by this problem. He seeks to develop deep into this problem as a prelude to script a new chapter in the sector of various crops in Thanjavur District.

Objectives of the study

Under these main objectives have been framed for the present study.

- To evaluate the marketing practices followed by the growers of the selected crops.
- To analyze the various problems faced by the crops growers in Pudukkottai District.
- To offer suggestions based on the findings of the study for the prospects of banana growers

Sampling Design

The present study proposes to cover the Problems of cropsproduction in Thanjavur District. As census method is not feasible, the researcher has proposed to follow sampling. It is decided to select the agriculturist which are cultivated in more than 500Farmers inThanjavur district. Cultivation of various crops a predominant position in Indian agriculture. It has led to the growth and development of the socio – economic fabric of agriculturalist. TamilNadu is one of the leading agriculture centers in South India. The growers in Thanjavur district are facing many problems faced by the growers of various crops. The researcher has identified the following problems.

1. Problems relating saplings and tubers
2. Problems relating to agricultural loan by the banks
3. Problems relating to labour in various crops
4. Problems relating to payment of various crops
5. Problems relating to cultivation of various crops.
6. Problems relating to marketing of various crops.
7. Problems associated with the department of agriculture.

In order to analyze the problems faced by the growers of various crops, the researcher has used the Garrett's ranking method to rank the important problems faced by the growers in various crops cultivation. The Variables like Region, Landholdings, Variety of crops planted and Awareness of the growers are tested with the above – said problems relating to crops plantation by using the well – known statistical tool of chi – Square test'

Garrett's Ranking Technique

Garrett's Ranking Technique is used to rank the important problems faced by the small growers in various crops plantation. The collected pieces of information from the respondents of small growers are arranged and converted into mean score values which are in turn ranked using Garrett's Ranking Technique.

$$\text{Per cent position} = 100 (R_{ij} - 0.05) / N_i$$

Where

R_{ij} : Rank gives for its factor by the j^{th} individual .

N_i : number of reasons ranked by the J^{th} individual.

CHI - SQUARE TEST

The chi – Square test represents a useful method of comparing experimentally obtained data with those expected theoretically. The following formula has been used:

$$\text{Chi – square test } (x^2) = E (f_o - f_e)^2 / f_e$$

Where f_o = Observed frequency.

f_e = Expected frequency

$$\text{Degree of freedom (d.f)} = (r-1) (c-1)$$

If the calculated value is greater than the table value at a particular significant level, say 0.05 level, it is concluded that the factor is dependent on variable for which Chi – Square is computed. If the calculated value is less than the table value, it is concluded that the factor is independent on the variable.

PROBLEMS RELATING TO SAPLINGS AND TUBERS

The aim of the researcher is to highlight the dominant variable whose impact is deep in situation. The researcher identified the problems relating to saplings and tubers that a) Non – availability of tubers in time is high cost of tubers: Low productivity. b) Poor quality of tubers and e) Menace of insects and diseases. The aim of this analysis is to identify the foremost problem related with the tubers for various crops cultivation. In order to get out of these problems, the growers look forward to the department of agriculture to ensure the supply of quality tubers. Table 1.1 the various problems relating to tubers with their mean score and rank.

Table 1.1 Problems Relating to Saplings & Tubers

S.No	Problems	Mean Score	Rank
1	Non –availability of saplings and tubers in time	60.09	II
2.	High cost of saplings and tubers	38.40	IV
3.	Low productivity	56.83	III
4.	Poor quality of saplings and tubers	46.04	IV
5.	Menace of insects and diseases	68.76	I

Source:Primary data

It is observed from table 5.1 that being the menace of insects and diseases has the highest mean score of 68.76 and it ranks first among the various problems of saplings and tubers. Various crops saplings and tubers

are easily identified by insects like borer and berry. Borer and are susceptible to diseases like leaf rust, rust, bloc rot, pink disease, anthracnose, root disease, brown – eye spot, berry blotch and collar root.

Non – availability of tubers in time with the mean score of 60.09 and low productivity with the mean score of 56.83 hold the second and the third ranks respectively. The poor quality of tubers with the mean score of 46.04 and high cost of tubers with the mean score of 38.40 hold the fourth and the fifth ranks respectively. It is inferred from the analysis that the main problem relating to saplings and tubers is being menace of insects and diseases.

Irrigation and Problems Relating To Saplings And Tubers

Water is an important determinant factor of cultivation of various crops. Irrigation is the artificial application of water for soil for normal growth of various crops plants. There are two types of irrigation namely well – irrigation and canal irrigation namely well- irrigation and canal irrigation. Problems relating to saplings and tubers are tested with nature of irrigation. For this it is surmised that there is a significant relationship between irrigation and problems relating to saplings and tubers'. The ranking scores of respondents belonging to various irrigations are furnished in Table 1.2

Table 1.2

Irrigation and Problems Relating to Sapling and Tubers

S.No	Problems	Well	Canal	Total
1.	Non – availability of saplings and tubers in time	520	272	792
2.	High cost of saplings and tubers	321	207	528
3.	Low productivity	396	244	640
4.	Poor quality of saplings and tubers	367	177	544
5.	Menace of insects and diseases	750	346	1096
	Total	2398	1202	3600

Source : Primary Data

Calculated value of $\chi^2 = 16.62$

Table value at 5% significant level for 4 d.f = 9.49.

The calculated value is more than the table value. It implies that the hypothesis there is a significant relationship between irrigation and problems relating to saplings and tubers holds good. This confirms statistically that there is a significant relationship between irrigation and problems relating to saplings and tubers.

Land Holdings and Problems Relating To Saplings And Tubers

Problems relating to saplings and tubers are tested with the size of landholdings. For this, it is surmised that there is a significant relationship between landholdings and problems relating to saplings and tubers. The ranking scores of respondents belonging to different landholdings are furnished in Table 1.3.

Table 1.3 Landholdings and Problems Relating to Saplings and Tubers

S.No	Problems	Landholdings	Total
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1.	Non – availability of saplings And tubers in time	425	248	119	792
2.	High cost of saplings and tubers	288	159	81	528
3.	Low productivity	351	187	102	640
4.	Poor quality of saplings and tubers	292	169	83	544
5.	Menace of insects and diseases	594	347	155	1096
	Total	1950	1110	540	3600

Calculated value of $\chi^2 = 2.05$

Table value at 5% significant level for 8.d.f = 15.51

The calculated value is less than the table value. It implies that the hypothesis there is a significant relationship between landholdings and problems relating to saplings and a seed' does not hold well. This statistically reveals that there is no significant relationship between landholdings and problems relating to saplings and tubers.

Variety of Various crops Cultivated And Problems Relating To Saplings And Tubers.

The variety of various crops cultivated is tested with problems relating to tubers. For this, it is surmised that there is a significant relationship between variety of various crops cultivated and problems relating to saplings and tubers'. The ranking scores of growers and furnished in Table 1.4

Table 1.4 Variety of Various Crops Cultivated and Problems Relating to Sapling &Tubers

S.No	Problems	Variety					
		Paddy	Banana	coconut	cereals	sugarcane	Total
1.	Non – availability of saplings and tubers in time	248	202	132	62	148	792
2.	High cost of saplings and tubers	172	114	122	28	92	527
3.	Low productivity	184	160	96	64	136	640
4.	Poor quality of saplings and tubers	159	175	70	27	113	544
5.	Menace of insects and diseases	317	129	240	179	231	1020
	Total	1080	780	660	360	720	3660

Calculated Value of $\chi^2 = 67.06$

Source:Primary Data

Table value at 5% significant level for 16 d.f = 26.30.

The calculated value is more than the table value. It implies that the hypothesis there is a significant relationship between variety of various crops cultivated and problems relating to saplings and tubers' holds good. Thus it is statistically revealed that there is a significant relationship between variety of various crops cultivated and problems relating to saplings and tubers.

The calculated value is seen to be more than the table value. It implies that the hypothesis there is a significant relationship between awareness of the growers and problems relating to saplings and tubers' holds good. This reveals statistically that there is a significant relationship between awareness of the growers and problems relating to saplings and tubers.

PROBLEMS RELATING TO AGRICULTURAL LOAN

Agricultural loans are provided by the commercial banks and co – operative societies. The researcher has identified the major problem faced by the growers i.e. the commercial banks and co – operative societies are not properly extending the agricultural loan at the right time. So the growers are forced to seek finance from local money lenders, friends and relatives and the like. The money lenders exploit this situation and demand a high rate of interest.

The growers face the following facets of agricultural loan problems a) Not properly extended in time b) Inadequate for various crops cultivation c) Higher rate of interest d) Improper lending – system and e) Granted on the basis of intism/ preference. Table 1.5 shows mean score and rank of problems relating to agricultural loan.

Table 1.5 Problems Relating to Agricultural Loan

S.No	Problems	Mean Score	Rank
1.	Not properly extended in time	55.32	II
2.	Inadequate for various crops cultivation	56.89	I
3.	Higher rate of interest	48.67	III
4.	Improper lending – system	41.68	V
5.	Granted on the basis of favoritism / Preference	45.07	IV

Source: Primary Data

It is inferred from table 1.5 that the agricultural loan issued a inadequate for various crops cultivation and is the foremost problem with highest mean score of 56.89 and it ranks the first among the various problems relating to the agricultural loan. Higher rate of interest with the mean score of 48.67 holds the third rank. The agricultural loan granted on the basis of invalidism / preference with the mean score of 45.07 and improper lending system with the mean score of 41.68 hold the fourth and the fifth ranks respectively It is observed from the above analysis that the major problem relating to agricultural loan is that it is inadequate for various crops cultivation.

Irrigation and Problems Relating To Agricultural Loan

The irrigation of various crops cultivation is tested with problems relating to agricultural loan. For this, it is surmised that there is a significant relationship between irrigation and problems relating to agricultural loan. The ranking scores of respondents belonging to various sources of irrigations are furnished in Table 1.6

Table 1.6 Irrigation and Problems Relating to Agricultural Loan

S.No	Problems	Well	Canal	Total
1.	Not Properly extended in time	555	287	842
2.	Inadequate for various crops cultivation	408	208	616
3.	Higher rate of interest	410	202	612
4.	Improper lending system	385	237	622
5.	Granted on the basis of favoritism / preference.	640	268	908
	Total	2398	1202	3600

Calculated value of $\chi^2 = 12.6$

Table value at 5% significant level for 4 d.f = 9.49

The calculated value is more than the table value. It implies that the hypothesis there is a significant relationship between irrigation and problems relating to agricultural loan does not hold good. This reveals statistically that there is no significant relation and problems relating to agricultural loan.

Landholdings and Problems Relating To Agricultural

Problems relating to agricultural loan are tested with the size of landholding. For this, the hypothesis framed is that there is a significant relationships between land hold hips and problems relating to agricultural loan'. The ranking scores of respondents belonging to different landholdings are furnished in Table 1.7

Table 1.7 Landholdings and Problems Relating to Agricultural Loan

S.No	Problem	Landholdings			Total
		Small	Medium	Large	
1.	Not properly extended in time	465	251	126	842
2.	Inadequate for various crops	348	172	96	616
3.	Higher rate of interest	324	179	109	612
4.	Improper lending system	348	172	102	622
5.	Granted on the basis of favoritism / preference	465	336	107	908
Total		1950	1110	540	3600

Calculated value of $x^2 = 28.96$

Source: Primary Data

Table value at 5% significant level for 8 d.f = 15.51.

The calculated value is greater than the table value. It implies that the hypothesis there is a significant relationship between landholdings and problems relating to agricultural loan' holds good. This confirms statistically that there is a significant relationship between landholdings and problems relating to agricultural loan. In the light of the findings made in the research study, the following suggestion is offered to improve the agriculture industry in Thanjavur district.

Findings

Government of Tamilnadu should assist the agriculturers to establish the co-operative society for supplying the various inputs at the right price including seeds, fertilizer and pesticide at a subsidized rate and for providing marketing support to the growers. The growers must be trained in modern techniques of various crops cultivation so as to reach higher productivity. The department of agriculture must devise methods and provide new tools to improve labour efficiency, resulting in the reduction of production – cost. The growers should come forward to pay wages higher than industrial operators and builders to avoid labour turnover. Emoluments and fringe benefits should also be given regularly to the workers in order to retain them in the cultivation.

Conclusion

India is the world's second largest producer of bananas. Tamilnadu is the major contributor to the country in banana cultivation. The study revealed that the area of banana cultivation in Pudukkottai District of Tamilnadu remains constant throughout of the study period but there is a fluctuation in cultivation of bananas. Considering the current scenario of the agri industry, it has to maintain its comparative attractiveness like others in India to grow and develop as a major industry. This would mean that the rewards to the growers should commensurate with the efforts required of them.

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