

Socio-Economic Analysis of Agrarian Crisis Among Farmers in Tamil Nadu and Puducherry*

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ABSTRACT

This study scrutinised the extent of agrarian crisis among farmers in Tamil Nadu and Puducherry. A survey of 240 farmers across five districts — Cuddalore, Nagapattinam, Mayiladuthurai, Thiruvarur, and Karaikal — revealed that a greater number of marginal farmers are indebted, with the highest average outstanding amount of Rs. 9,62,234. The proportion of institutional loans exceeds that of non-institutional loans for all categories of farmers. Low yield, insufficient income, crop failure, and high input costs are the primary reasons cited by farmers for indebtedness. Debt increases the distress proneness of farmers, along with other factors such as ageing, large family size, and joint family type, while factors like large farm size, subsidiary occupation, and extension contact reduce this distress. Most of the farmers fell under the medium category of distress. They face several physiological issues, *viz.*, stress, sleeplessness, headache, high blood pressure, and diabetes due to agrarian distress. A corporate-government collaborative value chain strategy shall be introduced to benefit farmers by assessing the modern needs of consumers and considering this as an opportunity to bring happiness to the farmers' lives.

Keywords: **Agrarian crisis, farmer indebtedness, distress proneness index, occupational stress, rural credit**

JEL codes: **D14, I31, Q12, Q18, O13**

I

INTRODUCTION

Agrarian crisis is a term used to describe a combination of material, political, and aspirational dissatisfaction in which the agricultural sector attempted to increase production and provide assistance in the face of challenges to careful central planning (Flachs, 2021). India's current agrarian crisis is characterized by several factors, including marginalization of land holdings (Sharma and Malik, 2021), flaring poverty gap among farmers (Reddy *et al.*, 2020), widening income gap between cultivators and non-cultivators (Suri, 2006), declining public investment in rural infrastructure (Siddiqui, 2015), growing irrelevance of price support policies (Kumar and Dadhich, 2019), non-occurrence of the classical agrarian transition (Lerche, 2013), and the fact that agriculture is becoming unprofitable due to rising expenditures and falling commodity prices (Assadi, 2010).

Jakobsen (2018) attributes India's agrarian crisis to the onset of the Green Revolution in 1966-67, during which subsistence farming transitioned towards agro-industrialisation, heavily dependent on state-subsidised high-yielding seeds, inorganic

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fertilisers, pesticides, and irrigation. This industrial growth generated employment opportunities and contributed to the nation's Gross Domestic Product (GDP). Although productivity soon stagnated, and the unrestrained use of surface or groundwater irrigation led to environmental issues, including waterlogging, soil salinisation, and depletion of the water table. A heuristic approach to fertiliser application compromised soil health, resulting in nutritional imbalances in crops and irreversible damage to the soil ecosystem (Diwakar, 2009). The indiscriminate application of pesticides has led to resistance, resurgence, and the emergence of secondary pests, resulting in diminished biodiversity and intensified pollution of soil, water, and air (Chand and Birthal, 1997). Furthermore, landraces have been lost, soil fertility has decreased, and crop susceptibility to pests and diseases has increased as a consequence of the desire to replicate the success of the fertile, irrigated alluvial plains of Northwest India in semi-arid regions during the 1970s (Vasavi, 1999).

The increased integration of agriculture with the market economy had eroded the cultural fabric of rural India (Vasavi, 2009). The rise of machinery in agriculture, crop specialisation for scale economies, and the reliance on loans for high-value inputs led to the decline of traditional methods where farmers collaborated and exchanged information (Suri, 2006). The division of joint families into nuclear households has resulted in individualisation of agriculture, in which farmers must independently seek knowledge, credit, and market access, consequently assuming a greater share of risks than they would in a socially integrated agricultural context. Isolated inside their distinct families, farmers often struggle to assess the risks arising from volatile markets, fluctuating climatic conditions, unreliable seeds, pesticides, and fertilisers, as well as uncertain and unproven agricultural techniques (Vasavi, 2009).

The prolonged agricultural crisis has led to widespread stress among farmers. The failure to meet familial obligations, stemming from economic decline and insufficient moral support from relatives, has led farmers to experience significant psychological distress, resulting in a loss of enjoyment in economic activities, addiction to substances such as tobacco, alcohol, or drugs, reliance on informal borrowing for unproductive ends, conflicts with family and community, and even suicide (Reddy *et al.* 2021). From 1995 to 2020, a total of 376,769 farmers and agricultural labourers committed suicide in India, averaging over 10,000 per year (NCRB, 2022).

Agriculturally advanced states, such as Gujarat, Punjab, Tamil Nadu, Karnataka, Andhra Pradesh, Kerala, and Maharashtra, have a higher rate of farmer suicides compared to less developed states like Uttar Pradesh, West Bengal, and Bihar. Farmers in states with more agricultural diversity experience greater indebtedness and despair compared to those in areas with less diversified agriculture (Suri, 2006). Suicides are predominantly seen among small and marginal farmers in low-rainfall areas of developed states, as they primarily incur debt for well

excavation or the cultivation of capital-intensive, high-value crops, anticipating elevated export prices. Nevertheless, falling water levels, elevated input costs, particularly for seeds, or a collapse in commodity prices on the international market, all disrupt their expectations and lead to indebtedness (Siddiqui, 2015).

Kale *et al.* (2014) used a scoring methodology to prioritize the variables contributing to farmers' distress in the Vidarbha area of Maharashtra, where 240 farmers have been requested to give a score from 1 to 4 to each of the 16 identified" categories based on their adverse effect. The raw evaluations for each factor have been averaged to get Mean Severity Score (MSS). Reddy *et al.* (2021) created a "composite Farmers' Distress Index that represents complexity or multidimensionality of suffering, serving as a policy instrument. Fifty indicators covering seven aspects of agrarian distress—hazard exposure, sensitivity, adaptive capacity, mitigation and adaptation strategies, triggers, socio-psychological factors, and impacts—were identified in the study of district-level agrarian distress among dryland farmers in Andhra Pradesh and Telangana. To categorise the four districts as highly distressed, moderately distressed, and less distressed, the estimated values of variously scaled indicators have been normalised, given equal weight, and averaged arithmetically. Bathla and Kumar (2019) employed the Gini Index to examine the degree of income inequality among agricultural households in 20 states. While the per capita annual income and its inequality increased with farm size, the share of non-farm sector income in total income decreased correspondingly, indicating that larger farmers depend more heavily on agricultural income.

This research seeks to ascertain the degree of farm indebtedness among farmers in Tamil Nadu and Puducherry by examining the prevalence and magnitude of debt, the factors influencing it, the challenges in repaying loans, the extent of income disparities among various groups of farmers, and their susceptibility to distress, highlighting the psychological issues resulting from occupational stress.

II

MATERIALS AND METHODS

2.1 Study Area

Tamil Nadu is one of the prominent and developed states in the country. The incidence of suicides is also high in the state, and it is similar to that of the union territory of Puducherry. Hence, it was decided to study the extent of the agrarian crisis in these states (Figure 1). Initially, four coastal districts-Cuddalore, Nagapattinam, Mayiladuthurai, and Thiruvarur of Tamil Nadu, together with Karaikal district of Puducherry-were deliberately chosen. Consequently, two taluks from each district were identified: Chidambaram and Kattumannarkoil in Cuddalore; Tharangambadi and Sirkali in Mayiladuthurai; Nagapattinam and Kilvelur in Nagapattinam; Nannilam and Mannargudi in Thiruvarur; and Karaikal and Thirunallar in Karaikal.

2.2 Data

In Tamil Nadu, 25 farmers from various villages were randomly selected and interviewed under each taluk, while in Puducherry, 20 farmers were similarly interviewed. A structured schedule was utilized to gather data on their age, education, family size, household income and expenditure patterns, farming experience, landholding size, cropping patterns, costs and returns from different enterprises, access to inputs such as labor, irrigation, seeds, machinery, and fertilizers, access to institutional and non-institutional credit, access to extension services, market access, off-farm occupations, social participation, levels of debt from various credit sources and repayment challenges, financial dependency on others, distress-inducing factors, and psychological and physiological problems arising from occupational stress. The sample size included 240 farmers from 5 districts in Tamil Nadu and Puducherry.

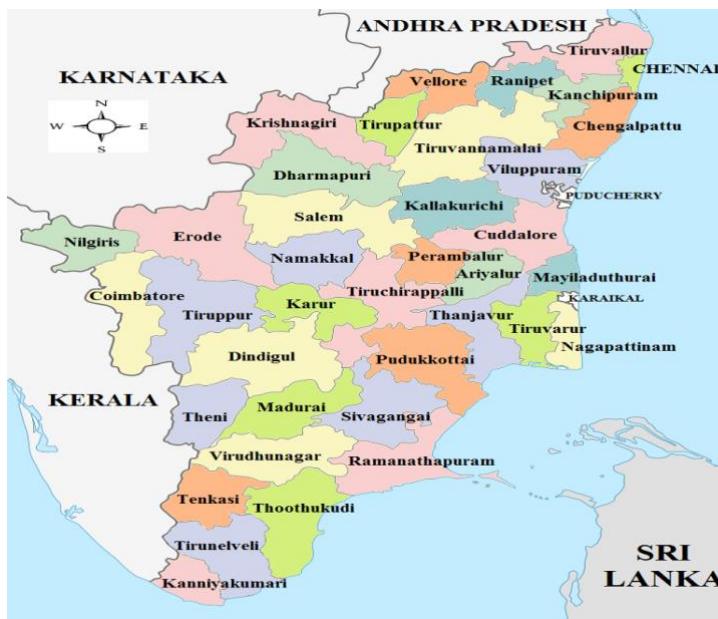


FIGURE 1. MAP OF THE STUDY AREA

2.3 Analytical tools

The data collected from the sample households were scrutinised, tabulated, and analysed by employing various analytical tools.

2.3.1 Distress Proneness Index (DPI)

From the literature, 15 reasons *viz.*, vagaries of monsoon, unpredictable yields, lack of irrigation facilities, labour shortage and its high wage rates, escalating input cost, supplier-driven demand in input market, spurious seed, low output price, procedural difficulties in getting institutional credit, limited market avenues, frequent power outages, insufficient technical guidance, lack of alternative employment opportunities, growing dependency on others, and rising indebtedness were identified to cause distress in farmers. Farmers were asked to assign scores from 0 to 3 to each of these reasons based on their extent of contribution to distress, signifying 0 for “not at all”, 1 for “cannot say”, 2 for “somewhat”, and 3 for “severe”. The raw scores were added to derive the distress proneness score, which was converted into the agrarian distress proneness index with the following formula:

$$\text{Agrarian DPI} = \frac{\text{Obtained agrarian distress proneness score}}{\text{Maximum obtainable agrarian distress proneness score}} \times 100$$

The respondents were categorised as less, moderately, and highly prone to distress according to the resultant index value with equal intervals (Table 1).

TABLE 1. CLASSIFICATION OF DISTRESS PRONENESS INDEX (DPI) BASED ON ITS RANGE

DPI	Value
Low	< 33.33
Medium	33.33 – 66.66
High	>66.66

2.3.2 Impact of distress-yielding factors

Linear regression is a method that calculates the coefficients of a linear equation, using one or more independent variables to predict the quantitative value of the dependent variable optimally. Regression models including a single dependent variable and numerous independent variables are termed multiple linear regression. The independent factors include age, education, family size, family type, farm size, subsidiary occupation, number of crops, yearly income, irrigation facilities, debt and extension contact. At the same time, the dependent variable is the projected Distress Proneness Index. The predicted signs of the independent variables are positive for age and family size, but negative for other factors. The multiple regression model has been employed to investigate the impact of distress-inducing elements.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + U$$

Where,

Y = Distress proneness index

X_1 = Age (years)

X_2 = Education (score)

X_3 = Family size (no.)

X_4 = Family type (no.)

X_5 = Farm size (acre)

X_6 = Subsidiary occupation (score)

X_7 = Number of crops (no.)

X_8 = Yearly income (Rs.)

X_9 = Irrigation facilities (dummy)

X_{10} = Debt (Rs.)

X_{11} = Extension contact (no.)

$\beta_1, \beta_2, \dots, \beta_{11}$ are coefficients of the respective explanatory variables.

U = Error term and β_0 is the constant term

III

RESULTS AND DISCUSSION

3.1 Extent of Indebtedness

The maximum number of indebted households was found in the marginal farmer category (Table 2). The number of marginal farmers who had institutional and non-institutional loans was found to be 56 and 46, respectively. The average outstanding amount of the marginal farmer category was Rs. 9,62,234. In the small farmer category, 42 farmers had an institutional loan, and 24 farmers had a non-institutional loan. In the medium and large farmer categories, 29 and 7 farmers had institutional loans, respectively, and 9 and 5 farmers had non-institutional loans, respectively. The average amount of outstanding loans in small, medium, and large farmers was Rs. 7,59,619, Rs. 8,65,546, and Rs. 2,55,351, respectively. The average outstanding loan was higher in the marginal farmer category, followed by the medium farmer category.

TABLE 2. NUMBER OF INDEBTED HOUSEHOLDS AMONG SAMPLE FARMERS IN THE STUDY AREA

Farmer category	Number of farmers having institutional loans	Number of farmers having non-institutional loans	Total number of farmers	Average outstanding amount (Rs.)
Marginal	56	46	102	9,62,234
Small	42	24	66	7,59,619
Medium	29	9	38	8,65,546
Large	7	5	12	2,55,351

3.2 Source of institutional and non-institutional loans and indebtedness

The frequency of farmers who availed institutional loans was higher than that of those who availed non-institutional loans in all categories of farmers (Tables 3 and 4).

In the case of marginal farmers, private banks and private money lenders were found to be the major sources of institutional and non-institutional credit, respectively. Commercial banks and private money lenders were found to be the primary sources of credit for small and medium-sized farmers. The frequency of indebted farmers was found to be higher among marginal farmers.

3.3 Causes of Indebtedness

Out of 240 farmers, 109 farmers mentioned low yield as the major cause of indebtedness (Table 5). Approximately 100 farmers cited insufficient income, and 64 farmers attributed crop failure as the primary cause of their debt. Twenty-seven farmers reported high input costs as the reason. Only two farmers mentioned unproductive expenditure as a cause.

TABLE 3. SOURCE OF INSTITUTIONAL LOAN AND INDEBTEDNESS

Farm category	Cooperative Bank		Commercial bank		Private banks		Private banks Average debt	
	N	Amount (Rs.)	N	Amount (Rs.)	N	Amount (Rs.)	N	Amount (Rs.)
Marginal	24	46,450	29	1,05,152	34	61,633	56	77,662
Small	17	62,298	19	1,41,870	6	39,246	42	64,179
Medium	12	87,288	12	1,61,718	5	2,41,620	29	1,44,696
Large	1	1,07,000	6	2,69,508	0	0	7	2,46,293

TABLE 4. SOURCE OF NON-INSTITUTIONAL LOANS AND INDEBTEDNESS

Farm category	Pawn brokers		Relatives		Private money lenders		Other including SHG		Average debt	
	N	Amount (Rs.)	N	Amount (Rs.)	N	Amount (Rs.)	N	Amount (Rs.)	N	Amount (Rs.)
Marginal	2	44,225	8	40,724	34	57,551	2	7,775	46	51,881
Small	1	11,500	8	88,479	14	39,246	1	51,000	24	55,303
Medium	2	52,100	0	0	7	1,27,557	0	0	9	1,10,789
Large	2	2,680	1	49,050	2	4,500	0	0	5	12,682

TABLE 5. CAUSES OF INDEBTEDNESS OF FARMER RESPONDENTS IN THE STUDY AREA

Sl. No.	Causes	Number of farmers (N=240)
1	Low yield	109
2	Crop failure	64
3	High interest rate	42
4	High input cost	27
5	Insufficient income	100
6	Unproductive expenditure	2
7	Others	7

3.4 Distress proneness of farmers

Most of the sampled farmers (86%) fell under the medium DPI category (Table 6). High and low DPI constituted 10 per cent and 4 per cent, respectively.

TABLE 6. DISTRIBUTION OF FARMERS BASED ON DISTRESS PRONENESS INDEX (DPI)

Sr. No.	DPI	Frequency of Farmers	Proportion (%)
1	Low DPI	10	4.17
2	Medium DPI	206	85.83
3	High DPI	24	10.00
	Total	240	100.00

3.5 Impact of distress-yielding factors of farmer respondents

Education, farm size, subsidiary occupation, number of crops, irrigation facilities, and extension contact were found to have a negative influence on the dependent variable (Table 7). Age, family size, family type, annual income, and debt had a positive impact on the dependent variable. Among the negative variables, farm size, subsidiary occupation, and extension contact were found to be significant. Similarly, age, family size, family type, and debt were significant among the negative variables.

TABLE 7. IMPACT OF DISTRESS-YIELDING FACTORS ON FARMER RESPONDENTS

Dependent variable: Distress Proneness Index			
Variables	Coefficient	Standard error	P value
Intercept	40.145	4.249	0.000
Age (X_1)	0.158**	0.053	0.003
Education (X_2)	-0.332	1.203	0.783
Family size (X_3)	1.092*	0.604	0.072
Family type (X_4)	3.527**	1.648	0.033
Farm size (X_5)	-0.246**	0.119	0.039
Subsidiary occupation (X_6)	-1.443*	0.759	0.059
Number of crops (X_7)	-0.315	0.566	0.579
Annual income (X_8)	0.00004	0.000	0.369
Irrigation facilities (X_9)	-1.233	1.272	0.333
Debt (X_{10})	0.00002***	0.000	0.000
Extension Contact (X_{11})	-1.560**	0.606	0.011
Observations		240	
R ²		0.38	
Adjusted R ²		0.35	

Note: '***', '**' and '*' denote significance at 1%, 5% and 10% levels respectively.

Age was found to have a positive association with the dependent variable, and it was significant at the 5 per cent level. Likewise, family size and family type had a positive association with the dependent variable. Farmers in joint households with a larger number of family members were found to have higher distress levels than those in nuclear households with fewer family members. When the number of family members is high, the need for money is also high, as the farmer's income will

be insufficient to meet the family's basic needs. The available capital for farming will be diverted to other purposes, leaving the farmer indebted.

Farm size, subsidiary occupation, and Extension contact were found to be significant at 10 per cent, 10 per cent and 5 per cent, respectively. A unit increase in the variables farm size, subsidiary occupation, and Extension contact would decrease the distress by 0.246, 1.443, and 1.560 units, respectively.

3.6 Physiological issues faced by farmers

Out of 240 farmer respondents, 65.42 per cent were stressed and 61.25 per cent were suffering from sleeplessness (Table 8). The proportion of farmer respondents suffering from headache, high blood pressure, or diabetes, and general physical weakness was 38.33 per cent, 32.92 per cent and 15 per cent, respectively.

TABLE 8. PHYSIOLOGICAL ISSUES FACED BY THE FARMER RESPONDENTS IN THE STUDY AREA

Sl.No.	Particulars	Frequency (no.)	Proportion (%)
1	Head ache	92	38.33
2	Sleeplessness	147	61.25
3	Stress	157	65.42
4	General physical weakness	36	15.00
5	Blood pressure/ Diabetics	79	32.92

3.7 Distribution of physiological issues among different categories of farmer respondents

Out of 124 marginal farmers, 64.52 per cent were suffering from stress, 57.26 per cent from sleeplessness, and 34.68 per cent from headache (Table 9).

TABLE 9. PHYSIOLOGICAL PROFILE OF THE FARMER RESPONDENTS BASED ON LAND HOLDING SIZE IN THE STUDY AREA

Sl. No.	Farmer category	Frequency	Particulars	Frequency	Proportion (%)
1	Marginal	124	Head ache	43	34.68
			Sleeplessness	71	57.26
			Stress	80	64.52
			General physical weakness	21	16.94
			Blood pressure/ Diabetics	36	29.03
2	Small	69	Head ache	31	44.93
			Sleeplessness	47	68.12
			Stress	47	68.12
			General physical weakness	11	15.94
			Blood pressure/ Diabetics	25	36.23
3	Medium	36	Head ache	12	33.33
			Sleeplessness	21	58.33
			Stress	24	66.67
			General physical weakness	1	2.78
			Blood pressure/ Diabetics	12	33.33
4	Large	11	Head ache	6	54.55
			Sleeplessness	8	72.73
			Stress	6	54.55
			General physical weakness	3	27.27
			Blood pressure/ Diabetics	6	54.55

Blood pressure or diabetes contributed 29.03 per cent. General physical weakness in the marginal farmer category was 16.94 per cent. Out of 69 small farmers, 68.12 per cent had suffered from stress and sleeplessness. Farmers suffered from headaches, general physical weakness, and blood pressure or diabetes, which accounted for 44.93 per cent, 15.94 per cent and 36.23 per cent, respectively. Among the 36 medium-sized farmers, 66.67 per cent and 58.33 per cent of farmers suffered from stress and sleeplessness, respectively. About 33.33 per cent, 2.78 per cent and 33.33 per cent suffered from headache, general physical weakness, and high blood pressure or diabetes, respectively. Out of 11 large farmers, 54.55 per cent were suffering from headaches, stress, high blood pressure, or diabetes. The percentage of farmers who suffered from sleeplessness, stress, and general physical weakness accounted for 72.73 per cent and 27.27 per cent, respectively.

IV

CONCLUSION AND POLICY IMPLICATIONS

Farmers in the study region were experiencing distress due to insufficient returns from agriculture, which were inadequate to meet their loan dues, which were availed for agricultural purposes. However, the government attempted to provide loan waivers and subsidies to improve the condition of farmers, but these measures did not benefit the poorest farmers. Loan waivers do not alleviate the agrarian crisis due to the uneven distribution of subsidies, *skewed benefit patterns, and a degeneration of government-supported agricultural extension programmes*. The study suggests that the benefit of suitable cropping pattern based on soil condition of the study area should be well addressed by agricultural department of state / U.T to the farming community; farmers should be encouraged to avail their loan from proper financial institutions and made aware on CIBIL score benefits; appropriate variety should be recommended to increase the productivity of the existing crops; government should support advanced irrigation system at their level through low cost technology; well irrigation system should be provided at full subsided rate by the government; proper marketing facilities should be provided at base level to the farmers; there is a need to create database on various aspects of farmers in the distressed area; the corporate-government collaborated value chain strategies can be introduced to the farmers by assessing the modern needs of consumers and considering that as opportunity to bring the happiness to the farmers' life.

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