ECONOMICS OF PADDY – A STUDY FROM DHARMAPURI DISTRICT

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Abstract

In Tamil Nadu, one of the states in India, rice is the main food. Tamil Nadu contributes a major share in the production of paddy and it is produced by millions of farmers. Despite these achievements, the farmers in Tamil Nadu are not able to get a fair price for the paddy and paddy cultivation has become uneconomic over the years. Such a serious problem that affects the livelihood of 65 percent of total population in the State has aroused the interest of the researcher to probe into the matter. Even though, agriculture is the main occupation of our economy, it involves many risks and uncertainties. In this situation this study analyzed the cost and returns in the production of paddy.

Key words

Paddy, Cost and Returns, Production, Behavior Technology

1. Introduction

In Tamilnadu, one of the states in India, rice is the main food. Tamil Nadu contributes a major share in the production of paddy and it is produced by millions of farmers. With the introduction of High Yielding Varieties Programme in the mid sixties, spectacular achievement in paddy production has been made and paddy production has nearly doubled and productivity has been increased from 1013kg/ha in 1960-61 to 3392 kg/ha in 1994-95 and to 2712 kg/ha in 1995-96 and to 2671 kg/ha in 1996-97 (Statistical Hand Book of Tamil Nadu, 2000). The productivity varies from year to year. Despite these achievements, the farmers in Tamilnadu are not able to get a fair price for the paddy and paddy cultivation has become uneconomic over the years. Such a serious problem that affects the livelihood of 65 percent of total population in the State has aroused the interest of the researcher to probe into the matter.

Even though, agriculture is the main occupation of our economy, it involves many risks and uncertainties . Unless the central and state governments extend their support to the farmers, they may not be able to continue this occupation. In Feb 2008, the farmers were encouraged by the central and 'state governments' 'Agricultural Debt Waiver and Debt Relief Scheme'. Under this Scheme, the total debt waiver and debt relief was about Rs.65, 300 crores covering 3.6 crores of farmers. This scheme boosted the farmers to continue their occupation.

2. Objective

- To study the cost and returns in the production of paddy.

3. Hypotheses

- Cost and benefit of paddy cultivation differs significantly between farm sizes.

4. Methodology

Dharmapuri District has been selected for the study. Rice is cultivated in all the blocks of the district. Random sampling method was employed to select the blocks, villages, hamlets and the respondents.

Selection of Respondents

The respondents were also selected by using random sampling technique. The paddy growers were arranged alphaphetically with the use of village revenue records in each hamlet and 20 respondents were selected from each hamlet and the total respondents come to 400. While selecting the blocks, villages, hamlets and the respondents, more concentration was given only on paddy cultivators. Hence, a multistage random sampling was adopted to select the sample size.

Data Collected

The data pertaining to this study were collected from both primary and secondary sources. A comprehensive questionnaire was prepared to collect data on the socio – economic conditions of the respondents, their economic motivation and adoption behaviour of technology, cost of cultivation, production and price of paddy, cost and return, retention from production and the marketable surplus. 400 samples were collected. The required secondary data relating to the study were collected from various publications, periodicals, journals, dailies as well as from the annual and published reports. Collection of secondary data was done from the offices of Commissioner and Director of Agricultural Departments at State, District and Divisional and block levels in district.

Tools Employed

Collected Tabular and percentage analyses were employed for tabulation and classification of the respondents. Mean and standard deviation was calculated and compared with the individual farmers' mean and standard deviation.

5. Result and Discussion

Cost of Production

Cost of production is divided into variable cost and fixed cost. Table 1and 1 A explain the variable cost and fixed cost in season wise and variety wise of all the groups of farmers.

COST OF PRODUCTION OF COARSE VARIETY
TABLE – 1
STATISTICAL ANALYSIS OF MINIMUM AND MAXIMUM COST OF PRODUCTION PER KG OF COARSE VARIETY IN RUPEES

Types of farmers and seasons	No of farmer	Variable cost			Fixed Cost			Total Cost		
		Mini - mum	Maxi - Mum	Mean	Mini - mum	Maxi - mum	Mean	Mini - Mum	Maxi - mum	Mean
Marginal										
Season – I	194	3.15	3.20	3.18	1.55	1.60	1.58	4.72	4.78	4.75
Season – II	131	3.15	3.18	3.17	1.58	1.90	1.59	7.73	5.06	4.75
Small										
Season – I	90	3.20	3.50	3.25	1.33	1.48	1.46	4.67	4.95	4.71
Season – II	63	2.23	3.40	3.23	1.30	1.50	1.47	3.70	4.80	4.69
Other										
Season – I	50	3.15	3.25	3.19	1.40	1.50	1.46	4.60	4.70	4.65
Season– II	43	3.10	3.30	3.22	1.35	1.45	1.42	4.50	4.70	4.64

Source : Primary Data

It is observed from Table that the minimum variable cost is Rs.3.15 in both the seasons and Rs.3.20 and Rs.3.18 in season I and season II of maximum variable cost for marginal farmers. Rs.3.20 and Rs.2.23 are the minimum variable cost in season I and Rs.3.50 and Rs.3.40 are the maximum variable cost in season II for small farmers and Rs. 3.15 and Rs.3.10 in season I and Rs. 3.25 and Rs.3.30 in season II for other farmers respectively Table also tells that Rs.3.18 and Rs.3.17; Rs.3.25 and Rs. 3.23; and Rs.3.19 and Rs 3.22 are the mean variable cost in Season I and season II for marginal, small and other farmers accordingly The mean variable cost is least in the case of marginal farmers followed by other and small farmers.

Table also tells the fixed cost. Rs.1.55 and Rs.1.58; Rs.1.33 and Rs. 1.30; and Rs.1.40 and Rs.1.35 are the minimum fixed cost and Rs.1.60 and Rs.1.90; Rs. 1.48 and Rs. 1.50 ; and Rs.1.50 and Rs.1.45 are the maximum fixed cost in season I and Season II for marginal farmers, small farmers and other farmers respectively. Also it is observed that Rs.1.58 and Rs.1.59; Rs. 1.46 and Rs.1.47; and Rs.1.46 and Rs.1.42 are the mean fixed cost in season I and season II for marginal farmers, small farmers and other farmers accordingly. The high mean fixed cost is found with marginal farmers than small and other farmers.

Total cost is also given in Table. The lowest mean total cost is found with other farmers followed by small and marginal farmer groups.

TABLE : 1A
STATISTICAL ANALYSIS OF MINIMUM AND MAXIMUM COST OF PRODUCTION PER KG OF FINE VARIETY IN RUPEES.

Types of farmers and seasons	No of farmers	Variable cost			Fixed Cost			Total Cost		
		Minimum	Maximum	Mean	Minimum	Maximum	Mean	Minimum	Maximum	Mean
Marginal Season – I	38	3.40	3.55	3.49	1.70	1.75	1.72	5.15	5.25	5.20
Season – II	101	3.15	3.60	3.48	1.60	1.75	1.71	4.90	5.25	5.20
Small Season – I	14	3.50	3.52	3.51	1.59	1.60	1.60	5.09	5.12	5.10
Season – II	41	3.40	3.60	3.54	1.50	1.60	1.56	5.00	5.20	5.10
Other Season - I	14	3.45	3.50	3.48	1.50	1.60	1.56	4.95	5.10	5.04
Season– II	21	3.45	3.60	3.54	1.40	1.58	1.53	5.00	5.15	5.07

Source : Primary Data

It is observed from Table 1A that Rs.3.40 and Rs.3.15; Rs.3.50 and Rs.3.40 and Rs.3.45 and Rs.3.45 are the minimum variable cost of fine variety for marginal, small and other farmers in Season I and season II respectively. Rs.3.55 and Rs.3.60; Rs.3.52 and Rs.3.60; and Rs.3.50 and Rs.3.60 are the maximum variable cost of fine variety for marginal, small and others farmers in season I and season II accordingly. The mean variable cost is higher with small farmer followed by other and marginal farmer. Table also tells that Rs.1.70 and Rs.1.60; Rs.1.59 and Rs.1.50; and Rs.1.50 and Rs.1.40 are the minimum fixed cost and Rs.1.75 and Rs.1.75; Rs.1.60 and Rs.1.60; and Rs.1.60 and Rs.1.58 are the maximum fixed cost of fine variety for marginal, small and other farmers in season I and season II respectively. The lowest mean fixed cost is found with other farmers followed by small other and marginal farmers. Total cost is also given in Table. The lowest mean total cost is found with other farmers followed by small and other farmer.

TABLE 2
STATISTICAL ANALYSIS OF VARIABLE COST OF PRODUCTION PER KG IN RUPEES

Variable Cost	Farmer	N	Mean	Std. Deviation	F	p
Coarse varieties	Marginal farmer	325	3.17[a]	0.0079	96.85	0.00**
	Small farmer	153	3.24[b]	0.0970		
	Other farmer	93	3.21[c]	0.0506		
	Total	571	3.19	0.0630		
Fine varieties	Marginal farmer	139	3.48[a]	0.041	30.02	0.00**
	Small farmer	55	3.53[b]	0.048		
	Other farmer	35	3.51[c]	0.057		
	Total	229	3.50	0.051		

Source: Primary data   ** Highly Significant

a, b, c: Duncan's Post hoc Test

Tables 2,3,4 explain the ANOVAs test results of the variable, fixed and total cost of production of the farmer groups of combined seasons. Table V.7B tells that the mean value of variable cost is higher in small farmer (Rs.3.24) followed by other farmer (Rs.3.21) and marginal farmer (Rs.3.17) for coarse variety and higher in small farmers(Rs.3.53) followed by other farmer (Rs.3.51) and marginal farmer (Rs.3.48) for fine variety. As a whole, the mean value of variable cost is higher for fine variety (Rs.3.50) than coarse variety (Rs.3.19). By employing 'F' test and Duncan's Post hoc test it is proved that there is a significant difference between the variable cost of coarse variety of paddy and the groups of farmers and the variable cost of fine variety and the groups of farmers.

TABLE 2
STATISTICAL ANALYSIS OF FIXED COST OF PRODUCTION PER KG IN RUPEES

Fixed cost	Farmer	N	Mean	Std. Deviation	F	p
Coarse varieties	Marginal farmer	325	1.58[a]	0.0193	1536.49	0.00**
	Small farmer	153	1.46[b]	0.0376		
	Other farmer	93	1.44[c]	0.0345		
	Total	571	1.53	0.0708		
Fine varieties	Marginal farmer	139	1.72[a]	0.031	541.87	0.00**
	Small farmer	55	1.57[b]	0.042		
	Other farmer	35	1.55[c]	0.039		
	Total	229	1.65	0.084		

Source: Primary data ** Highly Significant

a, b, c: Duncan's Post hoc Test

Table 2 tells that the mean value of fixed cost of production is lower with other farmer (Rs.1.44) followed by small farmer (Rs.1.46) and marginal farmer (Rs.1.58) for coarse variety and also lower with other farmer (Rs.1.55) followed by small farmer (Rs 1.57) and marginal farmer (Rs.1.72) As a whole, the mean value of fixed cost is lower in coarse variety than the fine variety. By employing 'F' test and Duncan's Post hoc test, it is found that there is a significant difference between the fixed cost of both coarse and fine varieties of paddy and the groups of farmers.

TABLE 3
STATISTICAL ANALYSIS OF TOTAL COST OF PRODUCTION PER KG IN RUPEES

Total cost	Farmer	N	Mean	Std. Deviation	F	p
Coarse varieties	Marginal farmer	325	4.75[a]	0.0182	164.77	0.00**
	Small farmer	153	4.70[b]	0.0906		
	Other farmer	93	4.64[c]	0.0447		
	Total	571	4.72	0.0653		
Fine varieties	Marginal farmer	139	5.20[a]	0.032	282.62	0.00**
	Small farmer	55	5.10[b]	0.035		
	Other farmer	35	5.06[c]	0.046		

	Total	229	5.15	0.066		

Source: Primary data   ** Highly Significant   a, b, c: Duncan's Post hoc Test

Table 3 elucidates the total cost of the cultivation of coarse and fine varieties of paddy. It is observed that the mean value of total cost is Rs.4.75; Rs.4.70 and Rs.4.64 for coarse variety and Rs.5.20; Rs.5.10 and Rs.5.06 for fine variety of marginal, small and other farmers group accordingly Also it is observed that as a whole the mean value of total cost is Rs.4.72 and Rs.5.15 for coarse and fine varieties of paddy respectively.

By employing ANOVAs test it is proved that there is a significant difference between the mean value of the total cost of cultivation and the groups of farmers in both coarse variety and fine variety of the paddy. Duncan's Post hoc test proves that there is a significant difference between the groups of farmers and the mean value of the total cost of cultivation in coarse variety and there is a significant difference between marginal and other farmer and small and other farmers with the mean value of total cost of cultivation in fine variety.

5. Hypotheses can also be framed

Null Hypothesis   :   There is no significant difference between
                                        the cost of cultivation per kilogram of production of paddy and the size of
                                        farms.
Alternative Hypothesis   :   There is a significant difference between the
                                        cost of cultivation per kilogram of production of paddy and the size of
                                        farms.

ANOVAs test given in Table .7D proves that there is a significant difference between the cost of cultivation per kilogram of production of paddy and the size of farms. Hence the null hypothesis is rejected and the alternative hypothesis is accepted.

COMPONENTS OF COST OF PRODUCTION OF COARSE VARIETY AND FINE VARIETY OF PADDY

Components of cost of cultivation is very important for taking marketing decisions favourably. Table 4 analyses the study of components of cost of cultivation on the basis of the guide lines of Government of India.

Calculation of cost has been done on the following grounds :

1.   Hired Human labour, bullock labour and machine labour – valued at the actual rates given by the farmer.
2.   Family labour- valued at the rates of wages paid for hired labour for similar work.
3.   Bullock labour and machine labour (owned)- valued at rates paid to hire in the same.
4.   Seeds (Purchased) insecticides and pesticides manure (purchased) fertilisers, irrigation charges- valued at rates actually paid by the farmers.
5.   Seeds (Farm produced), manure (owned) – valued at the prevailing market prices.
6.   Depreciation on implements- valued at 20 percent and apportioned in proportion to the value of output of paddy to the total value of output of all the crops of the year.
7.   Land revenue – actually paid by the farmer .
8.   Interest on working capital – valued at the 12 percent for half of the crop growth period.
9.   Rent paid for leased – in land- valued at the actual rent paid by the farmers.
10.   Imputed rental value of owned land-valued of the rate of rent payable for leasing in similar land.
11.   Imputed interest owned fixed capital valued at a rate of 10 percent of the value of assets (excluding land) and apportioned in proportion to the value of output of paddy in proportion to the value of output of paddy to the total value of output of all the crops of the year.

TABLE 4

STATISTICAL ANALYSIS OF COMPONENT OF VARIABLE AND FIXED COST OF COARSE VARIETY AND FINE VARIETY OF PADDY

Types of Cost	Cost Analysis					
	COARSE Variety			Fine Variety		
	MF	SF	OF	MF	SF	OF
A. Variable Cost						
PART-I 1. Seeds	141167.01 **(3.33)**	140468.46 **(2.68)**	135120.54 **(2.25)**	52634.40 **(4.13)**	49143.85 **(3.48)**	43583.38 **(3.05)**
2. Insecticides	36361.20 **(0.85)**	39834.34 **(0.76)**	18016.07 **(0.30)**	10832.75 **(0.85)**	10732.56 **(0.76)**	9145.37 **(0.64)**
3. Maneuvers & Fertilizers	863685.42 **(20.19)**	1099637.39 **(20.98)**	1386036.51 **(23.08)**	250937.36 **(19.69)**	289214.38 **(20.48)**	322659.91 **(22.58)**
4. Irrigation charges	35505.64 **(0.83)**	40882.61 **(0.78)**	30026.79 **(0.50)**	10577.86 **(0.83)**	11015.00 **(0.78)**	7144.82 **(0.50)**
	(25.20)	**(25.20)**	**(26.13)**	**(25.50)**	**(25.50)**	**(26.77)**
PART-II 5. Labour (hired)						
(i) Human	829890.89 **(19.40))**	1396822.52 **(26.65)**	1603430.45 **(26.70)**	247241.49 **(19.40)**	376345.86 **(26.65)**	381533.20 **(26.70)**
(ii) Bullock	19250.05 **(0.45)**	20441.31 **(0.39)**	12611.25 **(0.21)**	6372.20 **(0.50)**	5507.50 **(0.39)**	3000.82 **(0.21)**
(iii) Machine	361900.87 **(8.46)**	183971.75 **(3.51)**	118906.08 **(1.98)**	107817.68 **(8.46)**	49567.50 **(3.51)**	28293.47 **(1.98)**
	(28.31)	**(30.55)**	**(28.89)**	**(28.36)**	**(30.55)**	**(28.89)**
PART-III 6. Labour (Owned)						
(i) Human	77855.74 **(1.82)**	56606.69 **(1.08)**	46841.79 **(0.78)**	23194.82 **(1.82)**	15251.54 **(1.08)**	11145.91 **(0.78)**
(ii) Bullock	55611.25 **(1.30)**	30924.03 **(0.59)**	16214.47 **(0.27)**	16567.73 **(1.30)**	8331.86 **(0.59)**	3858.20 **(0.27)**
(iii) Machine	269072.87 **(6.29)**	430839.82 **(8.22)**	624557.18 **(10.40)**	80162.32 **(6.29)**	116081.16 **(8.22)**	149469.56 **(10.46)**
	(9.41)	**(9.89)**	**(11.45)**	**(9.41)**	**(9.89)**	**(11.51)**
PART –IV 7. Interest on working Capital	161700.39 **(3.78)**	162482.17 **(3.10)**	123710.36 **(2.06)**	44350.53 **(3.48)**	39541.03 **(2.80)**	25149.75 **(1.76)**
Total Variable Cost	2852001.33 **(66.70)**	3602911.07 **(68.74)**	4115471.49 **(68.54)**	850689.13 **(66.75)**	970732.26 **(68.74)**	984984.40 **(68.93)**
Variable Cost Per Kg	3.17	3.24	3.21	3.48	3.53	3.51

TABLE 4Contd ….

Types of Cost	COARSE Variety			Fine Variety		
	MF	SF	OF	MF	SF	OF
B. Fixed Cost						
1. Land revenue	49622.34 **(1.16)**	61848.05 **(1.18)**	85276.08 **(1.42)**	14401.18 **(1.13)**	16663.72 **(1.18)**	17719.14 **(1.24)**
2. Depreciation on Implements	259661.74 **(6.07)**	332826.38 **(6.35)**	410766.45 **(6.84)**	77358.55 **(6.07)**	89673.40 **(6.35)**	91739.44 **(6.42)**
3. Rent for leased land	242550.59 **(5.67)**	101682.39 **(1.94)**	43238.57 **(0.72)**	72260.78 **(5.67)**	27396.28 **(1.94)**	39725.18 **(2.78)**
4. Imputed rental value of owned land	615145.93 **(14.38)**	820797.02 **(15.66)**	986680.24 **(16.43)**	183264.57 **(14.38)**	221147.33 **(15.66)**	221346.42 **(15.49)**
5. Imputed interest on Capital	258806.18 **(6.05)**	321295.39 **(6.13)**	363924.66 **(6.06)**	76466.44 **(6.00)**	86566.61 **(6.13)**	73448.71 **(5.14)**
B. 1 Fixed Cost	1425786.77 **(33.30)**	1638449.23 **(31.26)**	1889886.01 **(31.47)**	423751.52 **(33.25)**	441447.34 **(31.26)**	443978.90 **(31.07)**
2. Fixed Cost Per Kg	1.58	1.46	1.44	1.72	1.57	1.55
C. 1. Total Cost (A+B)	4277788.10	5241360.30	6005357.50	1274440.65	1412179.60	1428963.30
2. Total Cost Per Kg	4.75	4.70	4.64	5.20	5.10	5.06

Source: Primary data Figures in parenthesis ( ) are percentages

As seen in Table 4 the total cost per kg production of coarse variety is Rs.4.75; Rs.4.70 and Rs.4.64 and for fine variety is Rs.5.20; Rs.5.10 and Rs.5.06 of marginal, small and other farmer groups respectively. The portion of variable cost per kg production is Rs.3.17; Rs.3.24 and Rs.3.21 for coarse variety and Rs.3.48 ; Rs.3.53 and Rs.3.51 for fine variety of marginal, small and other farmer groups respectively. Also it is seen that the portion of fixed cost per kg production is Rs.1.58; Rs.1.46 and 1.44 for coarse variety and Rs.1.72; Rs.1.57 and Rs.1.55 for fine variety of marginal small and other farmer groups accordingly.

The total cost interns of Rupees as a whole in coarse variety can be segmented into variable cost which accounts 66.67 percent and fixed cost which accounts for 33.30 percent to marginal farmer and which accounts to 68.74 percent and 68.53 percent as variable cost and also accounts for 31.26 percent and 31.47 percent as fixed cost for small and other farmer respectively. With regard to fine variety of paddy, the variable cost accounts for 66.75; 68.74; and 68.93 percent and the fixed cost accounts for 33.22;31.26; 31.07 percent for marginal small and other farmers respectively.

COST AND BENEFIT OF THE PRODUCTION OF PADDY OF THE FARMERS

To analyze the cost and benefit of the farmers, the mean money value of total cost and total revenue per acre are taken. Table 5 illustrates this. It is analysed in terms of before marketable surplus and marketable surplus. Before marketable surplus is referred that the retention of paddy is not deducted from the total production of paddy per acre. Marketable surplus is referred that the retention of paddy is deducted from total production of paddy per acre. Total revenue includes the total production per acre is multiplied by the respective prices of the paddy Benefit refers to net revenue which is obtained from the deduction of total cost from total revenue of the production of paddy per acre.

TABLE 5
COST AND BENEFIT OF THE PRODUCTION OF THE PADDY OF FARMERS PER ACRE

Types of farmers	Coarse Variety			Fine Variety		
	Total Revenue in Rs.	Total cost in Rs.	Net Revenue or Benefit in Rs.	Total Revenue in Rs	Total Cost in Rs.	Net Revenue or benefit in Rs.
Before Marketable surplus						
MF	11581.36	8100.83	3480.53	12175.48	7500.88	4674.60
SF	12067.13	8361.77	3705.36	13114.88	7911.58	5203.53
OT	11381.85	7807.05	3574.80	12455.94	7433.63	5022.31
Marketable Surplus						
MF	7415.51	8100.83	-685.32	7920.01	7500.88	419.13
SF	7930.54	8361.77	-431.23	8686.86	7911.58	775.28
OT	8649.80	7807.05	842.75	9454.01	7433.63	2020.38

Source : Primary Data

It is seen from Table 5 that the benefit is higher in the case of small farmer in both coarse variety (Rs.3705.36) and fine varieties (Rs.5203.53) before marketable surplus. Even though the cost is higher, the benefit obtained by the small farmer is also higher because of the highest revenue obtained by the small farmer in both the varieties of paddy.

But in marketable surplus, the benefit enjoyed by other farmer is higher in both coarse variety (Rs.842.75) and fine variety (Rs.2020.38) comparatively with small farmer and other farmer. The benefit enjoyed by marginal farmer and small farmer come negative for coarse variety (Rs.-685.32 ; Rs.-431.23 respectively) and positive for fine variety of paddy (Rs.419.13 ; Rs.775.28 respectively).

Because of the increased retention of the varieties of paddy, the benefit has come down to marginal and small farmers Table 6 proves this.

TABLE 6
PERCENTAGE OF RETENTION AND MARKETABLE SURPLUS IN TOTAL PRODUCTION OF PADDY

Particulars	Coarse Variety of Paddy				Fine Variety of Paddy			
	MS	SF	OT	Avg	MF	SF	OT	Avg
Retention of Paddy	35	34	24	31	37	35	25	32
Marketable Surplus of Paddy	65	66	76	69	63	65	75	68
Total	100	100	100	100	100	100	100	100

Source : Primary Data

The cost benefit was analysed only on the basis of the production income obtained from the sale proceeds of the paddy. But the other income of paddy obtained from the sale proceeds of straw may also be included in the total revenue which will increase the benefit more of all the groups of farmers. Table 7 illustrates the income of the farmers obtained from the sale proceeds of the straw of paddy.

TABLE 7
INCOME FROM PADDY STRAW OF THE FARMERS PER ACRE

Types of Varieties	Types of Farmers		
	MF (in Rs.)	SF (in Rs.)	OT (in Rs.)
Coarse Variety	720.00	760.00	710.00
Fine Variety	950.00	1020.00	980.00

Table proves that the loss in the sale proceeds of paddy income is compensated by the sale proceeds of the paddy straw income. The paddy straw is used by the farmers for their own cattle and also for sale. The straw income was valued at the price paid by the users. Even for own use, it was valued at the price actually paid by the users.

Hypotheses can also be framed

Null Hypothesis	:	There is no significant difference between the benefit and the groups of farmers.
Alternative Hypothesis	:	There is no significant difference between the benefit and the groups of farmers.

TABLE : 8
STATISTICAL ANALYSIS OF BENEFIT OF THE GROUPS
OF FARMERS

Types of Varieties	Types of farmer	Before Marketable Surplus				Marketable Surplus			
		Mean Benefit	Std Deviation	F	Probability	Mean Benefit	Std Deviation	F	Probability
Coarse Variety	MF SF OT	3480.53 a 3705.36 b 3574.80 a	470.36 491.10 531.01	11.09	0.00**	- 685.32 a - 431.23 a 842.75 b	2154.49 318.46 264.96	31.79	0.00 **
Fine Variety	MF SF OT	4674.60 a 5203.53 b 5022.31 c	579.36 670.90 1343.70	40.75	0.00 **	419.13 a 775.28 b 2020.38 c	506.70 305.26 259.00	183.62	0.00 **

Source : Primary Data   (* * 1% significant) (a, b, c . . . . . Duncan's Post hoc Test)

Anova test as given in Table 8 proves that there is a significant difference between the benefit and the groups of farmers in both coarse and fine variety of paddy and also before marketable surplus and marketable surplus. Duncan's Post hoc Test proves that there is a significant difference between marginal and small and other and small farmer before marketable surplus and other farmer with marginal and small farmer in marketable surplus in coarse variety. Also the test proves that there is a significant difference between the benefit among the groups of farmers in fine variety.

Hence the Null Hypothesis is rejected and the Alternative Hypothesis is accepted.

6. Major Findings

1. The volume of marketable surplus differs from season to season, variety to variety and farmers to farmers.
2. Highest marketable surplus is found with other farmers in all seasons and in all varieties of paddy.
3. Hypotheses tests prove that there is a significant difference between
    (1) The marketable surplus and the groups of farmers
    (2) The marketable surplus and the seasons
    (3) The marketable surplus and the varieties of paddy
4. The highest profit income is found with other farmer in fine variety and with small farmer in coarse variety of paddy as a whole.
5. The total cost of coarse variety of paddy per kilogram is Rs.4.75, Rs.4.70; and Rs.4.64 for marginal, small and other farmers accordingly.
6. The total cost of fine variety of paddy per kilogram is Rs. 5.20; Rs.5.10 and Rs.5.06 for marginal, small and other farmers accordingly.
7. Hypothesis test proves that there is a significant difference between the cost per kilogram of production of paddy and the groups of farmers.
8. Variable cost is higher than fixed cost in all the varieties of paddy and also with all groups of farmers.
9. (1) 66.74; 68.94; and 69.18 percent and (2) 33.26; 31.06; and 30.12 percent are the components of (1) variable cost and (2) fixed cost in total cost of coarse variety of paddy produced by marginal, small and other farmer groups accordingly.
10. (1) 66.92;69.22 and 69.37 percent and (2) 33.08; 30.78 and 30.63 percent are the components of (1) variable and (2) fixed cost in total cost of fine variety of paddy produced by marginal, small and other farmer group accordingly.
11. Before marketable surplus, the net revenue (benefit) is higher in the case of small farmers in both coarse and fine varieties than produced by marginal and other farmers
12. The net revenue is higher in the case of other farmers than marginal and small farmers in marketable surplus of both coarse and fine varieties of paddy
13. Hypothesis test also proves that there is a significant difference between the benefit and the groups of farmers.
14. Majority of the farmers reported that the main problems are high cost of fertilizers, labour problems high cost of seeds, unfavourable price, and not functioning of levy system.
15. Among the factors influencing profit income, area of cultivation, production, price, fixed and variable costs are highly significant from the above findings, from the above findings it is possible.
16. Due to the development of infrastructure facilities in the rural area, the labour becomes shortage during the harvest time which makes unnecessary delay in harvesting the crops.

From the above findings its is possible to draw some suggestions and significant policy implications.

7. Suggestions and Policy implication

1. Adequate steps should be taken by the government to reduce the cost of cultivation by reducing the price of fertilizers.
2. Adequate steps should also be taken by the government to provide the necessary credit facilities to the farmers in time.
3. The majority of the farmers make sales immediately after harvest to meet the cash requirement at the time of harvest. As a result they get lower income. To overcome this, government should extend schemes like pledge loan so that their financial requirements are met with. At the same time, it would help them to fetch a higher price by postponing their sales.
4. Storage and godown facilities are to be constructed by government at block level by which it is possible to postpone their sales to fetch a higher price

5. The government should follow different marketing policies especially the price policy for different seasons and varieties of paddy.

6. In recent years, the farmers meet the bad weather conditions, climate changes, over rain during the harvest time of paddy, which spoiled the production of paddy. So, the farmers claim compensation Government should protect the interest of the farmers by giving compensation when they are badly affected by climatic changes.

8. References

1) Basavaraja," Commercialism of Agriculture and Economics' Development," Yojana, vol.33, No.7,Apl.16-30,1989.

2) Consultancy project on "marketing Practices of Paddy-Their Fiscal and Production Impact", Sponsored by state planning, commission, Tamil Nadu Agricultural university, Coimbatore, 1994.

3) Directorate of Agricultural Marketing and Inspection of India, 1990.

4) Guoyongkang, "The co-operative sector in china of 1989, "Perspective and project planning for Agricultural co-op sector in chin Ganse Provincel, Report of the ICA Study mission; International co-op Alliance, regional office for Asia and the pacific, New Delhi, 1994.

5) Khanna. S.S. and Supa. M.P. - "Raise" rice production Yojana Vol.3, Feb – 1989.

6) Kombairaju,"A study on Marketable surplus of paddy in Thanjavur District," CAARDS, Tamil Nadu Agricultural university, Coimbatore-1980.

7) Parthasarathy and Subbharao," Production and marketed surplus of rice in the deltas of the south," Agricultural situation in India, vol.19(8),No.64,1964.

8) Raju and Oppen,"Marketing channels for selected crops in Semi-Arid Tropical India," Progress Report, No.16, ICRISAT, Patana cheru, India, 1980.

9) Selvaraj.R,"Small Farmers Cropping Pattern in Thanjavur District," Kisan world, Feb 1999, vol.24(1).

10) Swaminathan, M.S,"Livelihood security must be the Bottomlive." Frontline, Feb16,2001.