



## A STUDY ON COST AND RETURNS OF SRI PADDY FARMERS IN ERODE DISTRICT, TAMIL NADU

Dr.D.Muthamizh Vendan Murugavel  
Associate Professor of Commerce  
Dr GRD College of Science  
Coimbatore -641014

### INTRODUCTION

Rice is an important ingredient of household food-basket and yet the yield level has been low and uncertain in India. The operational holding-size is shrinking and land and water resources are being degraded. Therefore, some innovative paddy production practice is needed to meet its growing demand due to population pressure. Under this scenario, the System of Rice Intensification (SRI) may be an appropriate practice to produce more food with fewer inputs. SRI is actually an amalgamation of refined and intensive management practices for paddy production at farmers' fields. The conservation of land, water and biodiversity and utilization of the hitherto ignored biological power of plant and solar energy are the novelties of SRI. On account of its growing global acceptance, SRI has emerged as a movement among farmers. More scientific research on varietal selection, effective realisation of genetic expression of the plant, wide spacing and ideal crop geometry, transplanting of tender seedlings, conjunctive use of water, akin to the concept of aerobic rice, zero tillage, weed management, pest and disease management, etc. have helped in accelerating the adoption of SRI.

The system of rice intensification uses lower external inputs, less water, and less seed than the traditional paddy production system. Reports indicate that SRI can increase farmers' current rice yield two-fold or three-fold. SRI is a relevant innovation, which increases production, reduces yield gap and ensures the household food security for the vulnerable section of small and marginal farmers. Many farmers have started to adopt this innovative method to increase the paddy yield in India in recent years. Against this background, this study is a modest attempt to analyse the cost and returns of paddy farmers using SRI method of cultivation in Erode District, Tamil Nadu.

### REVIEW OF LITERATURE

Jyothirmai et al. (2003) studied the resource efficiency of paddy in Andhra Pradesh. It was found that at head region seed, labour and management index were found positive and significant and at middle region the coefficient of labour was positive and significant and at tail region coefficient of irrigation water was positive and significant.

It was also found that 56 to 61 per cent realisation of the maximum possible income by the farmers were from their given set of resources.

Rajendra (2005) studied the performance of System of Rice Intensification of Bansahan variety in Magan district, Nepal. The per hectare yield of SRI was 8.5 tonnes as against 4 tonnes of traditional method. He observed that SRI required less seed rate (5-10 kgs) and small quantities of water to achieve the mentioned yield level.

Rao and Rama (2011) assessed the economics and sustainability of SRI (System of Rice Intensification) and traditional method of paddy cultivation in North Coastal Zone of Andhra Pradesh for the period 2008–09 based on the data of costs and returns of crop. The study revealed that Benefit Cost Ratio is higher for SRI (1.76) than traditional (1.25) methods. Further, there was a 31 per cent yield gap between SRI and traditional methods, in which cultural practices (20.15%) showed a stronger effect than input use (10.85%). The most important constraint in SRI cultivation was

identified as 'nursery management'. The SRI method being more skill oriented, the study observed that yields could be made sustainable if constraints are addressed on war-footing basis.

#### **OBJECTIVES OF THE STUDY**

- ❖ To identify the important reasons for preferring SRI method of paddy cultivation by the farmers.
- ❖ To assess the cost of cultivation of paddy per acre in SRI method.
- ❖ To assess the cost and returns of paddy for SRI farmers.
- ❖ To compare the SRI farm practice with traditional paddy cultivation practice (per acre).

#### **PERIOD OF THE STUDY**

The study has been conducted during the year 2014.

#### **SAMPLING DESIGN**

This study is an empirical research based on survey method. The present study is confined to Erode district of Tamil Nadu. Erode district, where the paddy farmers are following both traditional method and SRI method of paddy cultivation, has been purposively chosen for the study considering its huge contribution in paddy production in the state. In Erode district, there are 14 blocks. Out of 14 blocks in the district, five blocks namely Gobichettipalayam, T.N.Palayam, Modakurichi, Bhavani and Erode have been purposively selected for the present study as they contribute huge in terms of area of paddy cultivation and production of paddy during the year 2012-13. The sample size of the present study is 500 farmers. The farmers who cultivate paddy at least in one acre of land with 2 years of continuous experience in cultivation of paddy in the selected blocks have been considered for the study. From each selected block, 100 farmers have been selected purposively. Out of 100 paddy farmers considered from each block, 80 farmers who follow traditional method of paddy cultivation and 20 farmers who follow system of rice intensification method of paddy cultivation have been purposively selected. Hence, the total sample size of the study is 500 farmers consisting of 400 farmers following traditional method of paddy cultivation and 100 farmers following SRI method of paddy cultivation.

#### **DATA**

The study includes only primary data that have been collected well structured and non-disguised Interview Schedule.

#### **TOOLS USED FOR DATA ANALYSIS**

For analysing the primary data collected, the statistical tools such as Percentage analysis, Mean, Sum and Garrett Ranking Analysis have been used in this study.

## ANALYSIS & INTERPRETATION

**REASONS FOR PREFERRING SRI CULTIVATION METHOD:** To identify the important reasons for preferring SRI method of paddy cultivation by the SRI paddy farmers, the Garrett Ranking Analysis has been used.

**Table 1 - Reasons for Preferring SRI Cultivation Method: Garrett Ranking Analysis**

Reasons	Total Score	Mean Score	Rank
Less water requirement	6017.40	60.17	II
Higher production	6220.43	62.20	I
Quality and higher grains & straw yield	4680.33	46.80	VI
Lesser seeds	5116.96	51.17	IV
Less nursery cost	5142.81	51.43	III
Low nursery duration	5097.49	50.97	V
Low pest and disease attack	4049.45	40.49	VII
Less input cost	4002.41	40.02	VIII
Institutional support from Agri. depts. and NGOs	3226.79	32.27	IX
Positive results and experience voiced by the neighboring farmers	2237.92	22.38	X
Possibility of expanding the area under paddy cultivation with minimum water availability	1292.00	12.92	XI

Source: Field Survey

It is inferred from Table 1 that higher production with the mean score of 62.20 and less water requirement with the mean score of 60.17 are the primary factors influencing the adoption of SRI cultivation method as the production is more than the traditional cultivation method with minimum water requirement and cost of cultivation. Reasons such as less nursery cost, lesser seeds, low nursery duration, quality and higher grains & straw yield and low pest and disease attack are ranked third, fourth, fifth, sixth and seventh respectively. Less input cost, institutional support from Agri. depts. and NGOs, positive results and experience voiced by the neighboring farmers and possibility of expanding the area under paddy cultivation with minimum water availability have only least influence in preferring SRI cultivation method.

**COST OF CULTIVATION OF PADDY PER ACRE IN SRI METHOD:** Cultivation expenses for each activity in SRI method of paddy cultivation have been collected from the SRI farmers and they are classified into three categories viz., input costs, labour costs and miscellaneous costs. Table 2 indicates the cost per acre incurred by the farmers of different size farms and average cost incurred by them per acre in SRI method of cultivation of paddy.

Table 2 gives a clear picture of the cost of cultivation of paddy per acre for marginal, small, medium and large farmers respectively. The cost of cultivation of paddy per acre incurred by a marginal farmer in case of SRI method is ` 21209.65, small farmer is ` 18255.41, by a medium farmer is ` 21838.79 and by a large farmer is ` 18809.41 respectively. The values indicate that the cost of cultivation per acre varies according to the size of land holding. Farm yard manure and harvesting expenses together contribute the major portion of the total cost incurred by the marginal, small,

medium and large farmers. The aggregate of labour cost is the largest in the case of all types of farmers contributing more than 50% of the total cost incurred by each group of farmers.

**Table 2 - Cost of Cultivation of Paddy per Acre in SRI Method (n = 100)**

Cost Items	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	Average
<b>Input costs</b>					
Farm yard manure	3371.43 (15.90)	3250.00 (17.80)	3396.15 (15.55)	5047.06 (26.83)	3704.82 (18.02)
Seeds	377.36 (1.78)	152.47 (0.84)	181.79 (0.83)	194.71 (1.04)	236.49 (1.15)
Chemical Fertilisers	3235.71 (15.26)	2647.06 (14.50)	3357.81 (15.38)	2458.82 (13.07)	3030.32 (14.74)
Pesticides	478.21 (2.25)	358.82 (1.97)	664.06 (3.04)	394.12 (2.10)	504.68 (2.46)
Weedicides	452.17 (2.13)	247.06 (1.35)	354.69 (1.62)	200.00 (1.06)	329.78 (1.60)
<b>Labour costs</b>					
Land preparation	3032.14 (14.30)	2600.00 (14.24)	3350.00 (15.34)	1676.47 (8.91)	2849.00 (13.86)
Transplanting	2517.86 (11.87)	2361.18 (12.93)	2031.58 (9.30)	2594.12 (13.79)	2319.40 (11.28)
Applying Fertilisers	257.14 (1.21)	235.29 (1.29)	333.95 (1.53)	352.94 (1.88)	298.90 (1.45)
Applying pesticides & Weedicides	322.14 (1.52)	382.35 (2.09)	381.58 (1.75)	211.76 (1.13)	336.20 (1.64)
Weeding	1307.14 (6.16)	1106.47 (6.06)	1644.47 (7.53)	1258.82 (6.69)	1393.00 (6.78)
Harvesting	4333.93 (20.43)	3176.47 (17.40)	4603.95 (21.08)	2647.06 (14.07)	3953.00 (19.23)
<b>Miscellaneous costs</b>					
Pump Set maintenance	446.43 (2.10)	400.00 (2.19)	500.00 (2.29)	500.00 (2.66)	458.82 (2.23)
Scaring of birds and rodents	333.33 (1.57)	350.00 (1.92)	304.55 (1.39)	300.00 (1.59)	318.84 (1.55)
Other expenses	744.64 (3.51)	988.24 (5.41)	734.21 (3.36)	973.53 (5.18)	821.00 (3.99)
<b>Total Cost</b>	21209.65 (100.00)	18255.41 (100.00)	21838.79 (100.00)	18809.41 (100.00)	20554.25 (100.00)

Marginal farmers have incurred more cost for seeds and weedicides than that of small, medium and large farmers. Small farmers have incurred more cost for applying pesticides and weedicides and scaring of birds and rodents than that of marginal, medium and large farmers. Medium farmers have incurred more cost for chemical fertilisers, pesticides, land preparation, weeding, harvesting and pumpset maintenance than that of marginal, small and large farmers. Large farmers have incurred

more cost for chemical fertilisers, weedicides, farm yard manure, seeds, transplanting and applying fertilisers than that of marginal, small and medium farmers.

The overall cost of cultivation of SRI farmers per acre is ` 20554.25. Farm yard manure and harvesting expenses together contribute the major portion of the total cost incurred by the SRI farmers. The aggregate of labour cost is the largest in the case of overall cultivation cost of paddy per acre in SRI method of paddy cultivation contributing more than 50% of the total cost incurred.

**COST AND RETURNS OF PADDY FOR SRI FARMERS:** Cost incurred by the SRI farmers in cultivating paddy plays a vital role in determining the net income available to them. Farmers sell their paddy output to the marketing source that suits their expectations at the prevailing selling price. Besides, the farmers sell the straw after harvesting at the prevailing rate. Table 3 shows the per acre details of gross income, cultivation cost and net income of SRI paddy farmers.

**Table 3 - Cost and Returns of Paddy for SRI Farmers (per Acre)**

Items	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	Average
Value of output of paddy – A	20145.00	23335.29	22973.05	24830.82	22558.60
Value of Straw– B	4857.14	3235.29	5144.74	3264.71	4420.00
Gross Income (A + B) = C	25002.14	26570.58	28117.79	28095.53	26978.60
Cost of cultivation –D	21209.65	18255.41	21838.79	18809.41	20554.25
Net income (C – D)	3792.49	8315.17	6279.00	9286.12	6424.35

Source: Field Survey

Table 3 conveys that medium farmers have earned more gross income (` 28117.79) than other category of farmers. The large farmers have earned higher net income (` 9286.12) than other category of farmers. The marginal farmers have earned less gross income (` 25002.14) and have incurred higher cost of cultivation (` 21838.79) than other category of farmers. The small farmers have incurred less cost of cultivation (` 18255.41) compared to other type of farmers. Only the marginal farmers have earned less net income (` 3792.49) in case of SRI method. On an average, the SRI paddy farmers have earned ` 26978.60 as their gross income per acre, incurred ` 20554.25 as their cost of cultivation per acre and received ` 6424.35 as their net income per acre.

**SRI FARM PRACTICE VERSUS TRADITIONAL PADDY CULTIVATION PRACTICE – A COMPARISON (PER ACRE)**

There may be a difference between the traditional method of paddy cultivation and SRI method of paddy cultivation in terms of inputs used and outputs derived. Generally, it is believed that SRI method reduces inputs used and cost of cultivation and increases the paddy output than the traditional method. Table 4 shows the comparison of SRI farm practice versus traditional paddy cultivation practice.

**Table 4 - Comparison of SRI Farm Practice versus Traditional Paddy Cultivation Practice (per acre)**

Particulars	Traditional Method	SRI Method
Seeds (in kgs)	25.18	7.06
Spacing (in cms)	18.50	22.51
Transplanting (in days)	26.02	16.50
No. of seedlings per hill	3.67	3.84
Fertilisers (in bags)	4.71	3.99
Pesticides (in litres)	1.17	0.97
Weedicides (in litres)	0.81	0.54
Weeding (in times)	2.22	2.42
Cultivation cost (in `) – A	22828.67	20554.25
Output (in podhi) –B	9.65	10.10
Selling price per podhi (in `) – C	2671.70	2767.60
Gross Income (in `)- D=(B X C)	25781.91	27952.76
Net Income (in `) E = (D –A)	2953.24	7398.51

Source: Field Survey; One podhi = 260 kilograms of paddy.

Table 4 clearly shows that only 7.06 kgs of seeds have been used per acre under SRI method as against 25.18 kgs under traditional method. SRI method spacing (22.51 cms) is higher compared to traditional method spacing (18.50 cms). In SRI method transplanting days (16.50 days) is lesser than the traditional method (26.02 days). Number of seedlings per hill is higher in case of SRI method (3.84) as against 3.67 in case of traditional method. Only 3.99 bags of fertilisers have been used in SRI method compared to 4.71 bags in case of traditional method. Only 0.97 litres of pesticides have been used in SRI method compared to 1.17 litres in traditional method. Only 0.54 litres of weedicides have been used in case of SRI method as against 0.81 litres in case of traditional method. Weeding has been done for 2.42 times in case of SRI method compared to 2.22 times in case of traditional method. The reason for this might be providing more space between the seedlings. It is also found that the cultivation cost per acre is also lesser in case of SRI method (₹20554.25) compared to traditional method (₹22828.67). The output of paddy per acre is higher in case of SRI (10.10 podhi) as against 9.65 podhi in case of traditional method. The net income derived out of SRI method is ₹7398.51 per acre as against ₹2953.24 in case of traditional method. The SRI farmers receive ₹4445.27 as an additional net income than traditional farmers due to decreased inputs, decreasing cultivation cost and increasing output of paddy per acre.

### SUGGESTION AND CONCLUSION

The study reveals that the net income available is higher and the cost of cultivation of paddy is lesser to the SRI farmers than the traditional farmers. Hence, it is suggested that the farmers following traditional method of paddy cultivation in the study area may prefer SRI method so as to reduce their cost of cultivation and increase their net income. Further, they may use the services of the extension personnel and attend the training programs to become familiar in the SRI method of paddy cultivation.



Based on the finding of the study, quite a valuable and fruitful suggestion has been offered to the farmers and the Government. If this suggestion is appropriately taken into consideration by them, paddy cultivation and marketing in the study area would be undoubtedly developed, the income and the standard of living of the farmers would be surely increased and our country's economic development as well as food security would also be eventually achieved.

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