

# A comparative economic analysis of Traditional and System of Rice Intensification (SRI) rice cultivation practices in Mahabubnagar district of Andhra Pradesh

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**Abstract:** System of Rice Intensification (SRI) paddy was introduced to offset the heavy cost of Traditional paddy cultivation. To decrease the cost of cultivation in Traditional paddy, to increase profits of the farmers in rice cultivation by decreasing the use of fertilizers, pesticides and minimizing water use by scientific water management in the face of labour scarcity, SRI paddy was introduced in Madagascar. In Traditional paddy the spacing of 20x15cms was followed and 20 days seedlings were used, and whereas, in SRI paddy cultivation, the wider spacing of 25x25cms was followed and by 8-12 days seedlings were used. Although large number of labour were needed for weed management in Traditional paddy, minimal labour was required for weed management in SRI paddy because of using weeders and machinery for weed management. While large amount of water to the tune of 2"-5" inundation was required for Traditional paddy cultivation, a film of water up to 1" only is maintained throughout in SRI paddy cultivation. The use of pesticides was heavy in Traditional paddy cultivation, where as the pest management is done without chemical pesticides in SRI paddy cultivation. The profits attained due to SRI paddy cultivation was higher as compared to Traditional paddy cultivation, therefore, SRI paddy was called as poor farmers' crop.

**Index Terms:** Labour scarcity, Weed management, Water management, Pesticide management, Cost of cultivation, Economic analysis, SRI rice cultivation, Traditional rice cultivation

## I. INTRODUCTION

The Traditional paddy cultivation was oldest method of rice cultivation. The Traditional paddy cultivation practices also had undergone changes due to changing times where, the cumbersome practices were replaced. The interest of the farmers in cultivating rice by using Traditional method has decreased as large numbers of farmers were using fertilizers and pesticides in the method of Traditional paddy cultivation to increase the production of rice. SRI paddy was introduced in Madagascar for the benefit all the farmers. The Traditional method needs extra labour and a lot of fertilizers. Farming with modern methods is also expensive using outside inputs. It was noticed that, farmers adopting conventional methods could increase their production only by using expensive inputs such as chemical fertilizers, pesticides and hybrid seed. It is becoming increasingly difficult for the community to afford these things. It is also known that using chemicals is harmful to the environment. A new method of growing rice is designed for increasing rice production which can use the organic compost, and also the local seed. This method is called "System of Rice Intensification"(SRI). In this context, a study was undertaken in Mahabubnagar district of Andhra Pradesh to note the impact of Traditional as well as SRI method of rice cultivation on the farmers.

## II. METHODOLOGY

The study on two methods of paddy cultivation i.e., Traditional and SRI was undertaken in Boothpur and Hanwadamandals in Mahabubnagar of Andhra Pradesh, where both these methods were practiced. From each of the selected mandals, 6 villages were selected randomly, and, from each village, 5 farmers each were selected randomly for the sample, cultivating paddy with Traditional and SRI methods.

## III. FINDINGS

### General characteristics of sample farmers:

Traditional paddy farmers are found to be of old age and middle age group whereas in Sri paddy farmers are found to be of younger age group. The average family size of Traditional paddy farmers was middle(4-6 no's) and large whereas the average family size of Sri paddy farmers was medium( 4-5 no's). While Traditional paddy respondents were found to be both educated(40 %) and

uneducated (60%), all the SRI paddy cultivators were found to be educated (100 %). The average land holding of Traditional paddy farmers was 3-5 acres, whereas, the average land holding of SRI paddy farmers was 4-6 acres.

#### **Nursery management:**

There are some differences between the SRI paddy and Traditional paddy in nursery management. While the SRI paddy cultivation needed 2kgs of seed per acre for nursery management, the Traditional cultivation needed 30kgs of seed per acre for nursery management. The cost of the nursery management in SRI paddy cultivation was 168 rupees per acre whereas, for the Traditional paddy nursery management it was 1250 rupees per acre. Therefore, the farmers gained Rs 1082 per acre due to SRI cultivation up to nursery stage.

#### **Method of transplanting:**

There are major differences between the SRI and Traditional paddy cultivation in the method of transplanting. The method of transplanting in SRI cultivation needed 5-8 no's of labour per acre, while the Traditional paddy cultivation needed 10-15 no's of labour. The wider spacing was followed between the plants and rows in SRI paddy (25x25cms) as compared to Traditional paddy (20x15cms). Therefore, the cost of transplanting incurred in SRI paddy was 1200 rupees per acre, whereas, in Traditional paddy the cost was double to that of SRI method i.e., 2400 rupees per acre. Therefore, there was a gain of Rs 1150 per acre for transplantation only due to SRI method of cultivation.

#### **Weed management:**

By using the weeder supplied by the department, the SRI farmer took up weed management without engaging any external labour, while in the Traditional cultivation method the farmer engaged 10-15 no's of labour per acre costing Rs 2400 per acre. Therefore, the SRI farmers gained Rs 2400 per acre for weed management.

#### **Method of harvesting:**

The crop attained maturity earlier by ten days for harvesting in SRI paddy (110 days) as compared to Traditional method of cultivation (120 days). But, the expenditure incurred was observed to be same in SRI paddy as well as in Traditional paddy cultivation methods for crop harvesting which was Rs. 2500 per acre.

#### **Yield and cost of cultivation:**

The yield differences were observed in case of SRI and Traditional paddy cultivation methods. While the farmer following SRI method could get 40-50 bags of rice per acre, the farmer practicing the Traditional method of paddy cultivation could get only 30-35 bags of rice per acre. It was observed that in one bunch of paddy panicles of BPT Sona in SRI paddy method there were 8000-10000 grains, while in Traditional method, only 4000-4500 grains were observed. The total cost of cultivation per acre for SRI method was Rs. 7208, while in Traditional paddy it was Rs. 17190. Therefore, the profits gained due to SRI cultivation was Rs. 9982 per acre.

The cost and expenditure of SRI paddy and Traditional paddy cultivation of sample farmers are given in the table as shown below.

**Table: The cultivation cost of SRI and Traditional paddy methods**

(n = 60)

S.No	Cultivation Practices	Expenditure (per acre) of SRI paddy	Expenditure (per acre) of Traditional paddy
1.	Seed Rate	Rs 60/- for 2kgs	Rs 600/- for 30kgs
2.	Nursery management	Rs 168/-	Rs 1250/-
3.	Land preparation	Rs 1800/-	Rs 1800/-
4.	Transplanting management	Rs 1200/-	Rs 2400/-
5.	Fertilizer management	Rs 1260/-	Rs 3240/-
6.	Weed management	Rs 100 (weeder rent per day)	Rs 2400/-
7.	Pesticide management	Rs 120/-	Rs 3000/-

8.	Harvesting	Rs2500/-	Rs2500/-
	<b>Total</b>	<b>Rs7208/-</b>	<b>Rs17190/-</b>

In the table shown above, it was observed that the seed rate of SRI paddy was 2kg per acre costing Rs40, whereas in Traditional paddy it was 30kg per acre costing Rs600. It was observed that in Traditional method, many costs were incurred for land preparation and chemical fertilizers. In SRI paddy cultivation, less expenditure was observed in case of weed management and pesticide management. In Traditional paddy cultivation method, it was observed that there was much cost for fertilizers followed by pesticide management. Less cost per acre was incurred for SRI method for nursery management as compared to Traditional method. The land preparation costs and harvesting costs incurred for both the methods were same. The advantage of SRI method was seen in case of reduction in cost of cultivation, higher yields obtained per acre and lesser duration for harvesting the crop. Therefore, it is concluded that the SRI method of cultivation is advantageous to the paddy farmers as compared to Traditional method.

#### REFERENCES

- GUPTA, D. D., RATHI, A. AND SHAMA, K. K.,** 1985, Economics of paddy cultivation in Haryana. Agriculture Situation in India, **42:** 1051-1058.
- Jayaram, H. Chandrashekar, G. S., and Achoth, L.,** 1992, An economic analysis of technical efficiency in rice cultivation of Mandya-Some issues in resource pricing. Indian journal of Agricultural Economics, **47:**677-682.
- KUMAR D. AND SHIVAY, Y.S.** 2004, System of Rice Intensification. Indian Farming, **54 (8):**18-22.
- MANGAL RAI,** 2004, International year of rice-An overview. Indian Farming, **54(8):**3-6.
- MOHANDAS, K. AND THOMAS, E. K.,** 1997, Economic analysis of rice production in Kuttand area of Kerala. Agriculture Situation in India, **54:** 555-560.
- NASURUDEEN, P. AND MAHESH, N.,** 2004, Impact of technology on paddy farms in Karaikal region of Union territory of Pondicherry. Agricultural Economics Research Review, **17 (conference No.):** 43-50.
- NARASIMHAM, S., RAJU, V. T. AND SHAREEF, S. M.,** 2003, Cost and returns of paddy in Yanam Region of Union Territory of Pondicherry. The Andhra Agricultural Journal, **50(1):** 131-135.
- PERGADE, S. H.,** 1986, Economics of rice based cropping situation in different land situations in Dakshina Kannada. M. Sc. (Agri.) Thesis, University of Agricultural Sciences, Bangalore.
- REDDY, V. R., REDDY, P. P., REDDY, M. S. AND RAJU, D. S. R.,** 2006, Water use efficiency: A study of System of Rice Intensification (SRI) adoption in Andhra Pradesh. Indian Journal of Agricultural Economics, **60(3):** 458-472.
- Reddy, A. R. AND SEN, C.,** 2006, Technical inefficiency in rice production and its relationship with farm-specific socio-economic characteristics. Indian Journal of Agricultural Economics, **59(2) :** 259-267.