



Comparison Between Traditional And Improved Method of Paddy Cultivation for Doubling Farmers Income

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ABSTRACT

Rice (Oryza sativa) is the staple food for more than half of the world's population and plays a pivotal role in food security of many countries. More than 90 per cent of the global production and consumption of rice in Asia. Multistage sampling design was adopted in selection of district, tehsil and villages. On the basis of area under both the methods of paddy cultivation, Dharmapuri and Sarangapur tehsils of Karimnagar district were selected for the present study. From each tehsil, five villages were selected on the basis of traditional and SRI methods of paddy cultivation. From each village, 10 farmers were selected randomly comprising 5 farmers for traditional and 5 farmers for SRI methods of paddy cultivation. Thus, from 10 villages, 100 paddy growers were selected with the equal distribution of 50 for traditional and 50 farmers for SRI methods of paddy cultivation. The economics of traditional paddy and SRI method paddy found that the per hectare cost of cultivation (Rs. 48945.9) for SRI paddy was more when compared to that (Rs. 47341.61) of traditional paddy. Total cost of cultivation was more by about Rs.1604.29 for SRI when compared to that in traditional method. The per hectare gross returns realized for traditional paddy farmers and SRI paddy farmers, respectively were Rs. 86860 and Rs. 112420. The net returns were Rs. 39518.39 for traditional method and Rs. 63474.1 for SRI method. The net returns over Cost A, Cost B and Cost C were also higher in SRI method when compared to those in traditional method. The return per rupee spent was around Rs. 1.83 in traditional method and it was 2.29 in SRI method. The major attributing factor for the high operational cost in SRI method of rice was human labour. The study revealed that the higher total operational costs were compensating the yield advantage of SRI method of rice. The Major reasons for practicing SRI method by sample farmers were less water requirement and higher yield levels.

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INTRODUCTION

Rice (*Oryza sativa*) is the staple food for more than half of the world's population and plays a pivotal role in food security of many countries. More than 90 per cent of the global production and consumption of rice in Asia. In Andhra Pradesh rice is cultivated in an area of 4.00 Million hectares, production of rice during 2011-12 was 9.32 million tones and yield was 3146 kg per ha. It is expected that about 20 lakh tones of fine rice would be exported from the state.

In System of Rice Intensification (SRI) method, synergic interaction increases land labour and water use efficiency. SRI method deviates from the traditional method of cultivating irrigated paddy in a number of ways. For instance, 5kg per hectare of seeds is sufficient in SRI as against the usual 50-60 kg per hectare in traditional method. The transplantation of the seedlings is carried out within 2 weeks as against 4-5 weeks with a wider spacing and 1 seedling per hill. The root development is more and healthier under SRI method; tillering is almost double, and the crop does not lodge, the grain weight is more with fewer incidences of pests and diseases in the new method. Thus it involves the application of certain management practices, which together provide better growing conditions for rice plants, particularly in the root zone, than the traditional method. The reduced demand for water facilitates conservation of water and soil that is not kept saturated has greater biodiversity. The un-flooded paddy fields do not produce methane, one of the major greenhouse gases contributing towards global warming. This Water Saving And Water Use Efficient Method Of Rice Cultivation Is Suitable For Resource Poor Farmers and water scarce areas.

Objectives

1. To study the comparison between improved method and traditional method of paddy cultivation.
2. To compare the cost and returns of paddy cultivation in improved and traditional methods of paddy cultivation

METHODOLOGY

Multistage sampling design was employed in selection of district, tehsils, villages and paddy growers. In first stage, Karimnagar district was purposively selected on the availability of traditional and system of rice intensification methods of paddy area for the study. In second stage, on the basis of area under both the methods of paddy cultivation, Dharmapuri and Sarangapur tehsils of Karimnagar district were selected for the present study. In third stage, from each tehsil, five villages were selected on the basis of traditional and SRI methods of paddy cultivation. The selected villages in the Dharmapuri tehsil were namely, Donoor, Nakkalapeta, Gadhepalli, Dharmapuri, TeegalaDharmaram and the selected villages in the Sarangapur tehsil were namely, Nagnur, Pembatla, Sarangapur, Rechpally, Konur. In the fourth stage, from each village, 10 farmers were selected randomly comprising 5 farmers for traditional and 5 farmers for SRI methods of paddy cultivation. Thus, from 10 villages, 100 paddy growers were selected with the equal distribution of 50 for traditional and 50 farmers for SRI methods of paddy cultivation.

Then cross sectional data were collected with the help of well-structured pretested schedule by personal interview method. The data were collected during the year 2015-16 for the period from 1st July, 2015 to 30th June, 2016. The data were related to socio-economic characteristics, costs, returns and profitability, trend in market arrivals and prices, constraints and suggestions of rice growers.

Results And Discussion

Compare Costs and Returns Structure in Traditional and Sri Methods of Paddy Production

Per hectare input use pattern in Traditional and SRI methods of paddy cultivation

The pattern of inputs used in both the methods of paddy cultivation and total cost of cultivation for sample farmers is depicted in Table 1. A glance at the table indicated that farmers of traditional paddy were found to use more of seeds (75 kg), N fertilizer (183.5 kg), P fertilizer (57.5 kg), K fertilizer (75 kg) and plant protection chemicals 1550 ml as against 5 kg of seeds, 156 kg of N fertilizer, 46 kg of P fertilizer, 60 kg of K fertilizer and 1300 ml of plant protection chemicals by SRI paddy farmers. However, SRI paddy farmers used 57 man days of human labour, 13.75 hours of machine labour and 7.42 tonnes of farmyard manure, which were more against 51.25 man days of human labour, 10 pair days of bullock labour, 3.5 hours of machine labour and 3.06 tonnes of farmyard manure used by traditional paddy farmers. Irrigation charges, rental value of land, interest on fixed capital were found to be more for traditional paddy farmers, whereas interest on working capital and depreciation were found to be more for SRI paddy farmers.

Table 1. Per hectare input use pattern in Traditional and SRI methods of paddy Cultivation.

| Sr.No. | Particulars | Units | Traditional | SRI |
|--------|----------------------------|--------|-------------|----------|
| | | | Quantity | Quantity |
| 1. | Seeds | kg | 75 | 5 |
| 2. | Fertilizers | | | |
| | N | kg | 183.5 | 156 |
| | P | kg | 57.5 | 46 |
| | K | kg | 75 | 60 |
| 3. | FYM | tonnes | 3.06 | 7.42 |
| 4. | Plant protection Chemicals | ml | 1550 | 1300 |
| 5. | Human labour | days | 51.25 | 57 |
| 6. | Bullock labour | days | 10 | |
| 7. | Machine labour | hours | 3.5 | 13.75 |

Cost of cultivation of paddy production

Per hectare cost of cultivation of paddy was calculated and is presented in Table 2. The per hectare cost of cultivation (Rs. 48945.9) for SRI paddy was more when compared to that (Rs. 47341.61) of traditional paddy. The share of human labour in total cost was 21.70 per cent (Rs. 10275) for traditional paddy farmers and 27.27 per cent (Rs. 13350) for SRI paddy farmers. The expenditure made on machine labour was 11.1 per cent (Rs.5250) for traditional paddy farmers and 31.66 per cent (Rs.15500) for SRI paddy farmers and the expenditure made on bullock labour was 21.12 per cent for traditional paddy farmers.

The next important item of expenditure in both the methods of paddy cultivation was the expenditure made on fertilizers, which worked out to be 15 per cent and 12 per cent, respectively for traditional and SRI paddy farmers. The rental value of land was the major expenditure contributing to the fixed cost (12.73% and 12.25%, respectively for traditional paddy farmers and SRI paddy farmers). The share of variable cost was 84.96 per cent (Rs. 40226.01) to the total cost in traditional paddy and 84.83 per cent (Rs. 41524.13) in SRI paddy cultivation. The variable cost was found to be less by about Rs. 1298.12 in traditional method, when compared to that in SRI method. The share of fixed cost was 1.53 per cent (Rs. 724.86) and 1.52 per cent (Rs.721.2) for traditional and SRI paddy farmers, respectively. Total cost of cultivation was more by about Rs.1604.29 for SRI when compared to that in traditional method.

Table 2.Total cost of cultivation in Traditional and SRI methods of paddy cultivation

| Sr.No. | Particulars | Traditiona | | SRI | |
|-----------|--------------------------------------|-----------------|----------|-----------------|---------|
| | | Value | Per cent | Value | er cent |
| A. | Variable costs | | | | |
| 1. | Seeds | 1500 | 3.17 | 100 | 0.20 |
| 2. | Fertilizers | | | | |
| | N | 2392.5 | 5.05 | 2033.95 | 4.15 |
| | P | 2707.5 | 5.72 | 2166 | 4.42 |
| | K | 2000 | 4.22 | 1600 | 3.26 |
| 3. | FYM | 830 | 1.75 | 1877.26 | 3.83 |
| 4. | Plant protection Chemicals | 1112.5 | 2.35 | 875 | 1.78 |
| 5. | Human labour | 10275 | 21.72 | 13350 | 27.27 |
| 6. | Bullock labour | 10000 | 21.12 | | |
| 7. | Machine labour | 5250 | 11.1 | 15500 | 31.66 |
| 8. | Interest on working capital @ 10% | 3656.91 | 7.72 | 3774.92 | 7.71 |
| 9. | Irrigation charges | 501.6 | 1.06 | 247 | 0.50 |
| | Sub total | 40226.01 | | 41524.13 | |
| B. | Fixed costs | | | | |
| 1. | Land revenue | 10 | 0.02 | 10 | 0.02 |
| 2. | Rental value of land | 6030.5 | 12.73 | 6000 | 12.25 |
| 3. | Depreciation | 350.24 | 0.74 | 690.57 | 1.41 |
| 4. | Interest on fixed capital @ 12% | 724.86 | 1.53 | 721.2 | 1.47 |
| | Sub total | 7115.6 | | 7421.77 | |
| | Total cost cultivation | 47341.61 | | 48945.9 | |

Method wise paddy output

The per hectare paddy output obtained in both the methods is presented in Table 3. The yield per hectare realized in traditional method was 6.3 tonnes. The paddy yield realized by SRI paddy farmers was 8.2 tonnes per hectare. There was a glaring difference between the two methods in the paddy straw yield. Traditional paddy farmers obtained 4.96 tonnes per hectare and SRI paddy farmers realized 5.82 tonnes per hectare.

Method wise cost and return structure in paddy cultivation

The method-wise cost and return structure in paddy cultivation in study area is given in Table 4. It was clear from the table that return from main produce was Rs 81900 for traditional and Rs.106600 for SRI method of paddy cultivation. Similarly, return from by produce was Rs. 4960 for traditional and Rs.5820 for SRI paddy farmers. Thus, gross returns realized for traditional paddy farmers and SRI paddy farmers, respectively were Rs. 86860 and Rs. 112420. The per hectare cost A, cost B and cost C for SRI method were more when compared to that in traditional method. The net returns were Rs. 39518.39 for traditional method and Rs. 63474.1 for SRI method.

The net returns over Cost A, Cost B Cost C were also higher in SRI method when compared to those in traditional method. The return per rupee spent was around Rs. 1.83 in traditional method and it was 2.29 in SRI method.

Table 3. Method-wise paddy output.

| Particulars(t/ha) | Traditional | SRI |
|-------------------|-------------|------|
| Main Product | 6.3 | 8.2 |
| By Product | 4.96 | 5.82 |

Table 4. Method-wise cost and returns in paddy cultivation (Rs/ha).

| Particulars | Traditional | SRI |
|------------------|-------------|----------|
| Cost A | 38411.25 | 40124.7 |
| Cost B | 45166.61 | 46845.9 |
| Cost C | 47341.61 | 48945.9 |
| Gross returns | 86,860 | 1,12,420 |
| Net returns over | | |
| Cost A | 48448.75 | 72295.3 |
| Cost B | 41693.39 | 65574.1 |
| Cost C | 39518.39 | 63474.1 |
| B:C ratio | 1.83 | 2.29 |

Contribution of Cost-A, Cost-B and Cost-C in total cost of cultivation

Contribution of Cost-A, Cost-B and Cost-C in total cost of cultivation of paddy in traditional and SRI methods is presented in table 5. Cost-A includes hired human labour, bullock labour, machine labour, seed, manure, fertilizer, plant protection chemicals, irrigation charges, land revenue, interest on working capital, depreciation. Then, cost-B consists of cost-A plus rental value of land and interest on fixed capital. Cost-C includes cost-B plus imputed value of family labour. The contribution of Cost-A, Cost-B and Cost-C was higher in SRI method of paddy cultivation compared to traditional method of cultivation.

Table 5. Contribution of Cost-A, Cost-B and Cost-C in total cost of cultivation

| Cost concepts | Traditional | SRI |
|---|-------------|---------|
| Cost-A | | |
| Hired human labour | 8100 | 11250 |
| Bullock labour | 10000 | 0 |
| Machine labour | 5250 | 15500 |
| Seed | 1500 | 100 |
| Manure | 830 | 1877.26 |
| Fertilizer | 7100 | 5799.95 |
| Plant protection chemicals | 1112.5 | 875 |
| Irrigation charges | 501.6 | 247 |
| Land revenue | 10 | 10 |
| Interest on working capital | 3656.91 | 3774.92 |
| Depreciation | 350.24 | 690.57 |
| Cost-B | | |
| Cost-A+ rental value of land+ interest on fixed capital | 45166.61 | 46845.9 |
| Cost-C | | |
| Cost-B+ imputed value of family labour | 47341.61 | 48945.9 |

CONCLUSION

It is concluded that the month wise arrival and price indices of rice in selected market showed great fluctuation. It was also noticed that when the arrivals increased the prices showed the decreasing trend and vice-versa. The economics of traditional paddy and SRI method paddy found that the per hectare cost of cultivation (Rs. 48945.9) for SRI paddy was more when compared to that (Rs. 47341.61) of traditional paddy. Total cost of cultivation was more by about Rs.1604.29 for SRI when compared to that in traditional method. The per hectare gross returns realized for traditional paddy farmers and SRI paddy farmers, respectively were Rs. 86860 and Rs. 112420. The net returns were Rs. 39518.39 for traditional method and Rs. 63474.1 for SRI method. The major attributing factor for the high operational cost in SRI method of rice was human labour. The study revealed that the higher total operational costs were compensating the yield advantage of SRI method of rice.

It is concluded that the Major reasons for practicing SRI method by sample farmers were less water requirement and higher yield levels. The major constraint in adoption of SRI when new techniques are being learned, there are greater labour requirements. This can be a constraint to farmers for changing rice-growing practices, especially very poor ones who need to invest most or all of their labour in immediate income-earning opportunities.

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