

Socio-Economic dynamics of Farmers and Economics of Certified Seed Production of Paddy in Karimnagar District, Telangana

ABSTRACT

Paddy plays a vital role in the national food security and principal food crop cultivated throughout the Telangana state providing food for its population, fodder to the cattle and employment to the rural masses. The present study was based on primary data in Karimnagar district of Telangana during the agricultural year 2014-15. Analysis of data shows that majority of seed farmers belongs to small category (1-2 ha) followed by semi-medium (2-4 ha) and marginal (< 1 ha) category. The overall average land holding size of paddy seed farmers was 2.04 ha followed by grain farmers (1.27 ha) and district average (1.03 ha). Study area was dominated by paddy, cotton and maize with a cropping intensity of 159. Net irrigated area of paddy grain producer, certified seed producer and district average was 71.00, 90.60 and 73.95 per cent respectively. Non-availability of labour was the most important constraints hindering adoption of paddy seed production technology. The seed production area is dominated by variety BPT- 5204 which covers 31.57 per cent area under paddy seed production. Current study illustrates a ratio of 32:68 towards fixed and variable costs in paddy certified seed production with a total cost of Rs. 57315 per hectare and the gross and net returns were Rs. 83150 and Rs. 25835 per hectare respectively. The total cost of cultivation in paddy seed production was around 13.63 per cent higher than grain production while, gross return was about 28.42 per cent higher in seed production. Consequently, net return from seed production of paddy was 80.56 per cent higher than grain production. Hence, production of certified seed has resulted in a win-win situation for the farmers with higher yield and increased returns. Higher yield and profitability associated with certified seed production can be effectively popularized among farmers, results in increased certified seed production. Farmers can be promoted in this endeavour by providing required quantity of foundation seed along with technical guidance.

Keywords: [Paddy, seed production, economic analysis, Telangana]

1. INTRODUCTION

Paddy is one of the most important cereal crops of India occupying an area of 43.79 million hectare with the production of 112.91 million tons with an average productivity of 25.78 quintal/ha during 2017-18 (4th advance estimates). It plays a vital role in the national food security and would continue to remain so because of its wider adaptability to grow under diverse ecosystems. Paddy alone contributes 39.64 per cent of total food grains production [5].

Paddy is the principal food crop cultivated throughout the Telangana state providing food for its population, fodder to the cattle and employment to the rural masses. Any decline in its area and production will have a perceivable impact on the state's economy and food security. In Telangana paddy is the major food crop grown in 16.80 lakh

hectares producing 51.70 lakh tons in both kharif and rabi seasons with an average productivity of 30.75 quintal/ha during 2016-17 (4th advance estimates). At national level Telangana is contributing 4.70 per cent of paddy production with 3.89 per cent paddy area [4]. The increase in paddy area, production and productivity mainly depends on the rainfall and availability of irrigation. The main paddy growing season of the state is kharif (Wet season) with 65 per cent of total rice being cultivated during the season and 35 per cent of paddy is grown in rabi/summer season.

Seed is a crucial, vital, basic and important input for attaining sustained growth in agriculture production and productivity. A sustained increase in agriculture production and productivity has dependent on the development of new improved variety, timely and adequate supply of quality seed to the farmers. It is estimated that the direct contribution of quality seed alone to the total production is about 15-20 per cent depending upon the crop and it can be further raised up to 40 per cent with effective management of other inputs [2]. A superior quality seed not only increases productivity per unit area, but it also helps in producing uniform crops without any admixtures which is important for obtaining high prices on the market.

Quality seed production is a specialized activity. The general farm produce retained for seed cannot be substituted for quality seed, farm saved seed generally lacks genetic vigour and has poor germination [15]. Seed of paddy has significant share in its cost of cultivation, therefore the economics of paddy seed production has impacted both seed producers as well as its users. There are several studies pertaining to economics of paddy cultivation for grain production [1, 6, 7, 8, 10, 11, 12 and 14). But only a few studies related to economics of paddy seed production [9 and 13). Considering these facts, the present study was taken with the objectives to study the socio-economic parameter of seed growers and to examine the economics of certified seed production of paddy with comparison to grain production.

2. MATERIAL AND METHODS

The study is based on primary data collected from Karimnagar district of Telangana. The district Karimnagar has been selected purposively as it is one of the important district under paddy cultivation in the state which has around 15.54 per cent of total area under paddy in the state during 2015-16 [3]. The list of certified seed growers of paddy in Karimnagar district have been obtained from Telangana State Seed Certification Agency, Hyderabad. From the list, fifty certified seed growers of paddy have been selected randomly from five villages. For comparison study with grain production of paddy again fifty grain producers of paddy selected randomly from the above selected villages. Thus, the total number of selected farmers (grain and certified seed producer of paddy) was one hundred. Primary data were collected by personnel interview with the respondents using a well-structured and pre-tested interview schedule. Data on various socio-economic parameters, input used in the grain and seed production of paddy and their costs and returns were collected for the agricultural year 2014-15.

3. RESULTS AND DISCUSSION

Land holding

The data pertaining to average land holding of sample paddy farmers have been given in Table 1. The analysis of data shows that majority of seed farmers belongs to small category

(1-2 ha) followed by semi-medium (2-4 ha) and marginal (< 1 ha) category. The overall average land holding size of paddy seed farmers was 2.04 ha followed by grain farmers (1.27 ha) and district average (1.03 ha).

Table 1. Average land holding of sample paddy farmers

| Land holding particulars | Karimnagar district* | Sample paddy farmers | | |
|--------------------------|----------------------|----------------------|--------------|------------|
| | | Grain farmers | Seed farmers | Overall |
| Marginal (< 1 ha) | 0.43 (66.19) | 0.59 (42) | 0.66 (26) | 0.62(34) |
| Small (1-2 ha) | 1.38 (21.25) | 1.29 (34) | 1.42 (36) | 1.36 (35) |
| Semi-medium (2-4 ha) | 2.65 (9.56) | 2.11 (20) | 2.42 (26) | 2.28 (23) |
| Medium (4-10 ha) | 5.50 (2.72) | 4.10 (4) | 4.88 (10) | 4.66 (7) |
| Large (10 ha and above) | 15.85 (0.28) | 0 (-) | 12.00 (2) | 12.00 (1) |
| Average/Total | 1.03 (100) | 1.27 (100) | 2.04 (100) | 1.66 (100) |

Source: Handbook of Statistics, Karimnagar district- 2011, CPO, Karimnagar

Note: Figures within the parentheses are percentage of farmers belonging to respective group.

Cropping pattern

The study area is dominated by paddy, cotton and maize. Cropping pattern of the study area has been presented in Fig.1. The area under different crops shows that paddy ranked 1st (46.98 % of gross cropped area) followed by cotton (28.99 %), maize (11.23 %), pulses (3.46 %), oilseeds (2.32 %) and others (7.02 %). The cropping intensity of the study area was 159.

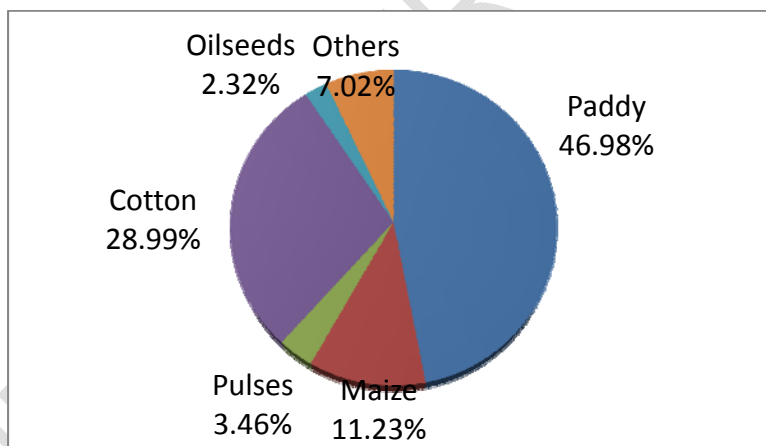


Fig.1. Cropping pattern of study area

Irrigation

Irrigated area in the study area has been presented in Fig 2 and source-wise average irrigated area of farmers has been presented in Table 2. In the Karimnagar district only 73.95 per cent area is irrigated while net irrigated area at paddy grain and certified seed producer have 71.00 and 90.60 per cent, respectively. The major source of irrigation was dug wells and canals (around 79 per cent of irrigated area).

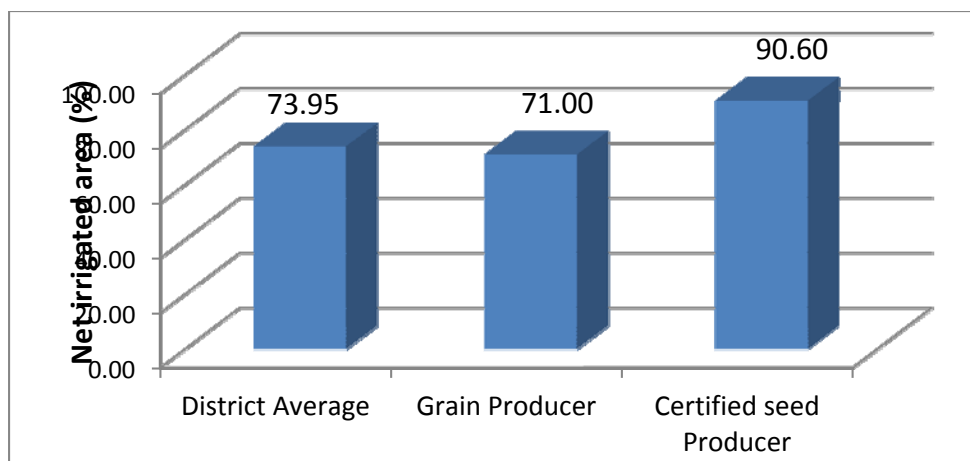


Fig.2. Irrigation in study area

Table 2. Source-wise average irrigated area (in percentage) at sample paddy farmers

| Irrigation source | Karimnagar district* | Sample paddy farmers | |
|-------------------|----------------------|----------------------|--------------|
| | | Grain farmers | Seed farmers |
| Canals | 20.86 | 14.64 | 26.38 |
| Tanks | 8.72 | 0.89 | 3.03 |
| Tube wells | 11.99 | 9.12 | 12.33 |
| Dug wells | 58.43 | 75.35 | 58.26 |
| Total | 100.00 | 100.00 | 100.00 |

Source: Handbook of Statistics, Karimnagar district- 2011, CPO, Karimnagar

Reasons for not producing certified seeds

The factors constraining adoption of paddy seed production technology as perceived by grain producers, are presented in Table 3. Non-availability of labour was the most important constraints hindering adoption of paddy seed production technology, as opined by 58 per cent of the farmers respondents. The other reasons constraining seed production technology were lack of irrigation water, lack of awareness / knowledge, non-availability of basic seed, marketing of product, small holding size and high cost of cultivation.

Table 3. Factors constraining adoption of paddy seed production technology

| Particulars | Number of farmers | Percentage |
|--------------------------------|-------------------|------------|
| Lack of irrigation water | 16 | 32 |
| Lack of awareness / knowledge | 22 | 44 |
| Non-availability of basic seed | 23 | 46 |
| Marketing of product | 24 | 48 |
| Small holding size | 24 | 48 |
| High cost of cultivation | 26 | 52 |
| Non-availability of labour | 29 | 58 |

Reasons for adopting paddy seed production technology

The major reasons for choosing the seed production are presented in Table 4. Farmers select enterprises based on several criteria, one of the most important criterions was higher profit as the surveyed farmers have assigned first rank. The other reasons for adoption of paddy seed production technology were better yield, suitability of climate, easy marketability of produce and technical know-how

Table 4. Reasons for adoption of paddy seed production technology

| Particulars | Number of farmers | Percentage |
|-------------------------------|-------------------|------------|
| Higher profit | 38 | 76 |
| Better yield | 32 | 64 |
| Suitability of climate | 26 | 52 |
| Easy marketability of produce | 24 | 48 |
| Technical know-how | 21 | 42 |

Paddy varieties

The varieties used by seed growers in the study area for seed production have been presented in Fig 3. The paddy seed production area is dominated by variety BPT- 5204 which covers 31.57 per cent area under paddy seed production. The other varieties used for seed production were MTU- 1010 (29.22 per cent), IR- 64 (10.60 per cent), MTU- 7029 (5.76 per cent), NLR- 34449 (4.58 per cent), IET- 4786 (3.57 per cent), JGL- 1798 (3.38 per cent), ADT- 43 (3.37 per cent) and others (7.95 per cent).

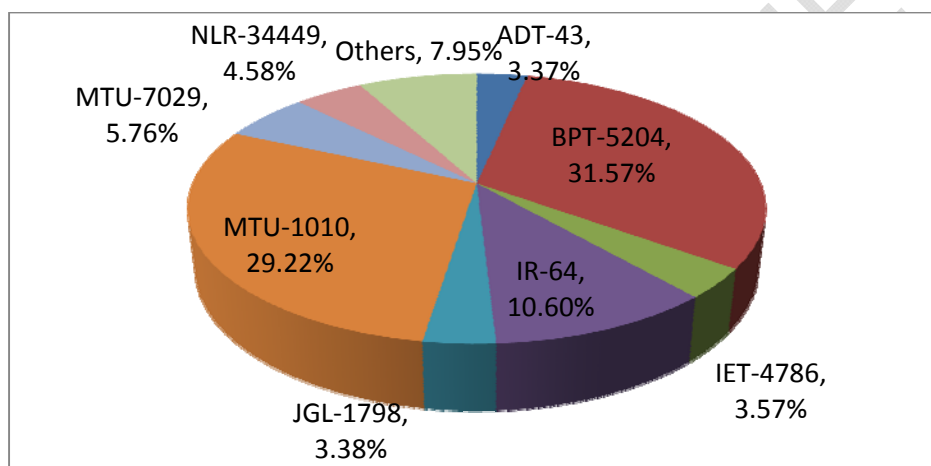


Fig.3. Area under different varieties used for paddy seed production

Experience of sample farmers in seed production

Experience of farmers in the seed production plays an important role in producing the quality seeds. The experience of sample seed growers in seed production is presented in Table 5. The table shows that 60 per cent farmers had less than five years experience in the seed production followed by 24 per cent farmers had 5-10 years experience and 16 per cent farmers have more than 10 years of experience in seed production.

Table 5. Experience of sample farmers in paddy seed production

| Experience of farmers (years) | Number of farmers | Percentage |
|-------------------------------|-------------------|------------|
| < 5 years | 30 | 60 |
| 5-10 years | 12 | 24 |
| >10 years | 8 | 16 |

Sources of information to the seed growers

The sources of information about knowledge on quality seed production among the sample seed growers are presented in Table 6. Majority of farmers (76.0 per cent) received information about the quality seed production from Government officials. The other important sources of information to farmers were fellow farmer (46.0 per cent) followed by electronic and print media (40.0 per cent), seed companies (38.0 per cent) and others (32.0 per cent).

Table 6. Sources of information to the seed growers

| Sources | Number of farmers | Percentage |
|----------------------------|-------------------|------------|
| Fellow Farmer | 23 | 46 |
| Government officials | 38 | 76 |
| Electronic and print media | 20 | 40 |
| Seed companies | 19 | 38 |
| Others | 16 | 32 |

Note: Percentage total is more than 100 because the sample farmers have given more than one response

Economics of paddy certified seed production

The cost and return of certified seed production of paddy have been provided in Table 7. The ratio of fixed and variable cost in paddy certified seed production was 32:68. Human labour was the major component of cost on inputs applied for seed production of paddy. Its share in total costs was about 38.21 per cent. It was followed by bullock & machine labour accounting for about 11.87 per cent of the total cost of paddy seed production. The share of seed cost to total input was about 1.64 per cent. Cost of manures and fertilizers used for crop accounted for about 5.99 per cent. Cost of plant protection measures accounted for about 3.22 per cent. The total cost in certified seed production of paddy was Rs. 57315 per hectare. The average yield of paddy quality seed and rejected seed was 40.0 quintal and 4.0 quintal and by-product was 25.0 quintal. The gross return and net return was Rs. 83150 and Rs. 25835 per hectare respectively.

Table 7. Cost and return in certified seed production of paddy (Rs. /ha)

| Sl. | Particulars | Amount (Rs.) | Per cent |
|-----|-----------------------------|--------------|----------|
| 1 | Human labour | 21900 | 38.21 |
| 2 | Bullock & Machine labour | 6800 | 11.87 |
| 3 | Seed | 940 | 1.64 |
| 4 | Irrigation | 1200 | 2.09 |
| 5 | Manures & Fertilizers | 3435 | 5.99 |
| 6 | Plant protection chemicals | 1847 | 3.22 |
| 7 | Seed certification charges | 1200 | 2.09 |
| 8 | Interest on working capital | 1493 | 2.61 |
| 9 | Total variable cost (Rs.) | 38815 | 67.72 |
| 10 | Total fixed cost (Rs.) | 18500 | 32.28 |
| 11 | Total cost | 57315 | 100.00 |
| 12 | Yield | | |
| a | Seed (q) | 40.00 | |
| b | Rejected seed (q) | 4.00 | |
| c | By-product (q) | 25.00 | |
| 13 | Gross return (Rs.) | 83150 | |
| 14 | Net return (Rs.) | 25835 | |
| 15 | BC ratio | 1.45 | |

Comparison in paddy grain and certified seed production

Economic comparison is essential to test the profitability and viability of any activity. Therefore, economics of seed production *vis-à-vis* grain production has been calculated and compared, so as to analyze the feasibility of seed production over grain production. The present analysis on cost of cultivation was worked out on per hectare basis separately for seed and grain production of paddy.

The total cost of cultivation in paddy certified seed production was around 13.63 per cent higher than grain production while, gross return was about 28.42 per cent higher in certified

seed production (Rs. 83150 /ha) than grain production (Rs. 64750/ha). Consequently, net return from seed production of paddy was 80.56 per cent (Rs. 25835/ha) higher than grain production (Rs. 14308/ha). Hence, production of certified seed has resulted in win-win situation for the farmers with higher yield and better quality of output. Because of seed production, seed producer fetched higher price that the grain in the marketing of produce. Graphical presentation of cost and return in paddy grain and certified seed production has been presented in Fig. 4.

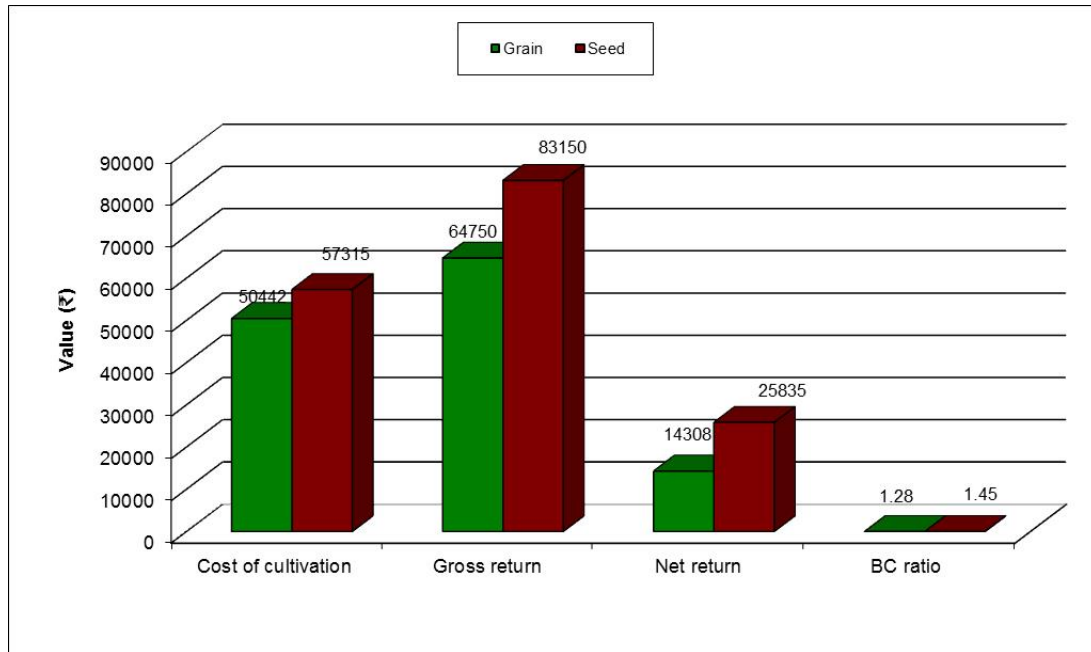


Fig.4. Cost and return in paddy grain and certified seed production

Partial budgeting

The additional costs and returns incurred in the paddy certified seed production over grain production has been presented in Table 8. Table reveals that the increment in profit realized in paddy certified seed production was Rs. 11527.0/ha. The cost on human labour, seed certification charges etc. mainly contributed to the increase in cost of certified seed production. The added return in paddy certified seed production were attributed mainly through the increased productivity in certified seed production and higher price realization of certified seed over grain. It can be concluded from the partial budgeting analysis that the adoption of certified seed production technology would provide an additional profit to the farmers.

Table 8. Partial budgeting of certified seed production

| Debit | | Amount (Rs.) | Credit | | Amount (Rs.) |
|-------|----------------------------|--------------|--------|------------------|--------------|
| A | Increase in cost | | A | Decrease in cost | 0 |
| i | Human labour cost | 3800 | | | |
| ii | Seed | 230 | | | |
| iii | Irrigation | 300 | | | |
| iv | Manures & Fertilizers | 65 | | | |
| v | Plant protection chemicals | 52 | | | |
| vi | Seed certification charges | 1200 | | | |
| vii | Others | 1226 | | | |

| | | | | | |
|-------------|--------------------|--------|--------------|--------------------|-------|
| Total | | 6873 | | | |
| B | Decrease in return | 0 | B | Increase in return | 18400 |
| Total Debit | | 6873 | Total credit | | 18400 |
| | | Profit | | | 11527 |

4. CONCLUSION

Paddy has the potential for profitable adoption of quality seed production technology which will further result in improvement of current seed replacement rate and varietal replacement rate scenario in paddy. The analysis showed that majority of seed farmers belongs to small category and average land holding size was 2.04. The cropping intensity of the study area was 159 and paddy was the important crop with 46.98 per cent of gross cropped area. Net irrigated area at paddy grain and seed producer have 71.00 and 90.60 per cent, respectively. Non-availability of labour was the most important constraints hindering adoption of paddy seed production technology and higher profit is the main reason for adopting paddy seed production technology. Area is dominated by variety BPT- 5204 which covers 31.57 per cent of total area. Majority of farmers received information about the quality seed production from Government officials. The total cost in certified seed production of paddy was Rs. 57315 per hectare. The gross return and net return was Rs. 83150 and Rs. 25835 per hectare respectively. The total cost of cultivation in paddy certified seed production was around 13.63 per cent higher than grain production while, gross return was about 28.42 per cent higher. Consequently, net return from seed production of paddy was 80.56 per cent higher than grain production. Partial budgeting analysis shows that increment in profit realized in paddy certified seed production was Rs. 11527.0/ha. This study suggests that higher yield and profitability in seed production may be popularized among the farming community through more extension efforts to increase the gain from certified seed production among farmers. This study reveals that adoption of certified seed production of paddy in farmers' fields is helpful in providing a profitable enterprise for increasing the net farm income.

CONSENT (WHERE EVER APPLICABLE)

Not applicable

ETHICAL APPROVAL (WHERE EVER APPLICABLE)

Not applicable

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