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Comparative economics of seed production vs grain production of soybean in Washim District of Maharashtra

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Abstract

The present study was based on primary data were collected from 90 farmers (45 grain and 45 certified seed producer of soybean) by personal interview method with the help of specially design schedule from Washim district of Maharashtra during the agricultural year 2018-2019. The per hectare cost of cultivation was ₹.50747.7 and ₹.57901.09 for soybean grain and seed production. The per hectare cost of cultivation was higher in soybean seed production than grain production but per quintal cost were ₹.3288.03 and ₹.3206.04 for soybean grain and seed production respectively. Per quintal cost was lower in seed production than grain production mainly because of its higher productivity.

The per hectare income received from soybean seed production (₹.77056.750) was higher showing more economic viability than that of grain production (₹.56788.37). The BC ratio at cost C was 1.33 in case of soybean seed production as compared to 1.12 in grain production. The B:C ratio of more than unity indicated that the seed production in the study area is a economically viable proposition.

Seed production of soybean is more profitable compared to grain production of soybean. Therefore, to increase their income, a greater number of farmers can take up seed production in areas where soybean is grown predominantly, provided the procedures and other formalities in registering the seed farms are simplified.

Keywords: Comparative economics, seed production vs grain production, soybean

Introduction

Soybean was introduced in Maharashtra during nineties (1984-85). Soybean became popular due to its short durational nature (90-115 days) with higher productivity as compared to other oilseed both under rained and irrigated condition. The area and production of soybean had shown a continuously increasing trend during the last two decades. The average yield for soybean realized in Maharashtra was around 12.43 q/ha as against the productivity potential of about 20-25 q/ha. This indicated that though the area under soybean was increasing, there is a wide gap between the potential yield and the actual yield on farmer's field. Maharashtra has second rank in soybean area and production in India. Area under soybean was 36.39 lakh hectares with production of 34.34 lakh metric tonnes and productivity of 944 kg/ha in kharif season of 2018-2019 (Source: www.krishi.maharashtra.in). The major soybean growing districts in Maharashtra are Nanded, Buldhana, Latur, Washim, Amravati, Yavatmal, Akola and Hingoli. In Maharashtra Nanded district rank first in production (3.85 lakh MT) and second in area (3.41 lakh hectare) while Latur rank first in area (3.72 lakh hectares) and third in production (3.26 lakh MT), Buldhana rank second in area (3.614 lakh ha.) as well as second in production (3.28 lakh MT) during the year 2018-19. (Source: SOPA Databank)

Major soybean growing area in Maharashtra is Vidarbha region. The area under soybean in Amravati region of Vidarbha was 12.67 lakh hectares with the production of 12.38 lakh MT and average productivity of 977 kg/ha in the year 2018-2019. The major soybean growing districts in Vidarbha region are Buldhana, Washim, Amravati, Akola, and Yavatmal. Soybean shown increasing trend in respect of area during the last decade. Though Soybean is recently introduced in Maharashtra, soybean farmers are now attracted towards soybean cultivation. In Maharashtra, Washim district stand first in productivity (1185 kg/ha.), fourth in production (3.09 lakh MT) and fifth in Area (2.61 lakh hectares).

The farmers are attracted towards soybean cultivation due to its suitability and profitability. Therefore, Washim is purposively selected for the study. The study has been planned to explore various aspects of soybean with respect to grain and seed production. There are no studies conducted on comparative economics of grain and seed production in Washim district of Maharashtra. Therefore, the main objective of the present investigation was to inquiry into comparative economics of grain and seed production of soybean in Washim district.

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The study would provide guidelines and direction for proper utilization of resources for maximization of profits. The study would also be useful in selecting suitable cropping system for study area. When soybean crop had entered into existing cropping pattern of producers in study area by replacing some other kharif crops, claiming that it is relatively profitable. However, there are other advantages like short duration of the crop as well as less reduction in the fertility status of the soil. In case of cotton crop, it is of long durational crop, the soils comparatively get exhausted more than that from soybean.

Therefore, it was important to study that at present what is the picture of profitability, returns, etc. The present study would be helpful for framing suitable price policies and for planning and implementing different development programmes for soybean seed and grain production programme in future, if required. Therefore, present study involving comparative economics of seed production vs. grain production of soybean in Washim district.

Methodology

Washim district was purposively selected for the study, as it is one of the important and major soybean grain as well as seed

growing districts in Maharashtra. Out of six tahsils in the district, Risod, Washim and Malegaon tahsils were selected for the study because maximum area under soybean seed production in these three tahsils of the district. The list of certified seed growers of soybean in Washim district have been obtained from Maharashtra State Seed Corporation Ltd., Akola. From the list 45 certified seed growers of soybean have been selected randomly from six villages. For comparison study with grain production of soybean again 45 grain producers of soybean selected randomly from the above selected six villages. Thus, the total number of selected farmers (grain and certified seed producer of soybean) was 90. Data on various inputs used in the grain and seed production of soybean and their costs and returns were collected for the agricultural year 2018-2019. The data was analysed in the tabular form with the help of means and averages.

Result and Discussion

Cost of cultivation

Economic comparison is essential to test the profitability and viability of any activity. Therefore, economics of grain production vis-à-vis seed production has been

Table 1: Cost of cultivation for Soybean grain and seed production

| Sr. No. | Cost Item | Grain production | | | Seed production | | |
|---------|-------------------------------------|------------------|----------|---------|-----------------|----------|---------|
| | | Qty | Value | Percent | Qty | Value | Percent |
| 1 | Hired Human Labour (Man days) | | | | | | |
| | A) Male | 14.94 | 2988.89 | 5.89 | 18.69 | 3738.87 | 6.46 |
| | B) Female | 22.67 | 3401.9 | 6.70 | 24.64 | 3697.3 | 6.38 |
| | Total Human Labour | 37.62 | 6390.79 | 12.59 | 43.34 | 7436.2 | 12.84 |
| 2 | Bullock Power (pair days) | 1.64 | 821.03 | 1.62 | 2.75 | 1378.33 | 2.38 |
| 3 | Machine (hrs.) | 7.93 | 4364.26 | 8.60 | 8.28 | 4558.85 | 7.88 |
| 4 | Manures (q) | 23.34 | 3502.2 | 6.90 | 31.07 | 4661.72 | 8.05 |
| 5 | Seed (kg) | 77.67 | 5825.30 | 11.48 | 81.91 | 5734.32 | 9.90 |
| 6 | Fertilizers (kg) | | 4678.63 | 9.22 | | 4767.06 | 8.23 |
| | N | 28.53 | | | 31.94 | | |
| | P | 69.14 | | | 71.44 | | |
| | K | 11.03 | | | 14.37 | | |
| 7 | Plant protection charges (₹) | | 921.25 | 1.82 | | 950.4 | 1.64 |
| 8 | Weedicide | | 1496.39 | 2.95 | | 1610.08 | 2.78 |
| 9 | Incidental charges (₹) | | 548.76 | 1.08 | | 655.34 | 1.31 |
| 10 | Repairs (₹) | | 410.73 | 0.81 | | 417.35 | 0.72 |
| | Working capital | | 28959.44 | 57.07 | | 32169.34 | 55.55 |
| 11 | Int. on working capital @ 6% (₹) | | 1737.57 | 3.42 | | 1930.16 | 3.33 |
| 12 | Depreciation on farm implements | | 3950.14 | 7.78 | | 3921.69 | 6.78 |
| 13 | Land revenue and taxes | | 110.35 | 0.22 | | 114.8 | 0.20 |
| | Cost "A" | | 34757.5 | 68.49 | | 38136 | 65.86 |
| 14 | Rental value of land | | 9072.37 | 17.88 | | 12755.79 | 22.03 |
| 15 | Interest on fixed capital @ 10% (₹) | | 4800 | 9.46 | | 4856.47 | 8.39 |
| | Cost "B" | | 48629.87 | 95.83 | | 55748.27 | 96.28 |
| 16 | Family labor | | | | | | |
| | A) Male | 4.02 | 1207.59 | 2.38 | 4.15 | 1246.29 | 2.15 |
| | B) Female | 6.06 | 910.24 | 1.79 | 6.04 | 906.52 | 1.56 |
| | Cost "C" | | 50747.7 | 100 | | 57901.09 | 100 |
| | Gross income (₹) | | 56788.37 | | | 77056.75 | |
| | A) Main produce | 15.47 | 55692 | | 18.06 | 75852 | |
| | B) By produce | 10.91 | 1096.37 | | 12.04 | 1204.75 | |
| 17 | Per quintal cost (₹) | | 3288.03 | | | 3206.04 | |

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 soybean. The item-wise cost of cultivation of grain and seed production of soybean has been presented in Table 1. The table reveals that human labour occupied the major share (12.84%) of total cost of ₹. 57901.09 per ha in seed production and (12.59%) of total cost of ₹. 50747.70 per ha in grain production of soybean respectively. The higher human labour requirement in seed production was mainly due to activities like rouging, gap filling etc. It was reported in a study Reddy *et al* (2013) that due to

knowledge and adoption gap, its results in lower yield and higher cost of cultivation. The other items involved in production of soybean seed were bullock and machine labour (10.36% of total cost) and cost of seed (9.90%). The higher share of bullock and machine labour was due to less mechanization at field level and this can be reduced by increasing mechanization in cultivation operation. The total cost of cultivation in soybean seed production was higher than grain production. Pal *et al.* (2020) and Sendhil and Sharma (2020) in their study also observed that there is total cost cultivation for Seed production was more than grain production.

Profitability of Soybean grain and seed production

An attempt has been made to compare the per hectare gross income, different cost and profit at different costs with the net returns and the benefit cost ration for soybean grain and seed production the details are given in the table 2.

Table 2: Costs, Returns, Gross income and B:C ratio for Soybean grain and Seed production (Per ha)

| Sr. No. | Particulars | Unit | Grain production | Seed production |
|---------|--------------|------|------------------|-----------------|
| 1 | Total Cost | | | |
| | Cost "A" | ₹ | 34757.5 | 38136 |
| | Cost "B" | ₹ | 48629.87 | 55748.27 |
| | Cost "C" | ₹ | 50747.7 | 57901.09 |
| 2 | Profit At | | | |
| | Cost "A" | ₹ | 22030.87 | 38920.75 |
| | Cost "B" | ₹ | 8158.5 | 21308.48 |
| | Cost "C" | ₹ | 6040.67 | 19155.66 |
| 3 | Production | q | 15.47 | 18.06 |
| 4 | Gross Income | ₹ | 56788.37 | 77056.75 |
| 5 | B:C Ratio | | | |
| | Cost "A" | | 1.63 | 2.02 |
| | Cost "B" | | 1.17 | 1.38 |
| | Cost "C" | | 1.12 | 1.33 |

Which reveals that all the costs were higher in seed production over grain production in soybean. The seed grower has to strictly adhere to the recommended cultural practices to ensure genetic purity as laid down by the seed certification agency. Seed production plot must be weed free and off-type plants need to be removed manually to maintain genetic purity. Proper drying of seeds and preliminary processing is another special operation in seed production. All these operations required additional labour. Hence, cost of cultivation was higher in seed production as compared to the grain production. The cost A, B and C were higher in soybean seed production in comparison to grain production respectively.

The Per hectare gross income received by soybean seed grower was ₹ 77056.75 and it was ₹ 56788.37 in case of soybean grain grower therefore, soybean seed grower obtain more gross income than soybean grain grower. Higher gross income was mainly due to higher productivity (18.06 q./ ha.) in case of soybean seed production as compare to soybean grain production (15.47 q./ ha.). Seed production gives higher returns with higher BC ratio compared to grain production. The BC ratio at cost C was 1.33 in case of soybean seed production as compared to 1.12 in grain production. The B:C ratio of more than unity indicated that the seed production in the study area is a economically viable proposition. Hence the hypotheses Soybean seed production is more profitable than grain production has been accepted. These results are in conformity with the findings of Shoaib *et al.* (2015), Pal *et al.* (2016), Akshatha (2017), Pal *et al.* (2019) and Dulal and Marahatta (2020).

Conclusions

All the costs were higher in seed production over grain production in soybean. The seed grower has to strictly adhere to the recommended cultural practices to ensure genetic purity as laid down by the seed certification agency. Seed production plot must be weed free and off-type plants need to be removed manually to maintain genetic purity. Proper drying of seeds and preliminary processing is another special operation in seed production. All these operations required additional labour. Hence, cost of cultivation was higher in seed production as compared to the grain production. The cost A, B and C were higher in soybean seed production in comparison to grain production respectively. Seed production of soybean is more profitable compared to grain production of soybean. Therefore, to increase their income, more and more number of farmers can

take up seed production in areas where soybean is grown predominantly, provided the procedures and other formalities in registering the seed farms are simplified.

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