An Evaluation of Organic and Conventional Cotton Production in Maharashtra, India

Abstract

Cotton is the most important commercial crop playing key role in economic and social affairs of the world. It is backbone of our textile industry. In the present study efforts have been made to study the cost, returns, profitability of organic and conventional cotton. The primary data required for the study were collected during year 2021-22 from 320 cotton growers covering 4 districts of Maharashtra. Simple statistical tools like averages and percentages were used in analysing the collected data and standard cost concepts was used for analysis.The result of the study revealed that, the per hectare cost of cultivation of conventional cotton were maximum in Wardha (Rs.83575), gross returns were maximum in Yavatmal (Rs.135096) and net returns (Rs.61844) with net returns on per rupees invested at total cost (Rs. 1.84) were maximum in Yavatmal. Thus, it was found that cotton cultivation was most remunerative farming in study area. Whereas, in Aurangabad it was found to be less remunerative among all the district in study area. The per hectare cost of cultivation in Aurangabad district were Rs.79958, gross returns was Rs.108176 and net returns was Rs.28218 with net returns on per rupees invested at total cost Rs. 1.35 which was comparatively lower than other districts. The per hectare cost of cultivation of organic cotton were maximum in Aurangabad (Rs.65652), gross returns (Rs.127652) and net returns (Rs.62000) with net returns on per rupees invested at total cost (Rs. 1.94). It was observed to be most remunerative farming in study area. Whereas, in Yavatmal it was found to be less remunerative among all the district in study area. The per hectare cost of cultivation was Rs.63427, gross returns were Rs.114997 and net returns was Rs.51569 with net returns on per rupees invested at total cost Rs. 1.81 which was comparatively lower than other districts. Organic agriculture thus potentially provides means of addressing both human and environmental predicaments. It shows several benefits, as it reduces many of the environmental impacts of conventional agriculture, it reduces reliance on costly external inputs, and guarantees price premiums for organic produce.

Key Word: Cotton, Cost, Benefit, Net-returns, Maharashtra

1. Introduction

Cotton is known as a "King of Fibre" crops due to its global importance in agriculture as well as industrial economy. It is commonly known as “White Gold” in farming community. It is a multipurpose crop that supplies 5 basic products viz; lint, oil, seed meal, hulls and linters. Due to its multipurpose nature and use, it has huge demand from industry side, which makes this crop popular among the farming community.

cotton is most important commercial crop in economic and social affairs of the world. In India, all the four cultivated species of cotton are grown. There are nine major cotton growing states i.e. Punjab, Haryana, Rajasthan, Maharashtra Madhya Pradesh, Gujarat, Andhra Pradesh, Karnataka and Tamil Nadu. In India, cotton occupies less than 5 per cent of cultivated area but represents the estimated 54 per cent of agricultural pesticide use and same pesticides are treated as “highly to extremely hazardous to human life”. The intensive use of agro-chemicals have damaged our ecosystems. Besides, the productivity of many crops has not shown proportionate improvement in the last 10-15 years despite the increased use of chemical inputs. Similarly, extensive use of pesticides has not reduced the losses due to pests. The overall growth and development of agriculture was quite impressive and remarkable particularly 60’s and 70’s till 90’s. However, the success story of Green Revolution proved to be only a short term phenomenon. The growth rate of agriculture and allied sectors remained more or less stagnant at 2.5 per cent to 3.1 per cent during the period of 1983 to 1997, and started declining thereafter.

Cotton is the most important fibre crop of India playing a dominant role in its agrarian and industrial economy. Maharashtra is the major cotton growing state and the main cotton growing districts of Maharashtra are Jalgaon, Dhule, Nandurbar, Akola, Amaravati, Nagpur, Yawtmal, Wardha, Buldana, Aurangabad, Nanded, Parbhani, Jalna and Nasik.

In many developing countries like India, there are agricultural systems that fully meet the requirements of organic agriculture. Organic culture considers the medium and long

term effects of agricultural interventions on the agro-eco system. It aims to produce food while establishing an ecological balance to present problems of soil fertility or pests.

Government of India took several initiatives and policy measures to introduce sustainable agriculture. Organic awareness programmes are conducted to create awareness among farmers about the advantages of organic agriculture.

Cotton productivity in India is quite low (467 kg/ha) as compared to world standards (723 kg/ha). The awareness of growing organic cotton is increasing with the promotional support of the Government and active participation of several NGOs. There is considerable scope for increasing productivity of cotton and improvement in its quality, while achieving reduction in cost of production of cotton in the country. The area under organic cotton production in selected district is large as compared to other districts in Maharashtra, and it is increasing day by day. Organic farming is an innovative type of farming. Hence, this study has wide scope.

2. Methodology

The present study was based on primary data used to meet the specified objectives of the study. The primary data were collected from the selected organic and conventional farmers of the study area by personal interview during visit of the village. Simple statistical tools like averages and percentages were used in analysing the collected data.

2.1Following standard cost concepts were used in study

i) Cost 'A'

The items considered in Cost-A areas under

i. Value of hired human labour
ii. Value of manures (owned and purchased)
iii. Value of fertilizers, seed and other inputs
iv. Value of plant protection chemicals and growth regulators
v. Depreciation on implements and machinery
vi. Land revenue including other cesses

vii. Interest on working capital

ii) Cost 'B'

$$Cost\ B\ = Cost\ A + Rental\ value\ of\ land\ + Intrest\ on\ fixed\ capital + Amortized\ cost\ of\ crop$$

iii) Cost 'C'

$$Cost\ C\ = Cost\ B + Imputed\ value\ of\ family\ labour\ + Supervision\ charges$$

2.2Valuation of the Costs

The procedure adopted for valuation of cost of different items is given as under

i) Hired human labour

Actual amount paid to hired labour for performing different farm operations is considered as cost of hired human labour.

ii) Other inputs

Inputs purchased such as manures, fertilizers, pesticides, *etc.* are valued on the basis of actual market price. However, for inputs produced on farm, opportunity cost is considered.

iii) Family human labour

The cost of family human labour used is considered on the basis of wage rates paid to hired human labour.

iv) Depreciation

The depreciation on farm assets used in cotton production is worked out by using straight line method.

v) Revenue and other cess

Actual amount paid to revenue department on account of land revenue, Zillah Parishad cess plus other local cess is taken into consideration as land revenue and other cesses.

vi) Interest on working capital

It is charged at the rate of 13 per cent on all paid out expenses for a period of one year.

vii) Rental value of owned land

The rental value of the owned land is estimated by using following formula,

$$Rental\ value\ of\ land\ = \left(\frac{Gross\ value\ of\ produce}{6}\right) - Land\ revenue$$

In our study we have calculated on the basis of actual rent paid.

viii) Supervision charges

They are considered at the rate of 10 per cent of Cost A.

ix) Benefit Cost Ratio

As the cotton is annual crop the benefit cost ratio was calculated by using following formula.

$$Benifit\ cost\ ratio = \frac{Gross\ return\ (₹)}{Total\ cost\ (₹)}$$

x) Per quintal cost of production

Per quintal cost of production was worked out by using following formula,

$$Per\ quintal\ cost\ of\ production = \frac{Total\ cost - Value\ of\ by\ produce}{Cotton\ yield\ in\ quintal}$$

3. Resultsand Discussion

3.1 Per hectare profitability of Conventional cotton cultivation in various districts of Maharashtra.

In Vidarbha and Marathwada region of Maharashtra, sample farmers from four conventional cotton growing district were selected. The Per hectare profitability of conventional cotton cultivation in various districts of Maharashtra is presented in Table 3.1.

Table 3.1 Per hectare profitability of Conventional cotton cultivation in fourdistricts of Maharashtra.

(Rs/Ha)

Sr. No.	Particulars	Wardha (N=40)	Yavatmal (N=40)	Nanded (N=40)	Aurangabad (N=40)
1.	Cost A	50915 (60.92)	51309 (70.04)	50486 (65.95)	43832 (54.82)
2.	Cost B	66428 (79.48)	60684 (82.84)	62986 (82.27)	61957 (77.49)
3.	Cost C	83575 (100.00)	73252 (100.00)	76557 (100.00)	79958 (100.00)
4.	Yield (qtl/ha)	15.77	16.48	16.03	13.16
5.	Average price (Rs/qtl)	8112.50	8197.50	8082.50	8222.50
6.	Gross return	127958	135096	129585	108176
7.	Net return@ cost C	44382	61844	53027	28218
8.	Per quintal cost @ cost C	5298.66	4444.88	4775.07	6077.64
9.	**BC ratio @ Cost C**	**1.53**	**1.84**	**1.69**	**1.35**

(Figure in parenthesis indicate percentage to total cost)

The per hectare cost of cultivation (Cost C) for conventional cotton in Wardha district was found to be Rs. 83575, in which Cost A was Rs. 50915, cost B was Rs. 66428. The average yield of conventional cotton in Wardha district was found to be 15.77 qtl. and net return obtained were workout to be Rs. 44382 and B:C ratio was 1.53.

In case of Yavatmal district cost A accounted 70.04 per cent of total cost (Cost C) and cost B accounted 82.84 per cent of total cost (Cost C). The cost C was found to be Rs. 73252/ha. The gross return obtained from sale of 16.48 qtl cotton was Rs.135096 and B:C ratio was calculated to be 1.84.

The per hectare cost of cultivation (Cost C) for conventional cotton in Nanded district was found to be Rs. 76557, in which input cost (Cost A) was Rs. 50486, cost B was Rs. 62986. The average yield of conventional cotton in Nanded district was found to be 16.03 qtl. and gross return obtained were workout to be Rs. 129585 and B:C ratio was 1.69.

In case of Aurangabad district cost A accounted 54.82 per cent of total cost (Cost C) and cost B accounted 77.49 per cent of total cost (Cost C). The cost C was found to be Rs. 79958/ha. The gross return obtained from sale of 13.16 qtl. cotton was Rs. 108176 and B:C ratio was calculated to be 1.35.

The per hectare cost of cultivation were maximum in Wardha (Rs.83575), gross returns were maximum in Yavatmal (Rs.135096) and net returns (Rs.61844) with net returns on per rupees invested at total cost (Rs. 1.84) were maximum in Yavatmal. Thus, it was found that cotton cultivation was most remunerative farming in study area. Whereas, in Aurangabad it was found to be less remunerative among all the district in study area.

The per hectare cost of cultivation in Aurangabad district were Rs.79958, gross returns was Rs.108176 and net returns was Rs.28218 with net returns on per rupees invested at total cost Rs. 1.35 which was comparatively lower than other districts.

Studies on economic analysis of *Bt* cotton (conventional) reported by Dass*et al.* (2014) and Singh *et al.* (2016) concluded that there were differences in total costs and net returns amongst various districts under the study form the same geographical region.

3.2 Per hectare profitability of organic cotton cultivation in various districts of Maharashtra.

In Vidarbha and Marathwada region of Maharashtra, sample farmers from four organic cotton growing district were selected. The Per hectare profitability of organic cotton cultivation in various districts of Maharashtra is presented in Table 3.2.

Table 3.2 Per hectare profitability of Organic cotton cultivation in various districts of Maharashtra.

Sr. No.	Particulars	Wardha (N=40)	Yavatmal (N=40)	Nanded (N=40)	Aurangabad (N=40)
1.	Cost A	32562 (49.75)	30740 (48.46)	31651 (51.30)	29235 (44.53)
2.	Cost B	48075 (73.4)	40115 (63.24)	44151 (71.57)	47360 (72.14)
3.	Cost C	65450 (100.00)	63427 (100.00)	61693 (100.00)	65652 (100.00)
4.	Yield (qtl/ha)	13.23	12.65	12.80	13.50
5.	Average price (Rs/qtl)	8990.25	9087.50	9346.25	9453.38
6.	Gross return	118903	114997	119675	127652
7.	Net return@ cost C	53452	51569	57983	62000
8.	Per quintal cost @ cost C	4948.71	5012.30	4817.98	4861.89
9.	**BC ratio @ Cost C**	**1.82**	**1.81**	**1.94**	**1.94**

(figure in parenthesis indicate percentage to total cost)

The per hectare cost of cultivation (Cost C) for organic cotton in Wardha district was found to be Rs. 65450, in which Cost A was Rs. 32562, cost B was Rs. 48075. The average yield of conventional cotton in Wardha district was found to be 13.23 qtl. and gross return obtained were workout to be Rs. 118903 and B:C ratio was 1.82.

In case of Yavatmal district cost A accounted 48.46 per cent of total cost (Cost C) and cost B accounted 63.24 per cent of total cost (Cost C). The cost C was found to be Rs. 63427/ha. The gross return obtained from sale of 12.65 qtl cotton was Rs. 114997 and B:C ratio was calculated to be 1.81.

The per hectare cost of cultivation (Cost C) for organic cotton in Nanded district was found to be Rs. 61693, in which Cost A was Rs. 31651, cost B was Rs. 44151. The average yield of conventional cotton in Nanded district was found to be 12.80 qtl. And gross return obtained were workout to be Rs. 119675 and B:C ratio was 1.94.

In case of Aurangabad district Cost A accounted 44.53 per cent of total cost (Cost C) and cost B accounted 72.14 per cent of total cost (Cost C). The cost C was found to be Rs. 65652/ha. The gross return obtained from sale of 13.50 qtl cotton was Rs. 127652 and B:C ratio was calculated to be 1.94.

The per hectare cost of cultivation were maximum in Aurangabad (Rs. 65652), gross returns (Rs. 127652) and net returns (Rs. 62000) with net returns on per rupees invested at total cost (Rs. 1.94). It was observed to be most remunerative farming in study area.

Whereas, in Yavatmal it was found to be less remunerative among all the district in study area. The per hectare cost of cultivation was Rs.63427, gross returns were Rs.114997 and net returns was Rs.51569 with net returns on per rupees invested at total cost Rs. 1.81 which was comparatively lower than other districts.

4. Conclusions

The per hectare cost of cultivation of conventional cotton were maximum in Wardha (Rs.83575), gross returns were maximum in Yavatmal (Rs.135096) and net returns (Rs.61844) with net returns on per rupees invested at total cost (Rs. 1.84) were maximum in Yavatmal. Thus, it was found that cotton cultivation was most remunerative farming in study area. Whereas, in Aurangabad it was found to be less remunerative among all the district in study area. The per hectare cost of cultivation in Aurangabad district were Rs.79958, gross returns was Rs.108176 and net returns was Rs.28218 with net returns on per rupees invested at total cost Rs. 1.35 which was comparatively lower than other districts. The per hectare cost of cultivation of organic cotton were maximum in Aurangabad (Rs.65652), gross returns (Rs.127652) and net returns (Rs.62000) with net returns on per rupees invested at total cost (Rs. 1.94). It was observed to be most remunerative farming in study area. Whereas, in Yavatmal it was

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5. References

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