

RESEARCH PAPER

Cost, returns and profitability of Bt-cotton production in beed district

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ABSTRACT

Investigation was carried out during the year 2013-14. About 96 Bt-cotton growers were randomly selected from twelve villages of two tehsils of beed district of Maharashtra. Cross sectional data were collected from Bt-cotton grower with the help of pretested schedule by personal interview method. The techniques like mean, percentage, ratio and cost concept of Cost-A, Cost-B and Cost-C were used to analyze the data. The results revealed that per hectare cost of cultivation of Bt-cotton was Rs. 67137.76. Among individual items of expenditure, the share of rental value of land was 31.85 per cent followed by hired human labour (13.79 %), bullock labour (9.21), irrigation (8.17%), seed (7.51%), fertilizers (6.19%), family human labour (5.64 %), manure (5.45%), plant protection (3.75%), machine labour (2.15 %), respectively. Per hectare gross returns and net profit was Rs. 129111.85 and Rs. 61974.09, respectively. Output-input ratio was 1.92.

KEY WORDS : Bt-cotton, Cost-C, Gross return, Net profit

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Cotton (*Gossypium* spp.) 'king of fibre' belonging to the genus *Gossypium* under *Malvaceae* family which closely linked to the human civilization itself is a large, rich and economically important germ comprising about 40 species of which four are commercially cultivated for cotton lint and seed. Cotton is a basic raw material for textile industry. The Textile Industry also plays a pivotal role through its

contribution to industrial output, employment generation and the export earnings of the country. Today in India there are 1500 mills, 4 million hand looms, 7 million power looms. In addition to cotton fibre, the cotton seed also has various uses. The oil that it contains is used in cosmetic products and in certain food products. Cotton seed has also become the main ingredient (33%) in processed Animal fodder, with soya, rapeseed and groundnuts lagging far behind. The "pressed cake" that remains after the oil has been extracted is sometimes processed in animal feed. The development of Bt-cotton hybrid is a landmark game-changer in technological application in Indian agriculture after the green revolution. Traditionally, India grew cotton varieties that produced short (< 20 mm), medium (20.5 – 25.5 mm) and medium length (25 – 27 mm) cotton fibres. Since the introduction

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of the new hybrid cotton seeds in the 1970s and Bt-cotton in 2002 – 2003, the Indian farmer has focused increasingly on the production of long (27.5 – 32 mm) and extra-long (> 32.5 mm) cotton fibres. The major Bt-cotton producing states are Punjab, Haryana, Maharashtra, Madhya Pradesh and Andhra Pradesh.

The crop is mostly grown in Marathwada region. The Maharashtra state is contributing 22.70 per cent of total production in the country. Area under cotton crop in Maharashtra state 41.46 lakh hectares with production of 79.00 lakh bales and productivity 324 kg per hectare in year 2012 (Source-Cotton Advisory Board–2013). In Beed district total area under cotton in year 2013 total area under cotton is 2097 hectare out of 4192 hectares of total cultivated area. (Source District Agriculture Office, Beed 2013). The important commonly grown varieties of Bt-cotton varieties in survey area was like Kanak, Malika, Ajit-155, Jaganath and Rashi. Most of the Bt-cotton grown under rainfed condition, sowing was done by dibbing method. Soils and climate of Beed district of Maharashtra are favourable to grow Bt-cotton crop. It is observed that area under Bt-cotton crop is increasing day by day. The reason for expansion of area under Bt-cotton cultivation is better returns to cultivators.

METHODOLOGY

Multi stage sampling design was adopted for selection of district, tehsils, villages, as well as grower of Bt-cotton. In the first stage, Beed district was purposively selected on the basis of area under the Bt-cotton production. In the second stage, Georai and Beed tehsils was selected on the of basis higher area under Bt-cotton. In third stage, eight villages were selected from the selected tehsils on the basis of highest area under Bt-cotton production. The selected villages were namely Jategaon, kekat pangri, Golegaon, Thakar-Adgaon in Georai tehsil and Kalasambar Balapur, Neknur and Mandavkhel in Beed tehsil. In the fourth stage, from each village, the separate list of Bt-cotton grower was prepared. From each of the list twelve farmers of Bt-cotton were randomly selected with equal distribution. Thus total 96 farmers of Bt-cotton were selected for present study. In analytical techniques, tabular analysis, arithmetic mean and ratio were used to analyze the data and per hectare costs, returns and profit of Bt-cotton were estimated.

ANALYSIS AND DISCUSSION

The results obtained from the present investigation

have been presented in the following sub heads:

Per hectare physical inputs and cost of cultivation of Bt-cotton production :

Per hectare physical inputs used in Bt-cotton production were estimated and presented in Table 1. It was observed that, use of hired human labour in Bt-cotton crop was 51.44 man days. Similar trend also observed in case of use of family human labour in Bt-cotton crop were 21.05 man days. Bullock labour was utilized in Bt-cotton upto 15.46 pair day and also the machine labour was utilized in case of field preparation for 4.63 hours. The quantity of seed used in Bt-cotton was 2.52 kg. Use of manures was 14.64 qtl. Regarding to fertilizer application *i.e.* nitrogen, phosphorus and potash, Bt-cotton grower use 82.96, 47.68, 38.96 kg, respectively. Use of plant protection in Bt-cotton production was 3.11 lit because of it genetically have the resistance capacity for the sucking pests and insects due to which it lowers down the requirement of higher quantity of spraying. The application of irrigation was 2364.81 m³ in Bt-cotton. The results revealed that cost-C was Rs. 67137.76 in which share of cost-A was 61.39 per cent. Among individual items of costs, rental value of land was predominant item with 31.85 per cent. In next order, hired human labour showed the highest share of 13.79 per cent followed by bullock labour (9.21%), irrigation (8.17%), seed (7.51%), fertilizers (6.19%). It was observed that other items of expenditure *i.e.* family labour (5.68%), manure (5.45%), plant protection (3.75%), machine labour (2.15%), land revenue (0.20 %) and showed minor proportions. Thus, on average expenditure on Cost-A was 61.39 per cent in Bt-cotton grower. The proportionate expenditure on Cost-B was found 94.36 per cent. Per hectare main produce, by produce and gross returns were also calculated and are presented in Table 1. It was clear from the table that main produce of Bt-cotton was 26.70 quintals while the by produce was 6.67 quintals. Gross return was found to be Rs. 129111.85. Thus, net profit from Bt-cotton crop was found to be Rs. 61974.09. The out-input ratio was 1.92. The results were in close correspondence with finding obtained by Kanhore (2008), with respect to cost-C, gross return, net profit, output-input ratio and so on.

Profitability of Bt-cotton production :

Per hectare profitability of Bt-cotton production was

calculated and presented in Table 2. The results revealed that, gross return from Bt-cotton Rs 129111.85. It was observed that farm business income was Rs.87894.05 in Bt-cotton production. It was observed that family labour income was Rs.65764.09 in Bt-cotton production. It was observed that net profit that was in Bt-cotton production Rs. 61974.09. It was found that output- input ratio was higher in Bt cotton as 1.92. It was concluded

that profitability of Bt cotton was more, it means gross returns, farm business income, family labour income, net profit as well as output- input ratio were higher in Bt cotton production. Regarding with gross returns, the share of the main produce in gross returns was 98.45 per cent and by-produce 1.55 per cent in Bt-cotton production. The results were conformity with the results obtained by Kauthekar (2012).

| Table 1 : Per hectare cost and returns of Bt-cotton production | | | | | |
|--|--------------------------------|----------------|-------------------|--------------|----------|
| Sr. No. | Particular | Unit | Quantity | Amount (Rs.) | Per cent |
| 1. | Hired human labour | man day | 51.44 | 9259.20 | 13.79 |
| 2. | Bullock labour | pair day | 15.46 | 6184.00 | 9.21 |
| 3. | Machine labour | hour | 4.63 | 1446.87 | 2.15 |
| 4. | Seed | kg | 2.52 | 5040.00 | 7.51 |
| 5. | Manure | q | 14.64 | 3660.00 | 5.45 |
| 6. | Fertilizer (N:P:K) | kg | 82.96:47.68:38.96 | 4159.72 | 6.19 |
| 7. | Plant protection | lit | 3.11 | 2520.09 | 3.75 |
| 8. | Irrigation | m ³ | 2364.81 | 5486.37 | 8.17 |
| 9. | Land revenue | - | - | 136.45 | 0.20 |
| 10. | Incidental charges | - | - | 170.37 | 0.25 |
| 11. | Interest on working capital | - | - | 2474.15 | 3.68 |
| 12. | Depreciation on capital assets | - | - | 679.79 | 1.01 |
| 13. | Cost –A (Σ1–12) | - | - | 41217.80 | 61.39 |
| 14. | Rental value of land | - | - | 21382.19 | 31.85 |
| 15. | Interest on fixed capital | - | - | 747.77 | 1.11 |
| 16. | Cost-B (Σ 13-15) | - | - | 63347.76 | 94.36 |
| 17. | Family human labour | man day | 21.05 | 3789.00 | 5.64 |
| 18. | Cost-C (Σ 16-17) | - | - | 67137.76 | 100.00 |
| 19. | Main produce | qtl | 26.70 | 127109.63 | 98.45 |
| 20. | By-produce | qtl | 6.67 | 2002.22 | 1.55 |
| 21. | Gross returns | Rs. | | 129111.85 | 100.00 |
| 22. | Net profit | | | 61974.09 | - |
| 23. | Output –input ratio | | | 1.92 | - |

| Table 2 Per hectare profitability of Bt-cotton production | |
|--|--------------|
| Particular | Amount (Rs.) |
| Gross returns (Rs.) | 129111.85 |
| Cost-A | 41217.80 |
| Cost-B | 63347.76 |
| Cost-C | 67137.76 |
| Farm Business income (Gross returns minus Cost-A) | 87894.05 |
| Family labour income (Gross returns minus Cost-B) | 65764.09 |
| Net profit (Gross returns minus Cost-C) | 61974.09 |
| Output-Input ratio (Gross returns divided by Cost-C) | 1.92 |
| Per quintal cost of production (Cost-C minus by produce value divided by main produce) | 2439.53 |

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