

## Economic analysis of Cost, Returns and Profitability of Maize in Karnataka State

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**ABSTRACT:** Maize (*Zea mays*) is one of the important cereal crops of the World and gaining lot of importance in animal feed and other industry uses. The present study aimed to calculate the costs and returns of maize in Karnataka. We evaluated profitability, net income, family labor income, farm business revenue, and the B:C ratio in this article by estimating the cost of cultivation using the cost concept (cost A1 A2, B1 B2, C1 C2, and C3). The absence of high-quality seeds was one of the main issues mentioned by the farmers. They believed that there were seeds of various qualities mixed together, which causes poor germination and reduced yields. The study comes to the conclusion that maize growers in the study area will see higher net returns if they make the best use of the resources at their disposal and make the required efforts to fix the issues found in the production of maize. The cost of cultivation of maize (total cost C2) was Rs. 48312.44 per hectare, variable cost was Rs. 32319.16/ hectare and fixed cost was Rs. 13228.79/ hectare. The per hectare gross income was Rs. 61180 and net return Rs. 15631.84 with B: C ratio of 1:1.34 which showed the profitable of crop. On the basis of finding of study, it is recommended that the study area getting profit and study will suggest to go for maize cultivation.

**Keywords:** Cost and return, profitability, Maize, estimation, Karnataka, net income and labor.

### INTRODUCTION

One of the key cereal crops in the global agricultural economy is maize, which is used as both human food and animal feed. The "Queen of Cereals" is maize. due to the fact that it has larger potential yields than other cereal crops. The crop is from Central America. The crop is grown all over the world under a wide range of climatic and soil conditions. Maize serves as a basic raw material for the manufacturing of starch, oil, protein, alcoholic drinks, culinary sweeteners, and, more recently, fuel. It also supplies nutrition for people and animals. Maize yields more, is simpler to process, and is less expensive than other cereals. Its adaptability enables it to flourish in a variety of agro-ecological zones. Every component of the maize plant has a marketable purpose: the grain leaves, stalk, tassel, and cob can all be used to meet the rising global need for food, feed, fuel, and industrial raw materials. Anwarlal *et al.* (2010) in their research paper

"Technical Efficiency of Chilly Production" used cost concepts in measuring cost and returns for chilly production. The study showed that, on an average total variable cost of production and total cost of production per hectare of land was TK 71,950/- and Tk 78,950 respectively, Chahal and Katariya (2005) using the cost concept in their study "Technological adoption and cost return aspects of Maize Cultivation in Punjab" estimated the cost and return of maize in Punjab. Sundar and Kombai Raju (2004) using the cost concept in their research "Economies of Production of Gloriosa" computed cost and returns in gloriosa cultivation. The author classified cost of production into two types namely establishment cost and maintenance cost respectively. Mahakakshmi (2009) in her study "Cost and Return in Vanilla Cultivation" using Cobb- Douglas production function revealed that the benefit-cost ratio was found to be much greater even after discounting, showing a ratio of 19.89, indicating that every one rupee

of investment, the farmer will receive Rs.20 (approx) as return. Grover and Singh (2007) in their research “Sesame Cultivation in Punjab” reported that cost on human labour and cost on plant protection measures were significant at five per cent level on large farms and one per cent level on small farms using Cobb-Douglas Production function. The study concluded vanilla cultivation as much profitable. In the present study, an attempt was made to evaluate cost, return and profitability of maize.

**Statement of the Problem.** In Karnataka, maize is a significant crop that is grown and contributes to the farmers' improved economic situation. During production and marketing, maize producers face a number of challenges, including a lack of healthy seeds, a manpower shortage, high labor costs, and a high use of pesticides and fertilizers. This study will assist in developing an appropriate framework for analyzing the various production cost components. A study like this will guarantee the best resource pairings to boost maize yield and so raise the profit. The profitability pattern would be highlighted by a study of the cost and return structure of maize.

**Objective of the study.** To study the input cost structure and profitability of maize in the study area.

#### MATERIAL AND METHODS

In order to pick districts, Taluks, villages, and maize growers based on the state's maize area, a multi-stage sampling design was used. Two districts, Belagavi and Bagalkot, were purposefully chosen for the initial stage from the state of Karnataka's highest cropped area. From each district, two taluks were chosen in the second stage. From each taluk, three villages were chosen in the third stage, and ten farmers were chosen from each village. Thus, the sample size for the current study is 120. Farmers' core data were gathered using a pretested structured interview schedule.

#### Cost concept

Cost A1=All actual expenses in cash and kind incurred in production by owner  
Cost A2= Cost A1+ rent paid for leased in land

Cost B1= Cost A1+interest on fixed capital

Cost B2= Cost B1+ rent paid on leased in land + rental value of owned land  
Cost C1= Cost B1+imputed value of family labour

Cost C2= Cost B2+ imputed value of family labour

Cost C3= Cost C2 + 10% of cost C2 (on account of managerial function performed by the farmer)

#### Returns

1.Gross income= value of total output

2.Farm business income= gross income-cost A1

3.Family labour income= gross income- cost B2

4.Net income= gross income-cost C2

#### RESULT AND DISCUSSION

From the perspective of the supply chain, the economics of maize production are extremely important. Because increased profitability would enhance the connections between supply chain agents even more. The entire expenditure in Karnataka came to Rs. 45,548.16 (Table 1). Around 70% of the total cost of cultivation was made up of variable costs, while 30% was made up of fixed costs. 24 percent, 7.9 percent, and 13.5% of all labor was performed by humans, animals, and machines, respectively. Cost incurred on manures and fertilizers was 11.96 per cent. And interest on working capital accounted 1.74 per cent. Rental Value of Owned Land and Interest on Fixed Capital are 24.36 per cent and 4.26 per cent respectively. Gross returns by the sale of main produce and by- product in Karnataka was estimated to be Rs. 61, 180 and Rs. 6000 respectively. And net return was Rs. 15631.84. finally, the benefit to cost ratio was arrived and it was found to be 1.34. hence it could be inferred that maize is profitable crop. Similar results were reported by Rupasena *et al.* (2008); Chahal and Katariya (2005); Jitendra Singh *et al.* (2006).

**Table 1: Input cost structure and profitability of maize growers (Per hectare).**

Sr. No.	Particulars	Rs /Hectare
	<b>Cost of Cultivation (Rs. /Hectare)</b>	
	A1	26408.53
	A2	26408.53
	B1	28352.96
	B2	39449.03
	C1	32909.15
	C2	44005.22
	<b>C2 Revised</b>	48312.44
	<b>Cost of Production (Rs. /Qtl)</b>	
	A1	820.16
	A2	820.16
	B1	877.44
	B2	1208.61
	C1	1020.96
	C2	1352.13
	<b>C2 Revised</b>	1484.48
	<b>C3</b>	1632.92

	<b>Value of Main Product (Rs. /Hectare)</b>	<b>55180</b>
	<b>Value of By- Product (Rs. /Hectare)</b>	<b>6000</b>
	<b>Material &amp; Labour Input/Hectare of</b>	
	Seed (Kg.)	16.30
	Fertilizer (Kg. Nutrients)	177.25
	Manure (Qtl.)	3.31
	Human Labour* (Man Hrs.)	365.07
	Animal Labour (Pair Hrs.)	29.18
	<b>Rate per Unit (Rs.)</b>	
	Seed (Kg.)	160.97
	Fertilizer (Kg. Nutrients)	28.14
	Manure (Qtl.)	139.04
	Human Labour (Man Hrs.)	30.67
	Animal Labour (Pair Hrs.)	124.20
	Rate (Rs. /Qtl.)	1550
	Derived Yield (Qtl. /Hectare)	35.6
	<b>*Break-Up Human Labour Hours:</b>	
	Family	144.76
	Attached	0.00
	Casual	220.31
	Total	365.07
<b>I</b>	<b>Operational Cost (variable cost)</b>	<b>32319.16/Hectare</b>
	<b>Human Labour</b>	Family
	Attached	4556.20
	Casual	0.00
	<b>Total</b>	6641.10
	<b>Animal Labour</b>	Hired
	Owned	1458.48
	<b>Total</b>	2165.50
	<b>Machine Labour</b>	Hired
	Owned	5417.96
	<b>Total</b>	731.92
	<b>Seed</b>	6149.88
	<b>Fertilizer &amp; Manure</b>	Fertilizer
	Manure	4988.56
	<b>Total</b>	460.09
	<b>Insecticides</b>	5448.65
	<b>Irrigation Charges</b>	189.73
	<b>Crop Insurance</b>	571.05
	<b>Miscellaneous</b>	38.68
	<b>Interest on Working Capital</b>	139.10
	<b>Fixed Costs</b>	794.54
<b>II</b>	Rental Value of Owned Land	<b>13228.79</b>
	Rent Paid for Leased-in-Land	11096.07
	Land Revenue, Taxes, Cesses	0.00
	Depreciation on Implements & Farm Building	11.51
	Interest on Fixed Capital	176.78
	<b>Total Cost [I+ II]</b>	1944.43
	<b>Return from by- produce</b>	<b>45,548</b>
	<b>Return from main produce</b>	<b>6000</b>
	<b>Gross return</b>	<b>55180</b>
	<b>Net return</b>	<b>61180</b>
	<b>B:C ratio</b>	<b>15631.84</b>
		<b>1.34</b>

## CONCLUSIONS

Among total cost of cultivation variable cost accounted around 70 per cent and fixed cost accounted 30 per cent. Human labor, animal labor and machine labor accounted 24 per cent, 7.9 per cent and 13.5 per cent respectively. Cost incurred on manures and fertilizers was 11.96 per cent. And interest on working capital accounted 1.74 per cent. Rental Value of Owned Land and Interest on Fixed

Capital are 24.36 per cent and 4. 26 per cent respectively. Gross returns by the sale of main produce and by-product in Karnataka was estimated to be Rs. 61, 180 and Rs. 6000 respectively. And net return was Rs. 15631.84. finally, the ratio of benefits to costs was calculated and found to be 1.34. Consequently, it might be concluded that maize is a productive crop.

## FUTURE SCOPE

It will be helpful for administrators to know whether the crop is profitable or not and farmers to know the extent of input use. So that they can take suitable action to improve the profitability of crop by extending the help to the cultivator in the form of technical advice and supply inputs to them. Poultry industries heavily depend on maize as it forms 50-60% of input required for broiler feed. As maize is processed into various value-added products, always there will be market potential.

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**Conflict of Interest.** None.

## REFERENCES

Anwarlal Huq, A. S. and Fatimah Mohamed Arshad (2010). Technical Efficiency of Chili Production. *American Journal of Applied Sciences*, 7(2), 185-190.

- Chahal and Kataria (2005). Technology adoption and Cost Returns aspects of Maize Cultivation in Punjab, 62(4), 241-247.
- Jitendra Singh, G. P. Singh and Rajkishor (2006). Present Status and Economics of Organic Farming in the District of Udham Singh Nagar in Uttaranchal. *Indian Journal of Marketing*, 19, 135-144.
- Mahakakshmi, K. (2009). Cost and Return in Vanilla Cultivation- A Study with Special Reference to Coimbatore District. *Indian Journal Marketing*, 47-54.
- Rupasena, L. P, H. S. Vijayakumar and N. M. Karur (2008). Resource Use Efficiency in Rice Cultivation in Srilanka. *Indian Journal of Agriculture Marketing*, 22(2), 1-11.
- Sundar, A. and S. Kombai Raju (2004). Economics of Production of Gloriosa Superba in Tamil Nadu. *Indian Journal of Arecanut, Spices & Medicinal Plants*, 6(2), 61-66.

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