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An economic analysis of production of maize in Kanker district of Chhattisgarh state

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Abstract

The study conducted “an economic analysis of production of maize in Kanker district of Chhattisgarh state”. The field level primary data were collected from randomly selected 72 maize growers of 9 villages of Kanker district for the agricultural year 2021-22. The total cost of cultivation of maize was ₹ 36145.44 /ha. The Variable Cost and Fixed Cost were determined to be ₹ 23017.68 /ha and ₹ 13127.76 /ha, respectively. The overall input-output ratio was found to be 1:2.27. On an overall basis Gross returns (total income) were observed to the ₹ 81957.71 /ha. The net returns were found to be ₹ 45812.27 /ha and the overall production of maize was 51.22 quintal /ha.

Keywords: Gross returns, net returns, B: C ratio, input-output ratio

1. Introduction

Maize is one of the most important cereal crop after rice. Maize has many assets for its wide distribution, its husk gives protection from birds and rain can be harvested over a long period since it can be left dried in the field until harvesting is convenient, can be stored long, provide numerous useful food products and frequently preferred to sorghum and other millets. In fact, it is a major source of starch. Corn starch (maize flour) is a major ingredient in home cooking and in many industrialized food products. Maize is also a major source of cooking oil (corn oil) and of maize gluten. Maize starch can be hydrolyzed and enzymatically treated to produce syrups, particularly high fructose corn syrup, a sweetener; and also fermented and distilled to produce grain alcohol. Grain alcohol from maize is traditionally the source of bourbon whiskey. Maize is sometimes used as the starch source for beer. It is also nutritive for adults of different ages. The green straw is suitable for making silage.

Maize in Chhattisgarh is one of major cereal crop as it contributes 119.63 area in thousand which have production 306.96 thousand MT and productivity 2566 kg per hectare in kharif in the year 2017- 2018. In Kanker district of Chhattisgarh, maize is preferred by the farmers after rice. There are many reasons that farmers of the Kanker district growing maize, firstly favorable climatic conditions for its cultivation and can be grown in all the seasons but the farmers mainly grow during rabi season. Some of the farmer’s also growing maize during *Kharif* as well as summer. The area of maize in the Kanker district is 16.484 thousand hectares. The production of maize was 60.51 thousand tons during 2020-2021.

2. Methodology

Sampling technique of Kanker district of Chhattisgarh was purposively chosen as the study area because, it has the larger area under maize cultivation in the district. A multistage simple random sampling technique (SRS) was adopted to select the villages and the respondents, different farmer involved in Maize production in Kanker district. The details of the sampling techniques at various stages are given as under:

3. Costs and returns of Maize cultivation

Despite the costs & return was worked out by old concepts, a standard method of cost of cultivation of maize was also used. This method is accepted by The Commission for Agricultural Costs and Prices (CACP). Under this method, the cost of cultivation was computed by using the 7 Cost concepts, which are known as cost A₁, cost A₂ cost B₁, cost B₂ and cost C₁, cost C₂, and cost C₃.

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3.1 Income over different cost

Income over cost $A_1 = \text{Gross Return} - \text{Cost } A_1$
 Income over cost $A_2 = \text{Gross Return} - \text{Cost } A_2$
 Income over cost $B_1 = \text{Gross Return} - \text{Cost } B_1$
 Income over cost $B_2 = \text{Gross Return} - \text{Cost } B_2$
 Income over cost $C_1 = \text{Gross Return} - \text{Cost } C_1$
 Income over cost $C_2 = \text{Gross Return} - \text{Cost } C_2$
 Income over cost $C_3 = \text{Gross Return} - \text{Cost } C_3$

3.2 Net income

It is the difference between total return and total expenses. So,
 Net income = Gross income - Total expenses

3.3 Input – output ratio

It is the ratio of input and output, which is an under
 Input - Output Ratio = Value of output / Value of input used

4. Results and Discussion

4.1 Cost of cultivation

Different Costs utilized in the process of production are studied to have a better understanding of the cost of maize cultivation. The results of this analysis are presented in the

table 1. According to the table, the total cost of cultivation in maize was ₹ 36145.44 /ha. The Variable Cost and Fixed Cost were determined to be ₹ 23017.68 /ha and ₹ 13127.76 /ha, respectively, representing 63.68 percent and 36.32 percent of the total cost of cultivation. It was also found that the total cost of cultivation in maize for marginal, small, medium and large farmers was ₹ 35153.76 /ha, ₹ 35903.26 /ha, ₹ 36969.93 /ha and ₹ 38203.75 /ha, respectively. For marginal, small and medium and large farmers the variable costs account for 63.80 percent, 63.09 percent, 63.54 percent and 64.52 percent, respectively. Marginal, small, medium and large farmers, are, spending 36.20 percent, 36.91 percent, 36.46 percent and 35.48 percent on fixed costs, respectively (Jain, Shelke and Meshram, 2019) [4].

From the table 1, it is clearly demonstrates that manure and fertilizer (16.69 percent) was maximum and found to be 16.69 percent followed by human labour (hired and family labour) cost (16.21 percent), seed cost (7.55 percent), plant protection (10.12 percent), machine power cost (8.24 percent), interest on working capital (2.26 percent), irrigation (1.45 percent) and miscellaneous (1.14 percent). The cost of family labour is decreasing with the increase in farm size.

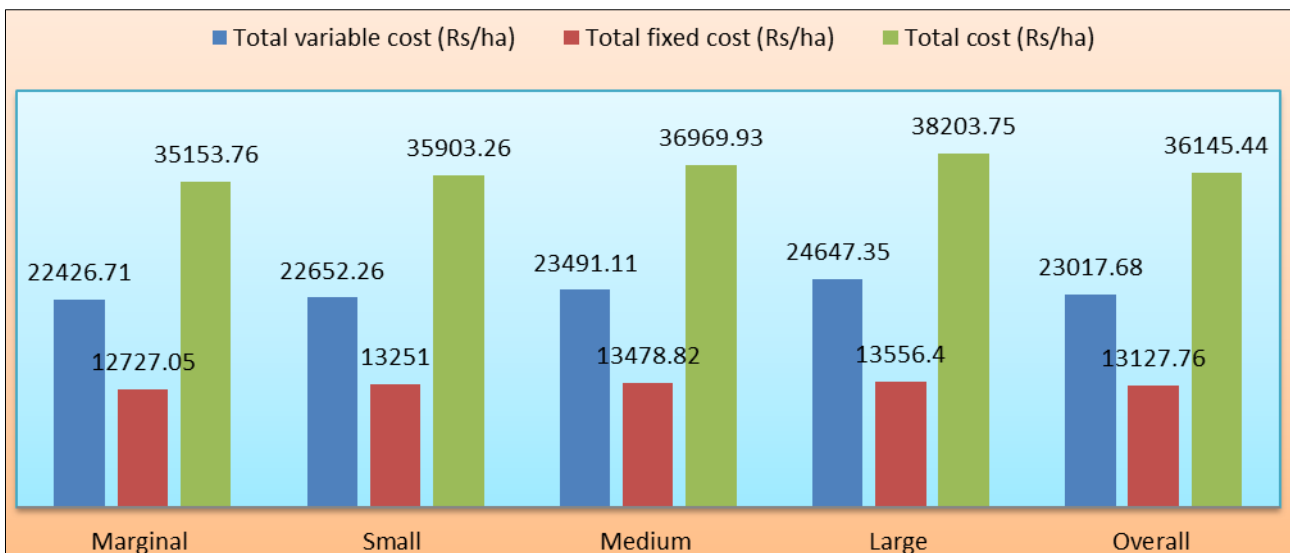


Fig 1: Different costs of different farm size of maize producer

Table 1: Cost on different heads of maize in the Kanker district (Rs. /ha)

S. No.	Particular	Marginal	Small	Medium	Large	Overall
A.	Variable cost					
1.	Human labour					
a.	Family labour	4126.73 (5.48)	3267.01 (5.75)	2036.67 (10.42)	1892.55 (11.34)	3181.16 (8.80)
b.	Hired labour	1926.60 (11.74)	2064.92 (9.10)	3853.20 (5.51)	4333.24 (4.95)	2678.64 (7.41)
Total human labour cost		6053.33 17.22	5331.93 14.85	5889.87 15.93	6225.79 16.30	5859.80 16.21
2.	Machine power	2964.00 (8.43)	2976.35 (8.29)	2988.74 (8.08)	3008.50 (7.87)	2978.52 (8.24)
3.	Seed	2507.40 (7.13)	2754.40 (7.67)	2840.85 (7.68)	3159.91 (8.27)	2732.48 (7.55)
4.	Manure & fertilizes	5940.00 (16.89)	6038.80 (16.81)	6137.00 (16.59)	6150.36 (16.09)	6033.78 (16.69)
5.	Plant protection	3441.30 (9.79)	3705.00 (10.32)	3754.40 (10.16)	4036.10 (10.56)	3658.29 (10.12)
6.	Irrigation charge	494.00 (1.41)	527.00 (1.47)	536.10 (1.45)	594.24 (1.56)	525.62 (1.45)
7.	Miscellaneous cost	247.00 (0.70)	494.00 (1.38)	506.00 (1.37)	595.23 (1.56)	412.15 (1.14)

8.	Interest on working capital	779.68	824.78	838.15	877.22	817.04
		(2.22)	(2.30)	(2.27)	(2.30)	(2.26)
Total variable cost		22426.71	22652.26	23491.11	24647.35	23017.68
		(63.80)	(63.09)	(63.54)	(64.52)	(63.68)
B.	Fixed capital					
1.	Land revenue	10.00	10.00	10.00	10.00	10.00
		(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
2.	Depreciation	255.00	260.00	269.97	272.57	261.71
		(0.73)	(0.72)	(0.73)	(0.71)	(0.72)
3.	Interest on fixed capital	606.05	631.00	641.85	645.54	625.13
		(1.72)	(1.76)	(1.74)	(1.69)	(1.73)
4.	Rental value of owned land	11856.00	12350.00	12557.00	12628.29	12230.92
		(33.73)	(34.40)	(33.97)	(33.06)	(33.84)
Total fixed cost		12727.05	13251.00	13478.82	13556.40	13127.76
		(36.20)	(36.91)	(36.46)	(35.48)	(36.32)
C.	Total cost (A+B)	35153.76	35903.26	36969.93	38203.75	36145.44
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

Note: Figure in parenthesis was percentage to the total cost of cultivation.

4.2 Measures of farm profit in maize cultivation in Kanker district

Table 2 departed that the overall per hectare gross profits from maize cultivation were computed using the market price of ₹ 1600 per quintal and total gross return from maize was found to be ₹ 81957.71. The cost of production of maize was found to be ₹ 711.61/qlt, ₹ 709.06/qlt, ₹ 697.79/qlt, ₹

694.99/qlt and ₹ 705.64/qlt for marginal, small, medium, large and overall farms size, respectively. While overall input-output ratio were found to be 1.00:2.27, On an overall basis Gross returns (total income) was observed to the ₹ 81957.71 /ha, while net returns was found to be ₹ 45812.27 /ha and overall production of maize was 51.22 quintal /ha.

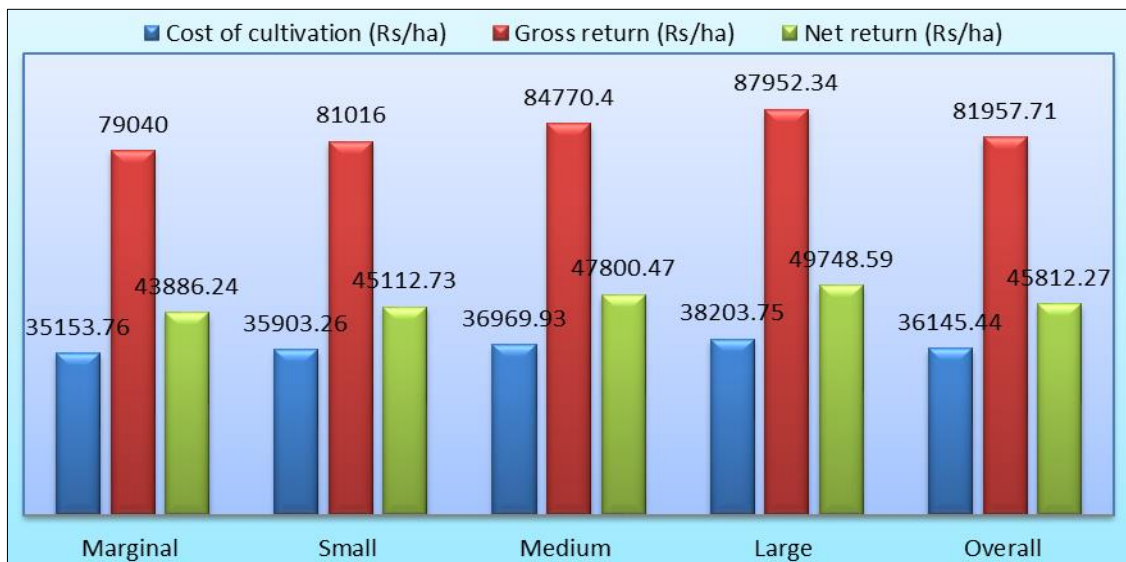


Fig 2: Cost and returns from maize in different farm size

Table 2: Yield, value of output and cost of production of maize in Kanker district

Particulars	Marginal	Small	Medium	Large	Overall
Yield (qt /ha)	49.40	50.64	52.98	54.97	51.22
Cost of cultivation (Rs /ha)	35153.76	35903.26	36969.93	38203.75	36145.44
Gross return (Rs /ha)	79040.00	81016.00	84770.40	87952.34	81957.71
Net return (Rs /ha)	43886.24	45112.73	47800.47	49748.59	45812.27
Cost of production (Rs/qlt)	711.61	709.06	697.79	694.99	705.64
Input – output ratio	2.25	2.26	2.29	2.30	2.27

4.3 Cost obtain on the basis of different cost concept of maize in Kanker district

Cost of cultivation of maize of sample farms in the Kanker district has been worked out and presented in table 3. It is envisaged that Cost A₁ as designated as variable cost was found to be ₹ 20108.23 /ha on an overall basis, which was added of rent paid for lease in land and Cost A₂, was found to be ₹ 20108.23 /ha, indicates that the interest on fixed capital imputed with Cost B₁ was ₹ 20733.36 /ha. Normally, farmers

are cultivating the crop in their own land but it has imputed rental value of land of ₹ 12230.92 /ha notified Cost B₂ was ₹ 32964.28 /ha. The Cost C₁ found to be ₹ 23914.52 /ha, includes the value of Cost B₁ and imputed value of family labour was found to be ₹ 3181.16 /ha, The Cost C₂, found to be ₹ 36145.44 /ha, includes the value of Cost B₂ and imputed value of family labour and The Cost C₃, found to be Rs 39759.98ha, imputed value of managerial allowances at 10 percent of Cost C₂.

4.4 Return obtained over different cost of maize in Kanker district: Table 3 also shows that the overall returns over Cost A₁, Cost A₂, Cost B₁, Cost B₂, Cost C₁, Cost C₂, and Cost C₃

was obtained to be ₹ 61849.48 /ha, ₹ 61849.48 /ha, ₹ 61224.35 /ha, ₹ 48993.43 /ha, ₹ 58043.19 /ha, ₹ 45812.27 /ha and ₹ 42197.73 /ha, respectively.

Table 3: Break-up of total cost and gross income over obtained over different cost (Rs. /ha)

Break-up of total cost obtained over different cost (Rs. /ha)					
Particulars	Marginal	Small	Medium	Large	Overall
Cost A ₁	18564.98	19655.25	21734.41	23037.36	20108.23
Cost A ₂	18564.98	19655.25	21734.41	23037.36	20108.23
Cost B ₁	19171.03	20286.25	22376.26	23682.91	20733.36
Cost B ₂	31027.03	32636.25	34933.26	36311.20	32964.28
Cost C ₁	23297.76	23553.26	24412.93	25575.46	23914.52
Cost C ₂	35153.76	35903.26	36969.93	38203.75	36145.44
Cost C ₃	38669.14	39493.59	40666.92	42024.12	39759.98
Gross income over obtained over different cost (Rs. /ha)					
Particulars	Marginal	Small	Medium	Large	Overall
Return over cost A ₁	60475.02	61360.75	63035.99	64914.98	61849.48
Return over cost A ₂	60475.02	61360.75	63035.99	64914.98	61849.48
Return over cost B ₁	59868.97	60729.75	62394.14	64269.43	61224.35
Return over cost B ₂	48012.97	48379.75	49837.14	51641.14	48993.43
Return over cost C ₁	55742.24	57462.74	60357.47	62376.88	58043.19
Return over cost C ₂	43886.24	45112.74	47800.47	49748.59	45812.27
Return over cost C ₃	40370.86	41522.41	44103.48	45928.22	42197.73

5. Suggestions for further improvement

The empirical findings of study envisaged the maize growers still growing the traditional variety as well hybrid of maize. Therefore it is being suggested that extension workers should come forward to aware the maize growers to grow improved or high yielding variety as hybrid need more agro-inputs, the government should arrange for the timely supply of quality seeds and other inputs at reasonable prices for maize growers. The government should promote cooperative societies in particular from marginal and small producer's that can collect the product from producers for transportation and sale on the terminal markets. Market related information including daily and weekly price of maize products should be disseminated among farmers.

6. References

- Dipriya R Lyngkhai, Bera BK, Chatterjee S. Economic Analysis of Production of Maize in Meghalaya and Constraints Associated with it. *Economic Affairs*. 2021;66(3):395-399.
- Elahi ME, Shah M, Mansoor M, Rashid A, Marwat SK, Husain N, *et al.* Economic analysis of maize cultivation under agro climatic condition of district Dera Ismail Khan. *American-Eurasian Journal of Agricultural & Environmental Sciences*. 2016;16(4):765-769.
- Hamidullah Elham, Jiajun Zhu, Mouhamadou Foula Diallo, Shakeel Ahmad, De Zhou. Economic Analysis of Smallholder Maize Producers Empirical Evidence from Helmand, Afghanistan. *Journal of Agricultural Science*. 2020;12(3):1916-9760.
- Jain AB, Shelke RD, Meshram DU. Cost, Returns and profitability of Kharif Maize in Solapur District of Maharashtra, India. *Int. J Curr. Microbiol. App. Sci*. 2019;8(5):1845-1849.
- Kshirsagar GA. Economics of production and marketing of maize in Solapur district. M. Sc. (Agri.) Thesis submitted to Mahatma Phule Krishi Vidyapeeth, Rahuri; c2010.
- Minithra R, Ashok KR, Vidhiyavathi A. Economic Analysis of Production and Marketing of Maize in Perambalur District, Tamil Nadu. *International Journal of Agriculture Sciences*. 2019;11(9):8412-8415.
- Monluzzaman. Agro-Economic analysis of maize production in Bangladesh: A farm level study. *Bangladesh J Agril. Res*, 2009, 34(1).
- Ngonkeu ELM, Tandzi LN, Dickmi CV, Nartey E, Yeboah M, Ngevel J, *et al.* Identification of Farmer's Constraints to Maize Production in the Humid Forest Zone of Cameroon. *Journal of Experimental Agriculture International*. 2017;15(3):1-9.
- Onuk EG, *et al.* Economic analysis of maize production in Mangu local Government area of plateau state, Nigeria, Agric Department, Mangu; c2010.
- Parveen A. Growth rate in area, production and productivity of maize. *Research Journal of Agricultural Sciences*. 2013;4(3):433-434.
- Rana JB, Singh JP, Kumar S, Shahni VK. Maize Production Viability: A Study of Economics, Constraints and Policy Implications for Eastern Uttar Pradesh. *Int. J Curr. Microbiol. App. Sci*. 2018;7(6):2776-2783.
- Sunitha NM, Veerabhadrapa BP. An economic analysis of maize marketing in Karnataka: a case study of Davangere district. *International Journal of Research in Commerce, Economics and Management*. 2017;7(7):48-53.