



An Economic Analysis of Production of Cowpea in Bilaspur District of Chhattisgarh, India

**Chandra Kumar Singroul^{a++*}, Ajay Tegar^{b#}
and V. K. Choudhery^{c†}**

^a Department of Agricultural Economic, College of Agriculture Raipur, IGKV, Raipur, India.

^b Department of Agricultural Economics, B. T. C. College of Agriculture and Research Station Bilaspur (C.G.), India.

^c Department of Agricultural Economics, COA, Raipur, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2024/v42i22368

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/112209>

Original Research Article

Received: 25/11/2023

Accepted: 01/02/2024

Published: 07/02/2024

ABSTRACT

The research entitled "An Economic Analysis of Production of Cowpea in Bilaspur District of Chhattisgarh, India" was done with the specific objectives to work out the cost and returns of cowpea in the study area, The survey for specified objective was conducted in Takhatpur and Bilha blocks of Bilapur district of Chhattisgarh. Data were collected from 75 cowpea growers from the 10 villages (5 villages from each block). Data related to marketing was collected from 5 village traders, 6 wholesalers and 8 retailers. The primary data were collected from the cowpea growers through

⁺⁺ Student of M.Sc.;

[#] Associate Professor;

[†] Head;

*Corresponding author: E-mail: chandrakumarsingroul@gmail.com;

personal interview method with the help of well-prepared questionnaire for the production and marketing in the year 2022-23. The collected data were analysed by using average, mean, percentage and other tools to present in tabular form and for cost and cost concept were used. The study reveal that the overall cost of cultivation per hectare of cowpea was calculated Rs.1,00,057.00. The cost of cultivation per hectare showed rising trend with the rise in farm size. The overall input-output ratio of cowpea was found to be 1:1.6 on the sample farms.

Keywords: Input-output ratio; fixed cost; variable cost; cost of cultivation; gross return; net return.

1. INTRODUCTION

Cowpea (*Vigna unguiculata*) also called black-eyed pea or southern pea, annual plant within the pea family (Fabaceae) grown for its edible legumes. Semi-arid areas of sub-Saharan Africa (Da Silva et al., 2018). In addition to their use as a protein-rich food crop, cowpeas are extensively grown as a hay crop and as a green manure or cover crop. Because of India's varied environment, various kinds of vegetables are always available. After China, it produces the second-most vegetables worldwide [1-3]. India produced 191.77 million metric tons of vegetables and 99.07 million metric tons in 2019–20, according to the National Horticulture Database (Second Advance Estimates) issued by the National Horticulture Board [4-8]. vegetables were grown on 10.35 million hectares. In the state, most vegetable crops, including solanaceous plants, cucurbits, beans, cabbage, cauliflower, etc., are cultivated successfully [9-21]. In Chhattisgarh, the total area of vegetable crops was 489.271 '000 ha and cowpea area and production 17084 '000 ha and 230826 '000 metric tons) in 2020–21, with a production of 6868.126 '000 MT and a productivity of 14.04 (q/ha). The following crops are grown in Bilaspur district: cowpea, tomato, potato, chilli, coriander (green), and okra [22-27]. The total area of vegetable crops in the district was recorded 36.407 '000 ha in the year 2020-21 with the production of 299.968 '000 MT [28-32]. The total area of cowpea in Bilaspur district was recorded 4407 ha in the year 2020-21 with the production of 92547 '000 MT, according to State Horticulture Database issued by Director Horticulture Nava Raipur, Atal Nagar, C.G.

2. MATERIALS AND METHODS

The survey for specified objective was conducted in Takhatpur and Bilha blocks of Bilaspur district of Chhattisgarh. 10 villages were selected (5 from each block) and total 75 farmers which was 10 % of total cowpea grower were selected from each selected village. The primary data were

collected from the cowpea grower through personal interview method with the help of well-prepared questionnaire for the production year of 2022-2023. The data collected were analysed through average, percentage and presented in tabular form and cost of cultivation was estimated with the help of cost concept of CACP.

3. RESULTS AND DISCUSSION

3.1 Economics of Cowpea

Table 1 makes it quite evident that compared to marginal farms, large farms had greater cowpea cultivation costs per hectare. Cowpea cultivation cost Rs. 100057.6 per hectare on an average. In comparison to marginal farms (Rs. 85900.18), small farms i.e. (Rs. 95001.84), and medium farms (Rs. 104749.90), large farms had greater cultivation expenses (Rs. 114579.10). The price of farming per hectare has increased along with the size of the farm. It was because large farmers, who had access to more credit from different financial institutions and were in a better financial position than marginal, small, and marginal farmers, spent more on contemporary farm inputs including high-quality seed, fertilizer, plant protection chemicals, hired labor, and other products. Large farms have higher costs than smaller farms, which leads to better yields and profitability.

3.2 Yield, Value of Output and Cost of Production Per Quintal of Cowpea

Table 2 displays the yield, cost of production per quintal of cowpea, and value of output per hectare for the sample farms. On the sample farms, the overall cowpea production per hectare was 70.48 quintals. It was determined that the overall cost of production per quintal was Rs. 1419.61. The cost of production per quintal of cowpea was Rs. 1520.89, Rs. 1425.59, Rs. 1445.81, and Rs. 1326.76 for marginal, small, medium, and large farm sizes, respectively. Due to stronger yields on the larger farms that offset the higher cost of cultivation, it declined as farm

size increased. The cost of production per hectare was on average Rs. 100057. The value of output per hectare on marginal, small, medium, and large farm sizes were, respectively,

Rs. 44004, Rs. 58270, Rs. 61886, and Rs. 84048. The increased cost of contemporary farm inputs was correlated with the higher value of produce on large farms.

Table 1. Economics of cowpea on different size groups of farms

S. No.	Particulars	FarmSize				Overall
		Marginal	Small	Medium	Large	
A Variable cost						
1	Family human Labour	23500.55 (27.36)	14500.67 (15.26)	15550.9 (14.85)	16332.56 (14.25)	17471.17 (17.46)
2	Hired human Labour	16055.27 (18.69)	25530.56 (26.87)	27851.33 (26.88)	29648.62 (26.76)	24771.45 (24.76)
	Total human Labour	39555.82 (46.05)	40031.23 (42.14)	43402.23 (41.43)	45981.18 (40.13)	42242.62 (42.22)
3	Machine Power	4939.44 (5.75)	5950.32 (6.26)	6764.23 (6.46)	8123.46 (7.09)	6444.36 (6.44)
4	Seed cost	1550.59 (1.81)	1850.79 (1.95)	2150.65 (2.05)	2550.23 (2.23)	2025.56 (2.02)
5	Manure& Fertilizer	5684.35 (6.62)	6869.79 (7.23)	7109.23 (6.79)	8306.39 (7.25)	6992.44 (6.44)
6	Plant Protection	4947.52 (5.76)	5609.19 (5.90)	6265.89 (5.98)	7484.56 (6.53)	6076.79 (6.07)
7	Irrigation Charges	664.10 (0.77)	796.08 (0.84)	886.14 (0.85)	896.05 (0.78)	810.59 (0.81)
8	Interest on Working Capital@3%	1720.25 (2.00)	1833.22 (1.93)	1997.35 (1.91)	2200.25 (1.92)	1937.77 (1.94)
	Total variable Cost	59062.07 (68.91)	62940.62 (66.19)	68575.72 (65.29)	75542.13 (65.71)	66530.14 (66.43)
B Fixed cost						
1	Depreciation @10%	493.94 (0.57)	595.03 (0.63)	676.42 (0.65)	812.34 (0.71)	644.43 (0.65)
2	Land revenue	12.00 (0.01)	12.00 (0.01)	12.00 (0.01)	12.00 (0.01)	12.00 (0.01)
3	Rental value of land	24344 (28.20)	29079 (30.67)	32805 (31.48)	35321 (31.03)	30387.25 (30.42)
4	Interest on Fixed capital	1987.99 (2.30)	2374.08 (2.50)	2679.47 (2.57)	2891.62 (2.54)	2483.49 (2.49)
	Total fixed Cost	26837.94 (31.09)	32060.91 (33.81)	36172.90 (34.71)	39036.97 (34.29)	33527.18 (33.57)
C	Total cost (A+B)	85900.18 (100.00)	95001.84 (100.00)	104749.9 (100.00)	114579.1 (100.00)	100057.6 (100.00)

Note: Figures in parentheses indicate percentages to the total

Table 2. Per hectare yield, value of output and cost of production per quintal of cowpea

S.N.	Particular	FarmSize					Overall
		Marginal	Small	Medium	Large	Overall	
1	Gross return (rs/ha)	129904	153272	166635	198628	1622109	
2	Total Cost (rs/q)	85900	95001	104749	114579	100057	
3	Net income (rs/q)	44004	58270	61886	84048	62052	
4	Yield (q/ha)	56.48	66.64	72.45	86.36	70.48	
5	Price (rs/q)	2300	2300	2300	2300	2300	
6	Cost of production (rs/q)	1520.89	1425.59	1445.81	1326.76	1419.61	
7	Input-output Ratio	1:1.5	1:1.6	1:1.5	1:1.7	1:1.6	
8	B:C Ratio	1.5	1.6	1.5	1.7	1.6	

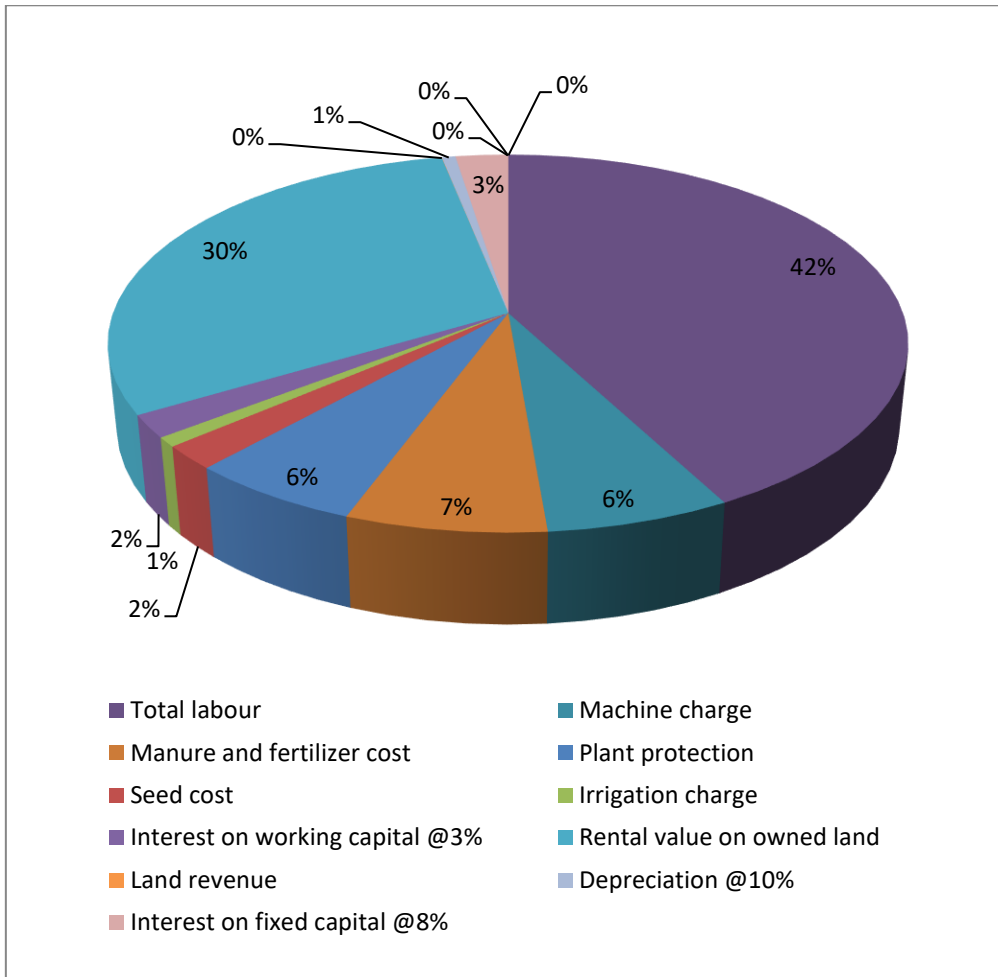


Fig. 1. Economics of cowpea in the study area

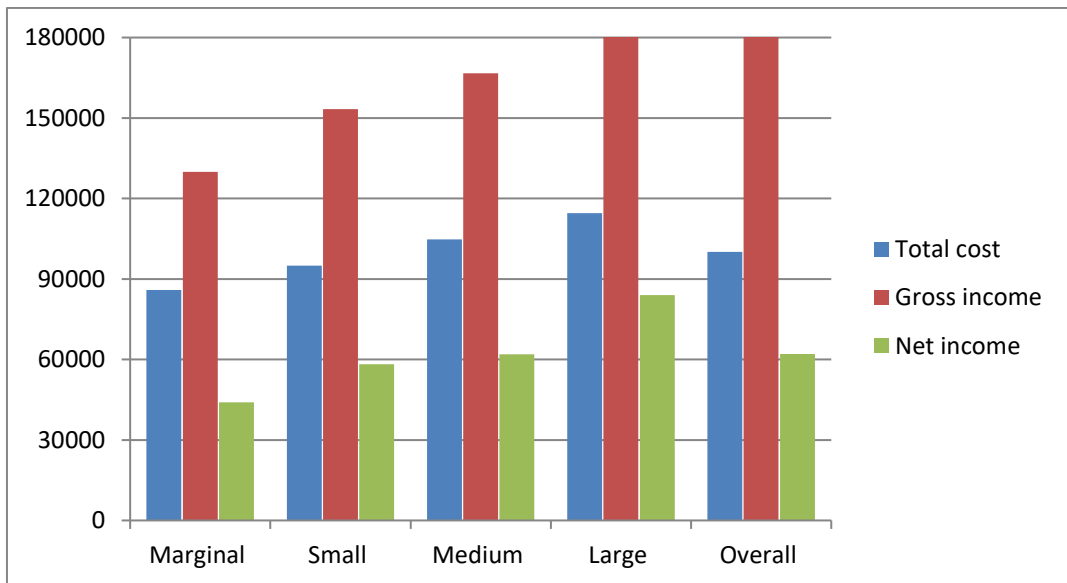


Fig. 2. Cost and return of cowpea on the sample farms for different group off-farms

According to Table 2 and Fig.2, the cowpea produced an average net profit, gross profit, total cost, and input-output ratio per hectare of Rs. 62052, Rs. 162109.80, and Rs. 100057, respectively.

4. CONCLUSION

This research was performed on the cost and returns of cowpea production in Bilaspur District of Chhattisgarh, India. Based on the findings, the study showed that the overall cost of cultivation per hectare of cowpea was calculated Rs.1,00,057.00. The cost of cultivation per hectare increased as farm size increased.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Chand P, Sharma R. Growth in area, production and productivity of vegetable crops in different agro-climatic zones of Rajasthan, Agricultural Economics Research Review. 2007;20(2):580-585.
2. Jain BC, Tegar A. Economics of production and marketing of tomato in Jaspur district of Chhattisgarh Delhi, India: Controller of Publications, Government of India, Agricultural Marketing. 2003;46(3):5-10.
3. Kumar Vinod, Koshla AK, Choudhary VK. Cost of cultivation and disposal pattern of tomato in Raipur district of Chhattisgarh, India. Plant Archive. 2016;16(1):464-468.
4. Jat, Jeewan Ram, Sangram Singh, Hanuman Lal, Choudhary LR. Constraints faced by tomato grower in use of improved tomato production technology. Rajasthan Journal of Extension Education. 2012;6(1):159-163.
5. Kaur Lavleen, Dhaliwal T, Rangi PS. Singh Nirmal. An econometric analysis of tomato arrivals and Prices in Punjab, Indian Journal of Agricultural Marketing. 2005;19(3):105-12.
6. Kotnala A, Singhal AK, Dubey LR. Marketing of major vegetables in Nainital district of Uttarakhand. Ind J Agril Mktg. 2013;27(3): 181-89.
7. Kumar PS, Vasudev N. Economics of price spreads in marketing of potatoes in Telangana, International Journal of Tropical Agriculture. 2015;33(2):263-268.
8. Kumar, Vinod AK, Koshla Choudhary VK. Cost of cultivation and disposal pattern of tomato in Raipur district of Chhattisgarh, India. Plant Archive. 2016;16(1):464-468.
9. Meena Susheela, Singh IP, Ramji lal Meena. Cost of cultivation and return on different cost concept basis of Onion in Rajasthan. Economic Affairs. 2016;6(1):11-16.
10. Shukla Ruchira Economics of Chilli cultivation in Jaipur District of Rajasthan. International Journal of Commerce in Business Management. 2010;3(2):267-269.
11. Verma PK. Production and marketing of summer vegetables and fruits crops in mahanadi river bed of Raipur district. Thesis submitted to Department of Agriculture and Natural Resource Economics, IGKV, Raipur, Chhattisgarh; 2006.
12. Yesdhanulla S, Aparna B. Marketing channels and price spread of tomato in Chittor district of Andhra Pradesh. Journal of Pharmacognosy and Phytochemistry. 2018;7(2):873-876.
13. Chand P, Sharma R. Growth in area, production and productivity of vegetable crops in different agro-climatic zones of Rajasthan, Agricultural Economics Research Review. 2007;20(2):580-585.
14. Sharma, Vikalp, Harbans Lal, Utpalendu Debnath, Vijay Hatte. Economics of potato production in Kangra district of Himachal Pradesh, India. International Journal of current Microbiology and Applied Sciences, 2017;6(10):123-129.
15. Shelke RD, Katkade JL, Jhadhav VB. Economic study of constraints and suggestions faced by the farmers in tomato production in Kolar district of Karnataka. International Research Journal of Agricultural Economics and Statistics. 2016;12(2):175-177.
16. Shiraganvi SS, Guledagudda SS. Growth performance of pulses in Karnataka. Journal Farm Science. 2016;29(4):524-525.
17. Shukla, Ruchira. Economics of Chilli cultivation in Jaipur District of Rajasthan. International Journal of Commerce in Business Management. 2010;3(2):267-269.
18. Verma PK. Production and marketing of summer vegetables and fruits crops in

- mahanadi river bed of Raipur district. Thesis submitted to Department of Agriculture and Natural Resource Economics, IGKV, Raipur, Chhattisgarh; 2006.
19. Wankhade RN, Malthane GB, Nemade DV. Constraints in pigeon pea production in Maharashtra. *Journal of Community Mobilization and Sustainable Development*. 2009;4(2):72-75.
 20. Yadav Y. Economic performance of different marketing channels of gram in Sahore district of Madhya Pradesh. Unpublished M.sc.Thesis, RVSKVV, Gwalior (M.P.). 2012:39.
 21. Yesdhanulla S, Aparna B. Marketing channels and price spread of tomato in Chittor district of Andhra Pradesh. *Journal of Pharmacognosy and Phytochemistry*. 2018;7(2):873-876.
 22. Deore SG, Pawar PP, Pulate SL. Economics of marketing of green chilli in Western Maharashtra. *International Journal of Applied Social Science*. 2015;21(2):84- 89.
 23. Devraj. Pulses production in Uttar Pradesh: a critical review, *Agriculture situation in India*. 2002;32(3):149-151.
 24. Dhakre DS, Bhattacharya D. Growth and instability analysis of vegetables in West Bengal, India. *International Journal of Bio-resource and Stress Management*. 2013;4(3):456-459.
 25. Godambe RB, Torane SR, Talathi JM, Kshirsagar PJ. Cost return and Profitability of Okra in Thane district of Maharashtra. *The Asian Journal of Horticulture*. 2016;11(1):14-18.
 26. Islam QMS, Miah MAM, Rahman MS, Hossain MS. Adoption of bari mung varieties and its constraints to higher production in southern region of Bangladesh. *Bangladesh Journal of Agricultural Research*. 2013;38(1):85-96.
 27. Jain BC, Tegar A. Economics of production and marketing of tomato in Jaspur district of Chhattisgarh Delhi, India: Controller of Publications, Government of India, *AgriculturalMarketing*. 2003;46(3): 5-10.
 28. Kumar V, singh M. An Economic Evaluation of quality seed production of an important leguminous fodder crop-Cowpea in Bundelkhand region, U.P., india. *Plant Achives*. 2017;17(1):527-531.
 29. Mathur BK, Henry A. Compound growth rate of area, production and productivity of pulses (moth bean, cowpea, and mung bean) in arid districts of Rajasthan. *Journal of Arid Legumes*, 2005;2(1):50-53.
 30. Meena, Susheela IP. Singh, Ramji lal Meena. Cost of cultivation and return on different cost concept basis of Onion in Rajasthan. *Economic Affairs*. 2016;6(1): 11-16.
 31. Rajur BC, Patil BL. Price spread, marketing costs and margins of chilli in Karnataka state. *Karnataka Journal of Agricultural Science*. 2015;28(3):364-368.
 32. Sharma, Sunil Kumar, Sharma NK. Constraints of recommended production technology of fennel cultivation by the farmer in Nagaur district of Rajasthan, India. *International Journal of Current Microbiology and Applied Sciences*. 2017; 4(1) :26-37.

© 2024 Singroul et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/112209>