



ISSN (E): 2277-7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2023; SP-12(8): 282-285  
© 2023 TPI

[www.thepharmajournal.com](http://www.thepharmajournal.com)

Received: 17-06-2023

Accepted: 30-07-2023

**Avinash Bhandekar**  
M.Sc. Research Scholar,  
Department of Agricultural  
Economics, Indira Gandhi Krishi  
Vishwavidyalaya University,  
Raipur, Chhattisgarh, India

**Dr. MK Deshmukh**  
Professor, Department of  
Agricultural Economics, Indira  
Gandhi Krishi Vishwavidyalaya  
University, Raipur,  
Chhattisgarh, India

**Dr. Vijay Kumar Chaudhary**  
Professor and Head, Department  
of Agricultural Economics,  
Indira Gandhi Krishi  
Vishwavidyalaya University,  
Raipur, Chhattisgarh, India

**Shubhi Singh**  
Ph.D. Research Scholar,  
Department of Agricultural  
Economics, Indira Gandhi Krishi  
Vishwavidyalaya University,  
Raipur, Chhattisgarh, India

**Shubham Kumar Thakur**  
Ph.D. Research Scholar,  
Department of Agricultural  
Economics, Indira Gandhi Krishi  
Vishwavidyalaya University,  
Raipur, Chhattisgarh, India

**Corresponding Author:**  
**Avinash Bhandekar**  
M.Sc. Research Scholar,  
Department of Agricultural  
Economics, Indira Gandhi Krishi  
Vishwavidyalaya University,  
Raipur, Chhattisgarh, India

## Economics of production and marketing of chilli in Kabirdham District of Chhattisgarh

**Avinash Bhandekar, Dr. MK Deshmukh, Dr. Vijay Kumar Chaudhary, Shubhi Singh and Shubham Kumar Thakur**

### Abstract

The economic analysis of chilli crop cultivation in Kabirdham district, Chhattisgarh, India, unveiled intriguing insights. Surprisingly, the cost of cultivation per hectare was found to be higher on large farms compared to small ones. The major cost contributors were human labor, seeds, manures, fertilizers, machine power, plant protection, irrigation, depreciation, bullock labor, and land revenue. Despite the challenges, the crop exhibited promise, with a yield of 10.9 quintals per hectare and a cost of production at Rs. 936.68 per quintal. The returns were encouraging, with a gross return of Rs. 218,000 and a net return of Rs. 115,893.13 per hectare, translating into an input-output ratio of 1:2.14. Interestingly, small spice growers predominantly relied on the producer → consumer marketing channel for selling chilli and fenugreek. Other channels, such as producer → commission agent → consumer and producer → wholesaler → retailer → consumer, were also explored. Overall, the study emphasized the profitability of chilli cultivation in the region, suggesting the adoption of improved production practices to curtail costs and bolster profits.

**Keywords:** chilli, cost of cultivation, marketing, price spread, marketing efficiency

### Introduction

Chhattisgarh boasts a rich spice cultivation landscape, with prominent districts like Kabirdham, Balrampur, Korea, Bilaspur, and Rajnandgaon. The state's spice repertoire includes Chili, Ginger, Garlic, Turmeric, coriander & Fenugreek. Remarkably, in the year 2020-21, the state recorded 67,756 hectares of spice cultivation, yielding an impressive 449,353 metric tons. India, a spice haven, cultivates 63 out of the 109 spices listed by the International Standard Organisation, with 20 classified as seed spices. This diversity underscores the significance of spice production in the region, contributing significantly to the country's spice heritage.

### Methodology

For this particular study, Kabirdham district was chosen purposively, focusing on two blocks with the highest area under spice cultivation: Kawardha and Pandariya. Among the 67 registered spice producers in the district, 37 were from Kawardha and 30 from Pandaria. The researchers utilized the snowball sampling method to randomly select respondents from the sample of 67 spice producers. Various statistical analyses were employed to analyze the data collected from these farmers. This unique approach allowed for a comprehensive understanding of spice production in the region, aiding in valuable insights and recommendations for the farming community.

### Economics of Chilli Crop

The analysis of chilli crop economics, as presented in Table 1, reveals intriguing patterns. Notably, the cost of cultivation per hectare of chilli was higher on large farms compared to small and medium farms, with an average of Rs. 102,106.9 per hectare. This trend can be attributed to large farmers investing more in modern farm inputs like quality seeds, fertilizers, plant protection materials, and hired labor. Their access to credit institutions and better economic status also played a role.

Among the various inputs, total human labor emerged as the highest cost factor, amounting to Rs. 59,678.62 per hectare. Following closely were costs for seeds (Rs. 9,306.24) and manures/fertilizers (Rs. 6,966.11). Machine power (Rs. 3,723.06), plant protection (Rs. 3,617.25), and irrigation (Rs. 2,720.03) also contributed significantly to the overall cost.

Depreciation (Rs. 372.31), bullock labor (Rs. 344.01), and land revenue (Rs. 15) constituted relatively smaller portions of the expenditure.

The positive correlation between expenditure and yield

explains the higher returns on large farms. This highlights the importance of investing in modern agricultural practices to achieve better outcomes.

**Table 1:** Various components of operational and overhead cost incurred in the cultivation of Chilli

Particular	Small	Medium	Large	Overall
<b>A. Material cost</b>				
Seed	8530.02	8990.09	10398.6	9306.24
	8.86	8.82	9.62	9.11
Manures and fertilizer	6686.12	6869.14	7343.97	6966.41
	6.94	6.74	6.80	6.82
Plant protection	3297.8	3493	4060.95	3617.25
	3.42	3.43	3.76	3.54
Irrigation charges	2660.83	2763.67	2735.58	2720.03
	2.76	2.71	2.53	2.66
Total material cost	21174.77	22115.9	24539.1	22609.92
	21.98	21.69	22.71	22.14
<b>B. Human labour cost</b>				
Family labour	7573.24	5522.01	2856.43	5317.23
	7.86	5.42	2.64	5.21
Hired labour	48212.74	54703.68	60167.76	54361.39
	50.06	53.65	55.69	53.24
Total human labour cost	55785.98	60225.69	63024.19	59678.62
	57.92	59.07	58.33	58.45
<b>C. Power use cost</b>				
Bullock power	1032.04	0	0	344.01
	1.07	0.00	0.00	0.34
Machine power	3013.47	3846.13	4309.58	3723.06
	3.13	3.77	3.99	3.65
Total power use cost	4045.51	3846.13	4309.58	4067.07
	4.20	3.77	3.99	3.98
Interest on working capital @ 6%	4617.65	4940.5	5253.8	4937.31
	4.79	4.85	4.86	4.84
(I). Total variable cost	85623.91	91128.22	97126.67	91292.93
	88.90	89.37	89.90	89.41
<b>D. Fixed cost</b>				
Depreciation @ 10%	301.35	384.61	430.96	372.31
	0.31	0.38	0.40	0.36
Land revenue	15	15	15	15
	0.02	0.01	0.01	0.01
Rental value of land	9500	9500	9500	9500
	9.86	9.32	8.79	9.30
Interest on fixed capital (7%)	876.99	935.28	967.72	926.66
	0.91	0.92	0.90	0.91
(II).Total fixed Cost	10693.34	10834.89	10913.68	10813.97
	11.10	10.63	10.10	10.59
Total cost(A+B+C+D)	96317.24	101963.1	108040.4	102106.9
	100	100	100	100

**Note:** Figures in parentheses indicate percentages of the total cost

### Yield and cost of production per quintal

Table 2 presents the yield, value of output per hectare, and cost of production per quintal of chilli on the sample farms. The average yield per hectare stands at 10.9 quintals, ranging from 10.2 quintals per hectare on small farms to 11.5 quintals per hectare on large farms. The overall per quintal cost of production is Rs. 936.68, with specific costs of Rs. 944.3, Rs. 926.9, and Rs. 939.5 on small, medium, and large farms, respectively. Interestingly, the cost of production decreases with an increase in farm size, owing to higher yields and cost-efficient cultivation on large farms.

The positive correlation between higher output values on large farms can be attributed to the increased investment in

modern farm inputs.

### Measures of farm profit

The study area exhibited an overall gross return of Rs. 218,000 per hectare, ranging from Rs. 204,000 per hectare at marginal farms to Rs. 230,000 per hectare at large farms. Gross returns were influenced by factors like variety, productivity, and selling price. The net return per hectare averaged at Rs. 115,893.13, with specific values of Rs. 107,682.76, Rs. 118,036.98, and Rs. 121,959.66 at small, medium, and large farms, respectively. The overall input-output ratio was 1:2.14, varying from 1:2.12 at marginal farms to 1:2.13 at large farms.

**Table 2:** Per hectare yield, value of output and cost of production per quintal of chilli.

S. No.	Particular	Small	Medium	Large	Overall
1	Average yield (Qt./ha)	10.20	11.00	11.50	10.90
2	Average price (Rs./Qt.)	20000	20000	20000	20000
3	Gross returns (Rs./ha)	204000	220000	230000	218000
4	Cost of cultivation (Rs./ha)	96317.24	101963.1	108040.4	102106.9
5	Net returns (Rs./ha)	107682.76	118036.9	121959.6	115893.1
6	Cost of production (Rs./Kg.)	94.43	92.69	93.95	93.68
7	Input output ratio	2.12	2.16	2.13	2.14
8	B:C Ratio	1.12	1.16	1.13	1.14

**Cost and returns on the basis of different cost concept**

Table 3 outlines the cost and returns based on different cost concepts in chilli production. Cost A<sub>1</sub>, representing variable cost, depreciation, and land revenue of own land, amounts to Rs. 86,363.01 per hectare on average. Cost B<sub>2</sub>, including the imputed value of land at Rs. 9,500, totals Rs. 87,289.67 per hectare. Cost C<sub>1</sub>, at Rs. 92,606.90 per hectare, incorporates Cost B<sub>1</sub> and the imputed value of family labor at Rs. 5,317.23 per hectare. Cost C<sub>2</sub>, at Rs. 102,106.90 per hectare, comprises Cost B<sub>2</sub> and the imputed value of family labor. Lastly, Cost C<sub>3</sub>, at Rs. 112,317.59 per hectare, considers the imputed value of managerial allowances, estimated at 10% of Cost C<sub>2</sub>.

**Table 3:** Various CACP costs associated with the cultivation of fenugreek (Rs/ha)

Particulars	Small farmer (<2 ha)	Medium farmer (2-4 ha)	Large farmer (>4 ha)	Over All average
Cost A <sub>1</sub>	78367.01	86005.82	94716.20	86363.01
Cost A <sub>2</sub>	78367.01	86005.82	94716.2	86363.01
Cost A <sub>2</sub> +FL	85940.25	91527.83	97572.63	91680.23
Cost B <sub>1</sub>	79244.00	86941.10	95683.92	87289.67
Cost B <sub>2</sub>	88744.00	96441.10	105183.92	96789.67
Cost C <sub>1</sub>	86817.24	92463.11	98540.35	92606.90
Cost C <sub>2</sub>	96317.24	101963.11	108040.35	102106.90
Cost C <sub>3</sub>	105948.97	112159.42	118844.38	112317.59

**Disposable pattern of spices**

A comprehensive study of the spice marketing system becomes imperative to comprehend its complexities and identify bottlenecks, ultimately leading to the provision of efficient services in transferring farm produce and inputs from producer to consumer. An effective marketing system not only minimizes costs but also benefits all sections of society. Marketing serves as the ultimate stage in any production system, and its efficiency is crucial for ensuring that produce reaches consumers in pristine condition, devoid of damage, at the lowest possible cost, and in the shortest time after harvest. According to Kohls, marketing encompasses all business activities involved in the flow of goods and services, starting from initial agricultural production until they reach the hands of the ultimate consumer. The core objectives of an efficient marketing system include enabling primary producers to maximize their benefits, offering farm-origin products to consumers at reasonable prices without compromising quality, facilitating the upliftment of all produce the farmers are willing to sell at incentive prices, and reducing the price spread between primary produce and the ultimate consumer.

**Marketing channel**

The study focuses on three key marketing channels for spice growers in the region:

**Channel-I:** Producer → Consumer This direct method of sale

is widely used by small spice growers for selling their chilli produce. It involves a straightforward approach, where farmers directly connect with consumers, eliminating intermediaries.

**Channel-II:** Producer → Itinerant Trader → Consumer This channel is popular among small and medium farmers due to their limited holding capacity and inadequate facilities. Farmers often lack the means to store produce for extended periods, and their yields might be relatively modest. Itinerant traders step in as intermediaries to purchase the produce from farmers and distribute it to consumers.

**Channel-III:** Producer → Commission Agent/Retailer → Consumer All categories of farmers utilize Channel-III for selling their produce. Large farmers dominate the quantity sold through this channel, followed by medium and small farmers. This method involves farmers engaging commission agents or retailers as intermediaries to bridge the gap between producers and consumers.

**Marketable surplus**

Table 4 highlights the estimated marketable surplus of green chilli. While green chilli is highly perishable, making immediate sale necessary, it possesses better storage capacity than other commodities. Although lack of infrastructure may force farmers to sell immediately after harvest, they can benefit from storing chillies at the household level. Storing allows them to wait for better market prices, maximizing their returns. This flexibility in selling offers an opportunity for farmers to optimize their income and make strategic marketing decisions to their advantage.

**Table 4:** Marketable surplus of chilli of sampled households. (Quintal per farm)

S. N.	Particulars	Small	Medium	Large	Overall
<b>Total quantity produced (Qty.)</b>					
1	Chilli	10.2	11	11.5	32.7
		100	100	100	100
<b>Quantity used for seed purpose</b>					
2	Chilli	0.05	0.11	0.13	0.29
		1.34	0.72	0.46	0.84
<b>Quantity used for home</b>					
3	Chilli	0.04	0.07	0.09	0.2
		2.15	1.13	0.52	1.27
<b>Total quantity utilized</b>					
4	Chilli	0.09	0.18	0.22	0.49
		3.49	1.85	0.98	2.11
<b>Marketable surplus</b>					
5	Chilli	9.84	10.80	11.39	32.21
		(96.51)	(98.15)	(99.02)	(98.50)

**Note:** Figure in parentheses indicate percentage to total quantity produced

**Table 5:** Channels for chilli are observed in study area.

Channel – I	: Producer	Consumer		
Channel – II	: Producer	Itinerant Trader	Consumer	
Channel – III	: Producer	Commission Agent	Retailer	Consumer

### Conclusion

The cost of cultivation analysis highlights the significance of managing labor and seed expenses, being major cost components in chilli cultivation. Optimizing operational costs, exploring cost-effective seed procurement methods, and adopting efficient farming practices can enhance profitability. Marketing is crucial, and addressing market access, price volatility, and information challenges can improve farmers' income and reduce vulnerability. Strategies like collective marketing, value addition, and direct market links are recommended for better market participation and price realization. The overall cost of cultivation per hectare of chilli is Rs. 102,106.9, showing a rising trend with increasing farm size. The input-output ratio is 1:2.14, indicating favorable returns. The overall gross return for chilli is estimated at Rs. 218,000.00 per hectare, varying from Rs. 204,000.00 at small to Rs. 230,000.00 per hectare at large farms.

### Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### References

1. Thakur, Shubham. An economic analysis of production and marketing of major medicinal and aromatic plants in bilaspur district of (Chhattisgarh). Ph.D. thesis (unpublished). Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh; c2023.
2. Sharma SK, Deshmukh MK. An economic analysis of seed production of chickpea in Kabirdham district of Chhattisgarh. The Pharma Innovation Journal. 2021;10(10):477-479.
3. Krishna, Deshmukh MK. An economic analysis of production of pigeonpea in Bemetara district of Chhattisgarh. The Pharma Innovation Journal. 2021;10(9):466-469.
4. Deshmukh MK, Gauraha AK, Chandrakar MR. Constraints in the cultivation and marketing of sugarcane production in Kabirdham district of Chhattisgarh, India. The Pharma Innovation Journal. 2021;10(6):449-451.
5. Boryohain, Aanya. Growth Trend in Area, Production and Productivity of Spices, International Indexed & Refereed Research Journal. 2013;4:67-69.
6. Dass, Devi. Economics of production and marketing of chillies in India with special reference to Haryana, M.Sc. (Agri.) Thesis submitted to Chaudhary Charan Singh Haryana Agricultural University, 2005.
7. Goudra VG, Havaladar YN, Megri SN, Hosamani SB, Banakar B. Growth rate scenario of chilli in North Karnataka, Karnataka journal of Agricultural science. 2011;24(3):412.
8. Kamal MM, Ali MR, Rahman MM, Shishir MRI, Yasmin S, Sarker MSH. Effects of processing techniques on drying characteristics, physicochemical properties and functional compounds of green and red chilli (*Capsicum annum* L.) powder. Journal of food science and technology. 2019;56(7):3185-3194.
9. Mishra JP, Vishwakaram RS, Rawat K. Production and

marketing of chillies. The Bihar journal of Agricultural Marketing. 1999;7(1):36-43.

10. Roy TN, Mandal G, Das TK, Das KK. West Bengal experiment: growing seed spices to develop backward area. Spices India. 2007;7:16-18.
11. <https://agriportal.cg.nic.in/horticulture/>