



## **Economic Analysis of Red Chilli Cultivation in Bhupalapalli District of Telangana, India**

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### **Authors' contributions**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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### **ABSTRACT**

The present study was conducted in Bhupalapalli district of Telangana, From Out of total blocks of Bhupalapalli district one block i.e., chityal has been selected purposively for current study on the basis of having high total area under production of red chilli for current study. It is worth nothing that the economic studies on chilli, conducted so far in India, are few and have not analyzed the detailed aspect of cost structure, resources use efficiency, productivity and marketing. The list of Farmers growing red chilli was collected from Horticulture Officer (H.O) and sample farmers were selected from the list randomly. The farm respondents were classified in to four groups on the basis of area under red chilli cultivation in all the selected villages viz. marginal - having the cultivated area less than 1 ha, small - having the cultivated area 1 ha to 2 ha, semi medium - having the cultivated area 2ha-4 ha, and medium - having the cultivated area 4 ha to10 ha. The study revealed that total cost incurred in cultivation of red chilli per hectare. Total cost of cultivation incurred was highest in marginal sized farm with Rs 1,42,480 /- followed by small sized farms i.e., Rs 1,37,310/-, semi medium sized farm i.e., Rs 1,32,140 /- and lowest in medium sized forms Rs 1,25,900 /-. Gross returns per hectare was lowest in marginal sized farms with Rs 3,50,000 /- followed by and small sized farms with Rs 3,71,000 /-, semi medium sized farms with Rs 3,85,000 /- and highest in medium sized farms with Rs 392000 /-. Net returns per hectare was highest in medium sized farms with Rs 2,66,101.5 /- followed by semi medium sized farms with Rs 2,52,861.5 /-, small sized farms with Rs 2,33,693.5 /- and lowest in marginal sized farms with Rs 2,07,517.5 /-.

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## 1. INTRODUCTION

Chilli (*Capsicum annum* L.) is most widely produced in Telangana and Andhra Pradesh states. It is an universal spice of India belongs to the "Solanaceae" family. In India chilli area is around 90 million ha and production is about 44 million tonnes. The nutritive value of chilli is excellent, rich in vitamins, especially in vitamin A and C [1,2].

The most important states under production in India were undertaken to work out the economics of production are Andhra Pradesh (49%), Telangana (17%) Karnataka (15%) Maharashtra (6%) and Tamil Nadu (3%), which constitute nearly 75 per cent of the total area under chilli. Chilli is an indispensable condiment of every Indian household. It is used in daily diet on one form or the other. It is a rich source of vitamin A and with good medicinal properties among the spices consumed per head; dry chilli fonts constitute a major share. The pungency in chilli is due to the alkaloid "capsaicinoid" [3-5]. It occurs in the cores or septa walls and placenta.

India exports chilli to countries all over the world, which the export value increased from Rs. 1230 lakhs (2010-11) to Rs. 4313.10 lakhs and chilli powder export value increased Rs. 62.76 crores (2000 -01) to Rs. 110.00 crores (2018-20). The world demand is expected to go up to 15.30 lakh tonnes by the end of 2015 AD. (Anon, 2005), therefore, it is predicted that there is a great scope for export of chillies. Demand is increasing for value added products using chillies such as chili paste, curry powders and other sauces for the convenience of food industry. In the extraction industry, there is always a demand for high. Capsaicin content (over 1%) chillies. This offers an extraction to direct saving on unit costs of extraction.

The distribution of market information refers to the of relevant market information to farmers, chilli traders, and millers around 80 per cent of chilli millers, assemblers, retailers, and farmers find it very easy to obtain market information. Very few traders complain about the source of information: only less than 2 per cent of the interviewed traders found it very difficult to get information. Those results reveal that a lack of access to market information is not a barrier to enter the market, since most of the information related to rice trading such as qualities, form of

packaging, buying selling prices; consumer behavior, regulation, etc are easy to obtain.

## 2. MATERIALS AND METHOD

The present study was conducted in Bhupalapalli district of Telangana. From Bhupalapalli district, one block has been selected purposively for current study on the basis of having high total area and production of red chilli. The list of farmers growing red chilli was collected from Horticulture Officer (H.O) and selected the respondents from among the list randomly. The farm respondents were classified in to four groups on the basis of area under red chilli cultivation in all the selected villages viz. marginal (- having the cultivated area less than 1 ha), small (- having the cultivated area 1 ha to 2 ha), semi medium (- having the cultivated area 2 ha to 4 ha), and medium (- having the cultivated area 4 ha to 10 ha).

### 2.1 Period of Enquiry

The study covers costs and returns in red chilli cultivation in different farm size groups in agriculture year 2021-2022.

### 2.2 Analytical procedure

Bhupalapalli district was selected purposively for the study because this district is specialized in the cultivation of red chilli on commercial scale and it is a first largest red chilli growing district. Block was selected randomly based on highest in area and production of red chilli cultivation. The list of farmers growing red chilli was collected from Horticulture Officer (H.O), from that list all together 10 per cent of respondents were selected randomly in all the 4 size farms groups in each selected village. For analyzing the data collected during the study, tabular analysis and financial analysis were employed. The technique of tabular analysis was employed for estimating the cost of cultivation, yield and return structure of red chilli. The primary data with respect to input use pattern, economics of production of red chilli were collected from the sample respondents by personal interview method with the help of well-structured pre-tested schedule.

## 3. RESULTS AND DISCUSSION

Table 1 revealed that total per hectare cost incurred in cultivation of red chilli. Total cost of

cultivation incurred was highest in marginal sized farm with Rs 1,42,480 /- followed by small sized farms i.e., Rs 1,37,310/-, semi medium sized farm i.e., Rs 1,32,140/- and lowest in medium sized farm i.e., Rs 1,25,900/- that makes sample average of total cost of cultivation incurred was Rs 1,34,525/-.

Table 2 reveals that total costs and return among different farm size groups in red chilli cultivation per hectare. Total cost of cultivation was highest in marginal size farms i.e., Rs 142480/- followed by small sized farms with Rs 137310 /-, semi medium sized farms with Rs 132140 /- and lowest in medium sized farms with Rs 125900/- that makes a sample average of Rs 134525/-.

Yield in quintals per hectare was lowest in marginal farms with 25 quintal per hectare and followed by small sized farms with 26.5 quintal per hectare each semi medium size farms with 27.5 quintals per hectare and highest in medium sized farms with 28 quintals per hectare that makes a sample average of 23.88 quintals per hectare.

Gross returns per hectare was lowest in marginal farms with Rs. 350000 /-and followed by small sized farms with Rs 371000 /-, semi medium sized farms with Rs 385000 /- and highest in medium sized farms with Rs 392000 /- that makes a sample average of Rs 374500 /-.

Net returns per hectare was highest in medium sized farms with Rs. 266101.5/- followed by semi medium sized farms with Rs. 252861.5/-, small sized farms with Rs. 233693.5/- and lowest in marginal sized farms with Rs. 207517.5/- that makes a sample average of Rs. 240043.5/-.

Cost of production per quintal was lowest for medium sized farms with Rs. 4496.4/- followed by semi medium sized farms with Rs. 4805.03/-, small sized farms with Rs. 5181.4/- and highest in marginal sized farms with Rs. 5699.3/- that makes a sample average of Rs. 5045.5/-.

Input- output ratio was highest for medium sized farms i.e., 1:3.11, followed by semi medium sized farms i.e., 1:2.91, small sized farm i.e., 1:2.70 and lowest for marginal sized farms i.e., 1:2.46 that makes a sample average of input- output ratio of 1:2.79.

Table 3 reveals that cost concepts in red chilli crop per hectare in different farm size groups.

Cost A, cost B and cost C was highest in marginal sized farms i.e., Rs.107215, Rs.20067.5 and Rs.142482.5 per ha, respectively, followed by small sized farms i.e., 103249, 20057.5 and 137306.5 in per ha, followed by semi medium sized farms i.e., 100086, 20052.5 and 132138.5 in per ha and lowest in medium sized farm i.e., 95051, 20047.5 and 125898.5 respectively.

Sample average of cost A, cost B and cost C were Rs.101400.25, Rs.20056.25 and Rs.134456.5 per ha, respectively.

Table 4 reveals those measures of farm profitability in red chilli in different farm size groups. Gross returns per hectare was highest in medium size farms i.e., Rs. 392000 /- followed by semi medium size farm i.e., Rs. 385000/- and small size farms i.e., Rs.371000/- and lowest in marginal size farms i.e., Rs. 350000 /- that makes an overall average of gross returns among different farm groups i.e., Rs. 374500 /-.

Farm business income was highest in medium size farms i.e., Rs. 296949/- followed by semi medium size farms i.e., Rs. 284914 /-, small size farms i.e., Rs. 267751/- and lowest in marginal size farms i.e., Rs. 242785 /- that makes an overall average of farm business income among different farm groups i.e., Rs. 273099.75/-.

Farm investment income was highest in medium size farms i.e., Rs. 286149/- followed by semi medium size farms i.e., Rs. 272914 /-, small size farms i.e., RS 253751/- and lowest in marginal size farms i.e., Rs. 227585/- that makes an overall average of farm investment income among different farm groups i.e., Rs. 260099.75/.

Net returns per hectare was highest in medium sized farms with Rs. 266101.5/- followed by semi medium sized farms with Rs. 252861.5/-, small sized farms with Rs. 233693.5/- and lowest in marginal sized farms with Rs. 207517.5/- that makes an overall average of Rs. 240043.5/-.

Family labour income was lowest in medium size farms i.e., Rs. 10800 /- followed by semi medium size farms i.e., Rs. 12000 /-, small size farms i.e., Rs. 14000 /- and highest in marginal size farms i.e., Rs. 15200/- that makes an overall average of family labour income among different farm groups i.e., Rs. 13000/-.

**Table 1. Details about resource use and cost of cultivation of red chilli among different size of farm groups**

SI.No.	Particulars	Size of farm groups				Overall average
		Marginal(Rs/ha)	Small(Rs/ha)	Semi Medium(Rs/ha)	Medium(Rs/ha)	
1.	Hired human labour charges	25600(17.97)	24400(17.77)	23600(17.86)	22000(17.47)	23900(17.78)
2.	Imputed value of family labour charges	15200(10.67)	14000(10.20)	12000(9.08)	10800(8.58)	13000(9.67)
3.	Bullock labour charges	3000(2.11)	3000(2.18)	3000(2.27)	2500(1.99)	2875(2.14)
4.	Machinery labour charges	10500(7.37)	(7.65)	9800(7.42)	8400(6.67)	9800(7.29)
5.	Cost of seeds	25000(17.55)	24000(17.48)	23500(17.78)	23000(18.27)	23875(17.76)
6.	Cost of farm yard manures	10000 (7.02)	9500(6.92)	9300(7.04)	9000(7.15)	9450(7.03)
7.	Cost of chemical fertilizers	5000(3.51)	5000(3.64)	4700(3.56)	4600(3.65)	4825(3.59)
8.	Cost of irrigation charges	1000(0.70)	1000(0.73)	950(0.72)	900(0.71)	962.5(0.72)
9.	Cost of plant protection charges	20000(14.04)	19500(14.20)	19200(14.53)	19000(15.09)	19425(14.45)
10.	Miscellaneous charges	600(0.42)	600(0.44)	550(0.42)	500(0.40)	562.5(0.42)
11.	Interest on working capital @6%	3840(2.70)	3174(2.31)	2961(2.24)	2676(2.13)	3162.75(2.35)
12.	Depreciation on fixed resources	2500(1.75)	2400(1.75)	2350(1.78)	2300(1.83)	2387.5(1.78)
13.	Land revenue paid to government	175(0.12)	175(0.13)	175(0.13)	175(0.14)	175(0.13)
14.	Rental value of own land	18000(12.63)	18000(13.11)	18000(13.62)	18000(14.30)	18000(13.39)
15.	Interest on fixed capital @ 10%	2067.5(1.45)	2057.5(1.50)	2052.5(1.55)	2047.5(1.63)	2056.25(1.53)
16.	Total cost of cultivation	142480(100)	137310(100)	132140(100)	125900(100)	134525(100)

**Table 2. Costs and returns in red chilli crop per hectare in different farm size groups**

SI.No.	Particulars	Size of farm groups				Sample average
		Marginal	Small	Semi Medium	Medium	
1.	Total cost of cultivation (Rs. /ha)	142482.5	137306.5	132138.5	125898.5	134456.5
2.	Yield (q/ha)	25	26.5	27.5	28	23.88
3.	Gross returns (Rs. /ha)	350000	371000	385000	392000	374500
4.	Net returns(Rs. /ha)	207517.5	233693.5	252861.5	266101.5	240043.5
5.	Cost of production (Rs. /q)	5699.3	5181.4	4805.03	4496.4	5045.5
6.	Input -output ratio	1:2.46	1:2.70	1:2.91	1:3.11	1:2.79

Note: Price per quintal of red chilli produce is Rs.14000.

**Table 3. Cost concepts in red chilli crop per hectare in different farm size groups**

Sl.No.	Cost concepts	Size of farm groups				Sample average (Rs/ha)
		Marginal (Rs/ha)	Small (Rs/ha)	Semi Medium (Rs/ha)	Medium (Rs/ha)	
1.	Cost A	107215	103249	100086	95051	101400.25
2.	Cost B	20067.5	20057.5	20052.5	20047.5	20056.25
3.	Cost C	142482.5	137306.5	132138.5	125898.5	134456.5

**Table 4. Measures of farm profitability in red chilli crop per hectare in different farm size groups**

Sl.No.	Particulars	Farm size groups				Overall average (Rs/ha)
		Marginal (Rs/ha)	Small (Rs/ha)	Semi Medium (Rs/ha)	Medium (Rs/ha)	
1.	Gross returns	350000	371000	385000	392000	374500
2.	Farm business income	242785	267751	284914	296949	273099.75
3.	Farm investment income	227585	253751	272914	286149	260099.75
4.	Net returns	207517.5	233693.5	252861.5	266101.5	240043.5
5.	Family labour income	15200	14000	12000	10800	13000

#### 4. CONCLUSION

The study shows that costs and returns in red chilli cultivation in different farm size groups in Bhupalapalli district, Telangana. The present study revealed that cost of cultivation, gross returns and net returns are relatively higher in medium sized farms compared to semi medium, small and marginal sized farms.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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