



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; SP-10(8): 468-472
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www.thepharmajournal.com
Received: 28-06-2021
Accepted: 30-07-2021

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An economic analysis of production and marketing of red gram in Rajnandgaon district of Chhattisgarh

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Abstract

This study is based on “An economic analysis of production and marketing of major pulses in Rajnandgaon district of Chhattisgarh”. From the study area 100 sample farmers selected for research purposes. There were average family members was 5.62. Overall total owned and operational area was 2.80 ha/farm. The overall irrigated and un-irrigated area were 1.81ha/farm and 0.98 ha /farm respectively. An average cropping intensity was 148.25%. The overall total cost per hectare of red gram was found to be 18825.47(Rs/ha). Overall value of net income of red gram was 28125.73 Rs/ha. The overall B-C ratio was 1.50. Overall marketable surplus of red gram was 1.06qt. (44.24%). The overall CostA1, CostA2, Cost B1, Cost B2, CostC1, CostC2 and CostC3 of red gram were Rs 12858.77, Rs12858.77, Rs15858.77, Rs 16176.00, Rs 18508.23, Rs18825.46, Rs 20708.01 per hectare respectively for the sample farms.

Keywords: benefit-cost ratio, marketable surplus, cropping intensity

Introduction

Agriculture is biggest area of the financial action and has a crucial job in creating economy by conveying food and crude materials, work to a significant populace, capital for its own improvement and excesses for creating public economy. The agricultural development relies upon environment and production of homestead produce. India is the bigger pulses maker and customer. In Indian pulses request is a significant for the world economy. India represents around 24% of world production of pulses and 30 percent of worldwide imports. Pulses are a kind of leguminous yield that are gathered exclusively for the dry seed. Dried beans, lentils and peas are the most generally known and burned-through sorts of pulses. Pulses do exclude crops which are collected green (for example green peas, green beans)- these are named vegetable harvests. All Pulses are eco-accommodating, it is significant wellspring of protein and furthermore complementary with grains underway and utilization will have a significant task to carry out under the possibility.

Red gram/ Pigeon pea/ Arhar

Red gram is an important pulse crop in India. Pigeon pea, arhar and tur are name of red gram. *Cajanas cajan* is the scientific name of red gram. Red gram is often cross- pollinated crop, out crossing is mediated by bees. Hybrid varieties in red gram first in India have been developed by using genetic male sterility system. Arhar is grown on wide range of soil having Ph5-8. It is also sensitive to salinity. In India many peoples are red gram producer and consumer in the world. Most important pulse in area and production next to chickpea. It is highly nutritious with rich protein

Objectives

- 1) To examine growth rate of Area, Production and Productivity of red gram in Rajnandgaon district of Chhattisgarh.
- 2) To work out the cost and returns of red gram in the study area.

Methodology

Analytical tools

The simple averages and percentage statistical tools were applied to represent the results of study.

To analyze the pattern of growth in area, production and productivity of major crops in study area, Compound Growth Rate (CGR) was computed.

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The details of the formulae given as under:

Compound growth Rate

$$Y = A B^t$$

Taking log on both sides

$$\log Y = \log A + t \log B$$

Assuming, $\log Y = y$, $\log A = a$, $\log B = b$

We get, $y = a + bt$

Where, $t = 1, 2, 3 \dots\dots\dots n$

$y = \text{area/production/productivity of crops.}$

After regression between y and t We have value of a and b

Where, $a = \text{Constant}$, $b = \text{regression coefficient}$

$$\text{As, } b = 1 + r$$

$$\text{Hence, } r = b - 1$$

Therefore,

$$r = (\text{Anti-log of } b-1) \times 100$$

Where,

$r = \text{Compound growth rate}$

Cost Concept

For estimation of cost and returns of major crops, the standard cost concepts given by the Commission of Agricultural Costs and Prices (CACP) has been used which are given below-

Cost A1 = All actual expenses in cash without family labour cost

Value of hired human labour.

Value of bullock labour (owned & hired).

Value of machine labour (owned & hired).

Value of seed (produced & purchased).

Value of manure, fertilizer and pesticide

Irrigation charges and land revenue.

Interest on working capital.

Cost A2 = Cost A1 + rent paid for leased-in land.

Cost B1 = A1 + interest on value of owned capital (excluding land).

Cost B2 = B1 + Rental value of owned land & rent paid for leased land.

Cost C1 = B1 + Imputed value of family labour cost.

Cost C2 = B2 + Imputed value of family labour (human labour at market rate or statutory minimum wage rate whichever is higher).

Cost C3 = C2 + 10 % of cost C2 as managerial cost

Income measures

(a) Gross income

$$\text{Gross income} = \text{Net income} + \text{Gross cost}$$

(b) Net income

$$\text{Net income} = \text{Gross income} - \text{Gross cost}$$

(c) Input-output ratio

$$\text{Input-Output ratio} = \text{Gross income/Gross cost}$$

(d) B-C ratio

B-C ratio = Present worth of gross returns/Present worth of cost

Marketing pattern

Marketable surplus

It is actual quantity of a commodity, which is available with the farmers after meeting his requirement is the marketable surplus, it is computed by use of following mathematical model:

$$MS = P - (C+S)$$

Where, MS = Marketable surplus P = Total production C = Family consumption S = Quantity kept for seed.

Disposal pattern

To examine the marketing pattern of major pulses at different categories of farms, simple analysis was done. To estimate the marketable surplus of produce, total quantity used for different purposes is deducted from total production of crop. This marketable surplus are dispose or sell in difference place (mandi, consumer, broker etc.) that is disposable pattern.

Disposable pattern= mandi, consumer, broker etc.

Result and Discussion

Cost of cultivation of red gram

Total variable cost of red gram on sampled farm (Rs/ha) presented in table 1 and Total fixed cost of red gram on sampled farm (Rs/ha) presented in table 2. The table indicates the total cost per hectare in large farm was higher than in marginal farm. The overall total cost per hectare of red gram was found to be 18825.47 (Rs/ha). The cost of cultivation was found for marginal, small, medium and large farm which were 16870.1 (Rs/ha), 17862.71 (Rs/ha), 20085.03 (Rs/ha) and 22603 (Rs/ha) respectively. Cost of cultivation per hectare showed an upward trend with the rise in farm size. It was because the large farmers incurred more expenditure on modern farm inputs such as quality seed, fertilizer, machines, hired labour, etc. The maximum cost accrues by the human labour followed by the bullock labour. The minimum cost accrue by irrigation because of red gram was rainy season crop. The large farmers were more use plant protection as compare to marginal farmer. Further the total cost of large farmer was more than the marginal.

Table 1: Total variable cost of red gram on sampled farm (Rs/ha)

S. No.	Particular	Marginal	Small	Medium	Large	Overall
1	Family human labour	3254.8 (19.29)	3140.25 (17.57)	1806 (8.99)	1230.6 (5.44)	2649.46 (14.07)
2	Hired human labour	1430.4 (8.4)	1650.65 (9.24)	3541.35 (17.63)	4214.3 (18.64)	2315.80 (12.30)
	Total human labour	4685.2 (27.72)	4790.9 (26.82)	5347.35 (26.62)	5444.9 (24.08)	4965.26 (26.37)
3	Bullock labour	690 (4.09)	640.6 (3.58)	372.1 (1.85)	250 (1.10)	544.25 (2.89)
4	Machine charge	2525 (14.96)	2641.3 (14.78)	3490 (17.37)	3862 (17.08)	2948.79 (15.66)
5	Manure and fertilizer cost	3150 (18.67)	3362.7 (18.82)	3490.17 (17.37)	4178 (18.48)	3484.61 (18.51)

6	Plant protection	780.8 (4.62)	1206 (6.75)	1462.16 (7.27)	1488.2 (6.58)	1234.3 (6.55)
7	Seed cost	1232 (7.30)	1275.15 (7.13)	1392 (6.93)	1630 (7.21)	1343.84 (7.13)
8	Irrigation charges	0 (00.00)	0 (00.00)	160 (0.79)	242 (1.07)	62.72 (0.33)
9	Interest on working capital	522.52 (3.09)	556.66 (3.11)	628.55 (3.12)	683.80 (3.02)	583.35 (3.09)
	Total variable Cost /TVC	13585.5 (80.53)	14473.31 (81.02)	16342.33 (81.36)	17778.9 (78.65)	15167.14 (80.56)

Note: Figure in the parentheses indicates the percentage

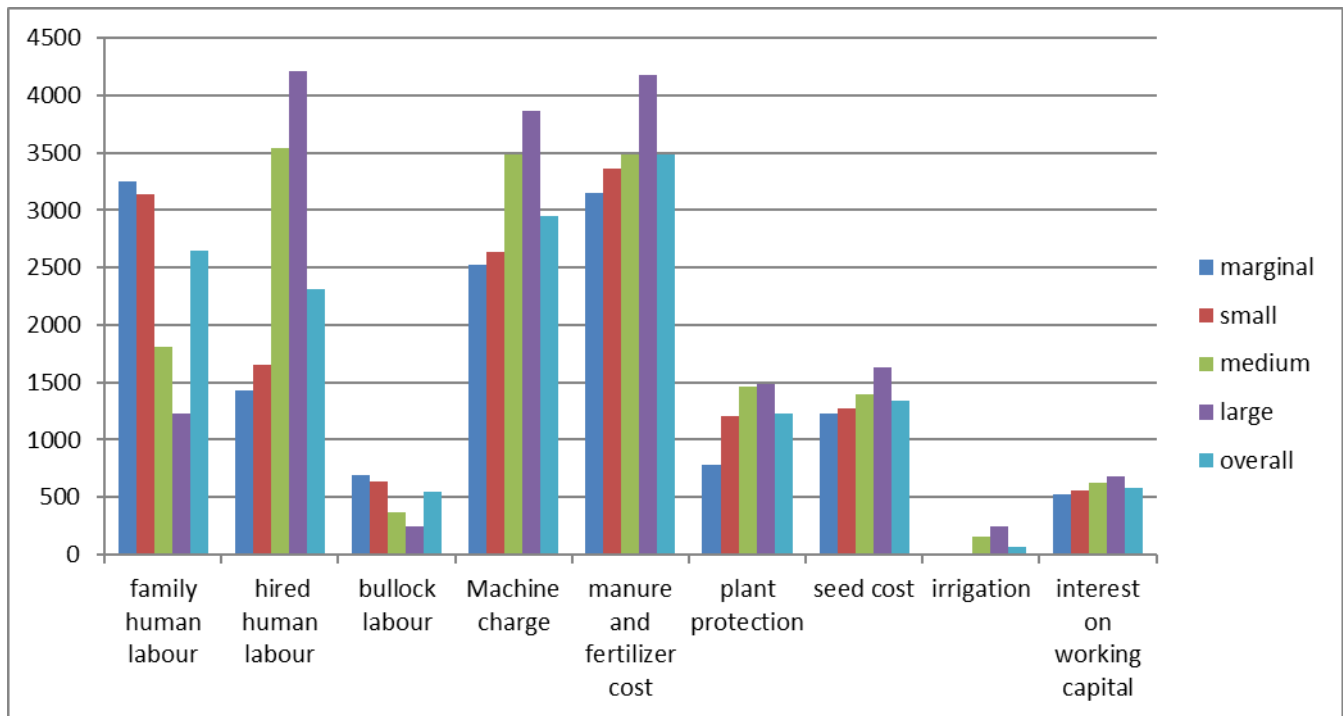


Fig 1: Total variable cost of red gram of different size of sample households

Table 2: Total fixed cost of red gram on sampled farm (Rs/ha)

S. No.	Particular	Marginal	Small	Medium	Large	Overall
1	Rental value on owned land	3000 (17.78)	3000 (16.79)	3000 (14.93)	3000 (13.27)	3000 (15.93)
2	Land revenue	12 (0.07)	12 (0.06)	12 (0.05)	12 (0.05)	12 (0.06)
3	Depreciation	116.2 (0.68)	216 (1.20)	362 (1.80)	942 (4.16)	341.08 (1.81)
4	Interest on fixed capital	156.41 (0.92)	161.4 (0.90)	368.7 (1.83)	870.1 (3.84)	305.23 (1.62)
	Total fixed cost/TFC	3284.61 (19.47)	3389.4 (18.97)	3742.7 (18.63)	4824.1 (21.34)	3658.32 (19.43)
	Total cost (TVC+TFC)	16870.1 (100.00)	17862.71 (100.00)	20085.03 (100.00)	22603 (100.00)	18825.47 (100.00)

Note: Figure in the parentheses indicates the percentage.

Yield value of output and cost of production per quintal

The output of yield value per hectare and cost of production per qt. of red gram on sample farms have been worked out in table 3. The table revealed that the overall yield of red gram was 7.82qt/ha. Overall cost of production was estimated 2400.90 Rs/qt. The cost of production for marginal, small, medium and large farms were found 2369.4Rs/qt, 2344.18Rs/qt, 2473.52Rs/qt and 2556.90Rs/qt. respectively.

The overall gross income was 46951.2Rs/ha. The gross income were 42720Rs/ha, 45720Rs/ha, 48720Rs/ha and 53040Rs/ha for the marginal, small, medium and large farmers respectively. The gross income was associated with the higher yield on large farms. The gross income of large farmers was found to be higher than the marginal farmers as yield of red gram was more for large farmers.

Table 3: Per hectare yield, value of output and cost of production per quintal of red gram

S. No.	Particular	Marginal	Small	Medium	Large	Overall
1	Total cost	16870.1	17862.71	20085.03	22603	18825.46
2	Yield	7.12	7.62	8.12	8.84	7.8252
3	Price	6000	6000	6000	6000	6000
4	Gross income	42720	45720	48720	53040	46951.2
5	Cost of production	2369.4	2344.18	2473.52	2556.90	2400.90

Measures of farm profit

Sample farms of different size groups have been worked out for net income, B-C ratio and Input- Output ratio per hectare which is in table 4. Overall value of net income of red gram

was 28125.73Rs/ha. The overall input-output ratio and B-C ratio were 2.50 and 1.50 respectively. The net income of large farmers was maximum as compare as marginal farmers.

Table 4: Cost and returns of red gram on the sample farms for different group of farms (Rs/ha)

S. No	Particular	Marginal	Small	Medium	Large	Overall
1	Total cost	16870.1	17862.71	20085.03	22603	18825.46
2	Gross income	42720	45720	48720	53040	46951.2
3	Net income	25849.9	27857.28	28634.97	30437	28125.73
4	B-C ratio	1.53	1.55	1.42	1.34	1.50
5	Input- Output ratio	2.53	2.55	2.42	2.34	2.50

Cost and returns on the basis of cost concept

The Cost and returns on the basis of cost concept in the production of red gram on the sample farm of different size groups have been presented table 5. From the table overall CostA1, CostA2, Cost B1, Cost B2, CostC1, CostC2 and CostC3 were Rs 12858.77, Rs12858.77, Rs15858.77, Rs

16176.00, Rs 18508.23, Rs18825.46, Rs 20708.01 per hectare respectively for the sample farms. The overall income over different cost i.e. income over Cost A1, A2, B1, B2, C1, C2 and C3 wereRs.34092.42, Rs 34092.42, Rs 31092.42, Rs 30775.19, Rs 28442.96, Rs 28125.73 and 26243.18 per hectare respectively.

Table 5: Break-up of total cost, cost concept wise income over different cost in red gram (Rs/ha)

Particular	Marginal	Small	Medium	Large	Overall
Break-up cost					
CostA1	10446.9	11549.06	14898.33	17490.3	12858.77
CostA2	10446.9	11549.06	14898.33	17490.3	12858.77
CostB1	13446.9	14549.06	17898.33	20490.3	15858.77
CostB2	13615.3	14722.46	18279.03	21372.4	16176.00
CostC1	16701.7	17689.31	19704.33	21720.9	18508.23
CostC2	16870.1	17862.71	20085.03	22603	18825.46
CostC3	18557.1	19648.98	22093.53	24863.3	20708.01
Income over different cost					
Income over cost A1	32273.1	34170.93	33821.67	35549.7	34092.42
Income over cost A2	32273.1	34170.93	33821.67	35549.7	34092.42
Income over cost B1	29273.1	31170.93	30821.67	32549.7	31092.42
Income over cost B2	29104.7	30997.53	30440.97	31667.6	30775.19
Income over cost C1	26018.3	28030.68	29015.67	31319.1	28442.96
Income over cost C2	25849.9	27857.28	28634.97	30437	28125.73
Income over cost C3	24162.9	26071.01	26626.47	28176.7	26243.18

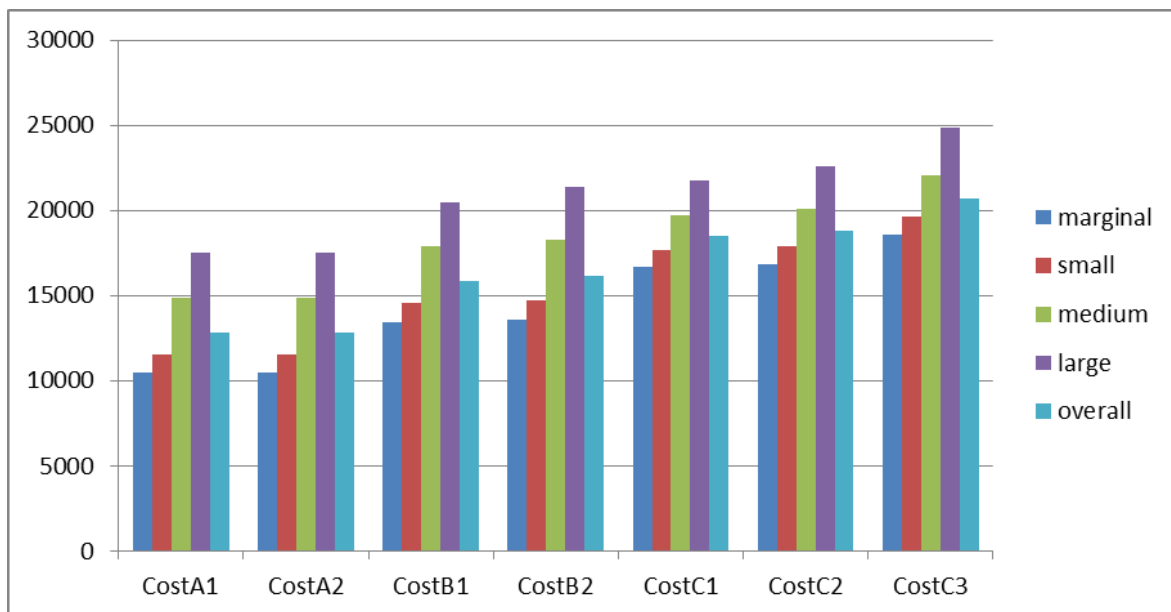


Fig 2: Cost of cultivation of red gram of different size of sample household

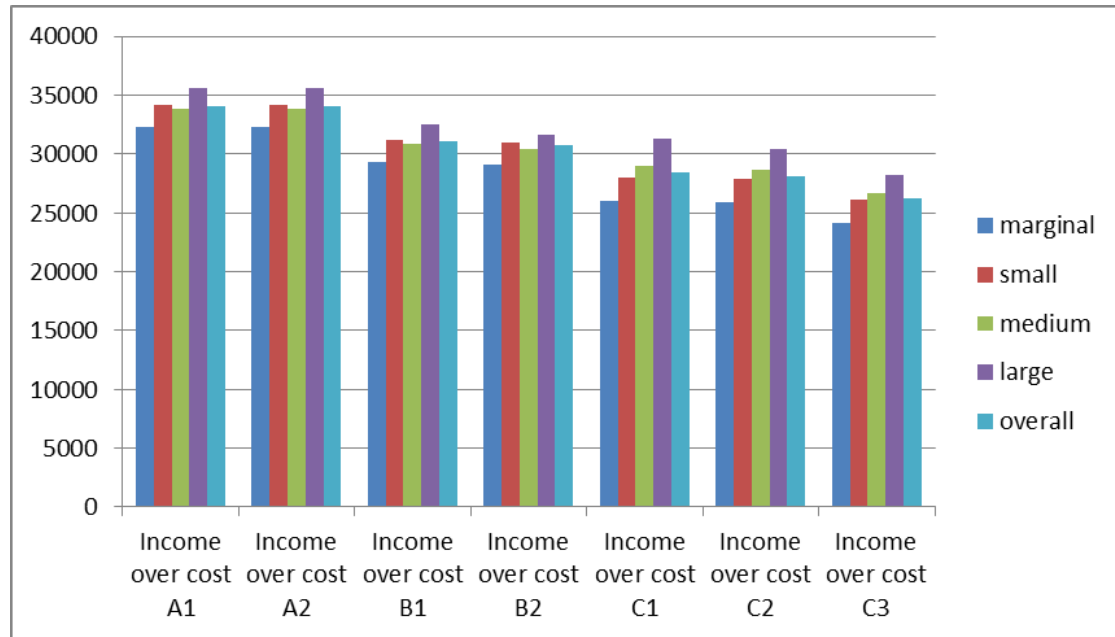


Fig 3: Income over different costs of red gram

Conclusion

The overall total cost per hectare of red gram was found to be 18825.47(Rs/ha). The overall yield of red gram was 7.82qt/ha. Overall cost of production was estimated 2400.90 Rs/qt. The overall gross income was 46951.2Rs/ha. Overall value of net income of red gram was 28125.73 Rs/ha. The overall input-output ratio and B-C ratio were 2.50 and 1.50 respectively.

Reference

1. Dhurwey CK, Choudhary VK, Shrey R. Estimation of compound growth rate and cost of cultivation of soybean in the Chhattisgarh plain. *Journal of Pharmacognosy and Phytochemistry* 2019;8(6):985-988.
2. Divya A. An economic analysis of production and marketing of major pulses in Raigarh district of Chhattisgarh 2014. Available at SSRN 2518931.
3. Hussain AH, Khattak NURK, Khan AQK. Costs benefit analysis of different rice varieties in district Swat 2008.
4. Shende NV, Meshram RR. Cost benefit analysis and marketing of tomato. *American International Journal of Research in Formal, Applied & Natural Sciences* 2015;11(1):46-54.
5. Sharma C. An economic analysis of production and marketing of major crops in Balodabazarbhatapara district of Chhattisgarh (Doctoral dissertation, Indira Gandhi Krishi Vishwavidyalaya, Raipur, CG 2015).