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Costs and income analysis of gram pulse crop cultivation in Azamgarh District of eastern Uttar Pradesh

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Abstract

Pulses are important with the view of their food and nutritional security and also income and employment generation ability possibility to raise the cropping intensity due to its nature of best fit with food grain production system. Study was conducted in Thekma block of Azamgarh district of Uttar Pradesh. A sample of 100 respondents were chosen through purposive cum proportionate random sampling and were categorized as marginal, small and medium size group of farms. A survey was conducted by personal interview method with use of pre-structured schedule. Simple tabular analysis was done to find out the result. It was found that Gram cultivation was profitable at all categories of farm. The total costs of cultivation and gross income per hectare were positively related with size of farms, whereas negative trend of net income with farm size should that resources are not efficiently used in Gram cultivation at larger size group of farm.

Keywords: Gram, tabular analysis, weighted mean

Introduction

Pulses are good sources of proteins and commonly called the poor man's meat (Reddy 2010). The frequency of pulses consumption is much higher than any other source of protein; about 89.00 percent population consume pulses at least once a week, while only 35.40 percent of persons consume fish or chicken/meat at least once a week in India (IIPS, ORC Macro, 2007). At the world level pulses are grown in an area of 78 million hectares with an annual production of 70 million tonnes (MT) and productivity of 908 kg/hectare (FAO & Agricultural org. 2012). In India pulses are grown on 22.23 million hectares of area with an annual production of 13.15 million tonnes (MT). India accounts for 33% of the world's area under pulses and 22% of the world production of pulses. About 90.00% of the global Pigeonpea, 65.00% of chickpea and 37.00% of lentil area falls in India, corresponding to 93.00, 68.00 and 32.00 percent; of the global production, respectively (FAO Stat 2011).

Area production and productivity of pulses in India were 23.47 million hectare, 18.34 million tonnes, and 781 kg/ha respectively (National Council of Applied Economic Research New Delhi 2012-13). While area, production, and productivity in Uttar Pradesh were 2.31 million hectare, 1.71 million tones and 742.00 kg/hectare respectively (Directorate of Economics and Statistics, Department of Agriculture and cooperation 2013-14).

Area, production, and productivity of pulse crops in Azamgarh district were 18533.00 hectare, 22352 metric tonnes, and 12.6 Q/ha respectively during the period 2011-2012. (Statistical Report District Azamgarh 2011-12). Area, production and productivity of Gram pulse crop in Azamgarh district were 3213.00 hectare, 4220.00 metric tonnes and 13.13 Q/ha respectively during the period 2011-12. (Statistical Report District Azamgarh 2011-12).

Methodology

Sampling technique

The purposive com random sampling design was used for the selection of district, block villages and respondents.

Selection of District: Azamgarh district of eastern U.P. was selected purposively to avoid the operational inconvenience of the investigator.

Selection of Block: Out of twenty two blocks of selected district, one block namely Thekma having highest area under gram was selected purposively.

Selection of village: A list of all the villages falling under selected block was prepared and arranged in ascending order according to area covered by gram crop and five villages were selected randomly from the list.

Selection of respondents: A lists of gram, pea and Pigeonpea growers of selected villages were prepared along with their size of holding. Thus, the farm holding categorised into three size groups (1) Marginal, (2) Small and (3) Medium: (2.0-4.0 ha). From this list a sample of 100 respondents were selected following the proportionate random sampling technique.

Collection of Data: Primary data were collected through personal interview method on well pre-structured schedule specially designed for this study, while secondary data were collected from published/ unpublished record of district and blocks, headquarters, books, journals, periodicals, and news bulletins etc. among different pulses grown in Azamgarh district, Gram crop had covered the area i.e. 3213.00 hectare. Thus these of Gram were considered for study. The data pertained for the agriculture year 2015-2016.

Analytical Tools: Analytical tools used for the analysis and interpretations of the data are given below.

Tabular analysis: Tabular analysis was used to compare the different parameters among marginal, small and medium size

group of the farmers. Family composition, investment pattern; crop-wise costs and returns etc. were computed and presented in tabular forms. In this computation weighted average was used.

$$W.A. = \frac{\sum W_i X_i}{\sum W_i}$$

Where

W.A. = Weighted average
 Xi = Variable
 Wi = Weight of variable

Result and Discussion

Per hectare costs of cultivation

The per hectare costs of gram in study area is presented in Table 1. it is revealed from the table that the total overall average per hectare cost of cultivation of gram is accounted for Rs. 33431.35. The maximum per cent share of the costs is constituted by seed i.e. 23.70 per cent followed by human labour, machinery charges, and fertilizer corresponding to 23.34, 13.37, and 7.26 per cent, respectively on overall farms. The average costs of cultivation of gram on different categories of farms are also mentioned in the table which was maximum of Rs. 34016.20 on small farm followed by marginal and medium size of farm corresponding to Rs. 33657.33 and 32470.80 respectively. Average cost of production per quintal was recorded as Rs. 1497.94. The higher per hectare cost of cultivation on marginal farm was found due to heavy expenditure on human labour and fertilizer as compared to other categories of farms. It may be concluded that costs of cultivation per hectare had the indirect association with the size of farms (Table 1 & Fig 1).

Table 1: Per hectare costs of different inputs used in Gram production (Rs.)

S. No	Particulars	Size group of farms			
		Marginal	Small	Medium	Overall average
1.	Human Labour	10342.87 (30.72)	6400.01 (18.81)	6037.74 (18.59)	7803.29 (23.34)
a.	Family Labour	9657.15 (28.69)	3866.67 (11.36)	2113.21 (6.51)	5573.78 (16.68)
b.	Hired Labour	685.72 (2.03)	2533.34 (7.45)	3924.53 (12.09)	2229.52 (6.67)
2.	Machinery Charges	3771.44 (11.20)	5100.01 (14.99)	4679.26 (14.41)	4469.96 (13.37)
3.	Seed	6205.72 (18.44)	9166.67 (26.95)	8784.91 (27.05)	7923.50 (23.70)
4.	Fertilizer	2603.42 (7.74)	2364.58 (6.96)	2273.20 (7.00)	2429.47 (7.26)
5.	Total working capital	22923.45 (68.10)	23031.27 (67.70)	21775.11 (67.06)	22626.22 (67.68)
6.	Interest on working capital	1146.17 (3.40)	1151.57 (3.38)	1088.75 (3.35)	1131.31 (3.38)
7.	Rental value of land	6000.00 (17.83)	6000.00 (17.63)	6000.00 (18.48)	6000.00 (17.94)
8.	Interest on fixed capital	528.01 (1.57)	714.01 (2.09)	655.09 (2.01)	625.79 (1.87)
9.	Sub total	30597.63 (90.90)	30923.90 (90.90)	29518.95 (90.90)	30392.19 (90.90)
10.	Managerial Cost @10% of sub-total	3059.76 (9.09)	3092.30 (9.09)	2951.89 (9.09)	3039.18 (9.09)
	Grand total	33657.33 (100)	34016.2 (100)	32470.80 (100)	33431.35 (100)

Figures in parentheses indicate the percentage to total

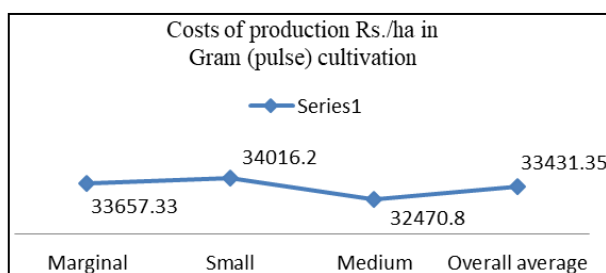


Fig. 1: Indicate the Rs./hectare cost of production

Per hectare income measures

The per hectare income measures of gram are presented in Table 2. It is depicted from the table that the per hectare gross income on overall farms was found to 75843.67. It was maximum of Rs. 81678.00 small size of farms followed by medium and marginal categories of farms corresponding to Rs. 73980.50 and Rs.72253.50 respectively. The overall net income per hectare was found to 42412.00. It was maximum of Rs. 47661.85 on small size of farms followed by medium and marginal categories of farms corresponding to Rs.

41509.66 and 38596.17 respectively. The overall family labour and farm business income accounted for 51025.12 and 57659.77 respectively. The output-input ratio came to 1:2.26 on overall farm which was highest on small farms i.e. 1:2.40 followed by medium and marginal farms corresponding to 1:2.27 and 1:2.14 respectively. It may be calculated that gram cultivation was more profitable on small farms of the study area due to high cost and higher yield per hectare. It may be concluded that Gram cultivation had the scope to increase the additional input to receive the additional income (Table 2. & Fig 2).

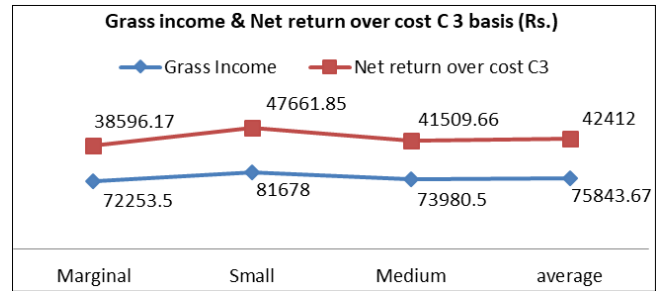


Fig 2: Grass income & Net return over cost C 3 basis (Rs.)

Table 2: Measures of per hectare cost and profit of Gram (Rs.)

S. No	Particulars	Size group of farms			Overall average
		Marginal	Small	Medium	
1.	Cost A1/A2	14412.47	20316.17	20750.65	18183.76
2.	Cost B1	14940.48	21057.18	21405.74	18818.41
3.	Cost B2	20940.48	27057.18	27405.74	24818.41
4.	Cost C1	24597.63	24923.85	23518.95	24392.18
5.	Cost C2	30597.63	30923.85	29518.95	30392.18
6.	Cost C3	33657.33	34016.15	32470.84	33431.35
7.	Yield q/ha.				
a.	M.P	18.94	21.20	19.22	19.76
b.	B.P	36.92	45.34	40.76	40.79
8.	Grass Income	72253.50	81678.00	73980.50	75843.67
a.	M.P	64869.50	72610.00	65828.50	67685.11
b.	B.P	7384.00	9068.00	8152.00	8158.55
9.	Net return over cost C3	38596.17	47661.85	41509.66	42412
10.	Family labour Income	51313.02	54620.82	46574.26	51025.12
11.	Farm Business income	57841.03	61361.83	53229.35	57659.77
12.	Cost of production (Rs/q.)				
a.	On Cost C3 basis	1599.31	1403.96	1501.71	1497.94
13.	Input-Output ratio				
a.	On the basis of cost A1	1:5.01	1:4.02	1:3.56	1:4.26
b.	On the basis of cost B1	1:4.83	1:3.87	1:3.45	1:4.11
c.	On the basis of cost B2	1:3.45	1:3.01	1:2.69	1:3.08
d.	On the basis of cost C1	1:2.93	1:3.27	1:3.14	1:3.10
e.	On the basis of cost C2	1:2.36	1:2.64	1:2.50	1:2.4
f.	On the basis of cost C3	1:2.14	1:2.40	1:2.27	1:2.26

Conclusion

Per hectare total cost of cultivation, gross income and Output input ratio of gram were Rs. 33431.35, Rs. 75843.67 and 1:2.26.

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