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Research Article

Economic analysis of groundnut crop in Jaipur district of Rajasthan

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SUMMARY : The present study was conducted to analyze the economics of groundnut crop. The study area was selected on the basis of highest area and production under this crop. The selected area was Jaipur district under groundnut crop. The present investigation was carried out to study the cost of cultivation and constraints in production confronted by farmer of selected groundnut crop. In groundnut about 77 per cent cost was variable cost and among fixed cost, renal value of owned land was found highest (17 %) of the total cost. The overall cost of production was Rs. 2399 on cost C_3 basis. The gross income per hectare in cultivation of groundnut was Rs. 57557. The net income was workout Rs. 8610. However, return on per rupee with rental value owned land was Rs. 1.16 and without rental value Rs. 1.41. The study of constraints in production of the groundnut crop revealed that all the production problems were common in the study area. The timely not availability of labour, irrigation supply, electricity, lack of storage facility at farm level, weeding problem, unawareness of the seed rate were the major constraints identified in production of oilseed crops.

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BACKGROUND AND OBJECTIVES

Among the oilseed crops groundnut is most popular crop in India. It occupies a pre-eminent position in the national edible oil economy. It is regarded as poor man's almonds since it contains about 25 per cent protein, 45 per cent edible oil and 26 per cent carbohydrates besides other essential nutrients. Groundnut can be used like other legumes and grains to make a lactose free milk like beverage, peanut milk. The oilcake obtained after the extraction of the oil is a valuable organic manure and animal feed. It contains 7-8 per cent nitrogen, 1.5 per cent phosphorus and 1.5 per cent potash. The major groundnut growing countries in the world are India, China, USA and West Africa. India occupies the first position in respect of area and production of groundnut in the world. It is grown on 5.47 million hectares area with production of 5.51 million tonnes in the year 2009-10 (Anonymous, 2011). The major groundnut producing states of the country are Gujarat, Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra, Rajasthan and Uttar Pradesh. Rajasthan contributes about 3.77 per cent area and 4.28 per cent production of groundnut in the country (Anonymous, 2011). The area and production of groundnut crop, Rajasthan has fifth position in production and sixth position in area. The country witnessed sizeable increase in the import of edible oils from 11.60 metric tonnes in 1995-96 to 42.17 metric tonnes in 2006-07. Demand for edible oils was at 13.9 million tonnes in 2004-05 (Anonymous, 2009). This demand expected to go up 19 million tonnes by 2009-10. The demand for oilseeds in India is rising at a faster rate and will be doubled by 2020 AD resulting in rising gap between domestic supply and consumption. The present level of oilseed production of the country needs to be increased by three times to meet out the

projected demand for edible oil.

RESOURCES AND METHODS

The present study was conducted in the Rajasthan state. Multi-stage sampling was used for the selection of primary data of the study. Groundnut was selected on the basis of highest area. For the present study, Jaipur district was selected on the basis of highest area. One tehsil was selected from the selected district. A list of all villages in selected tehsil was prepared with area under the crop. Four villages from selected tehsil were selected on the basis of highest area. A list of all farmers growing selected groundnut crop in selected villages was prepared and arranged in ascending order on the basis of area under groundnut crop. The cumulative total method was used to categorize the farmers in different size groups *i.e.* small, medium and large. The fourty farmers were selected randomly from selected tehsil. Both primary as well as secondary data were used for the present study. Information regarding various cost components in production of groundnut crop *viz.*, costs of various inputs, quantity through personal interview method on pre-structured data schedule.

Analytical framework:

Cost of cultivation:

The cost of cultivation of groundnut crop was worked out by using various cost concepts defined below (Raju and Rao, 2004).

Cost A_1: It includes:

Value of hired human labour, value of hired and owned animal labour, value of hired and owned machine labour, value of seed (both farm seed and purchased), value of manures (owned and purchased) and fertilizers, depreciation on fixed assets, irrigation charges, land revenue, interest on working capital and miscellaneous expenses.

Cost A_2: Cost A_1 + rent paid for leased in land.

Cost B_1: Cost A_1+ interest of fixed capital (excluding land)

Cost B_2: Cost B_1 + rental value of owned land + rent for leased in land.

Cost C_1: Cost B_1 + imputed value of family labour.

Cost C_2: Cost B_2 + imputed value of family labour.

Cost C_3: Cost C_2 + 10 per cent of cost C_2 as management cost.

Cost of production:

$$\text{Cost of production qt} = \frac{\text{Cost of cultivation} - \text{value of by product /ha.}}{\text{Quantity of main product /ha.}}$$

Constraints in production:

The constraints in production of groundnut crop were studied by using simple tabular method in percentage term.

OBSERVATIONS AND ANALYSIS

The experimental findings obtained from the present study have been discussed in following heads:

Cost concepts:

The Table 1 revealed that the cost A_1 which included the cost of various variable components and cost of depreciation on fixed assets, land revenue and amount of interest on working capital except imputed value of family labour and rent paid for leased land, interest on fixed capital and value was Rs. 33509.1 on overall basis. This cost was found increasing trend with the increase farm size. The cost A_2 which included rent paid for leased in with cost A_1 and this cost same as the cost A_1 which indicated that no leased land was operated by any selected farmers for cultivation of rapeseed-mustard in the area. The average value of cost B_1 was worked out Rs. 35213.4. This cost was also having positive correlation with the farm size (Deoghare and Agarwal, 1994). However, rental value of owned land was the same for all farmers, but was found higher in large farms due to higher interest rest on fixed capital followed by medium farms. In cost B_2, rental value of owned land and rent paid for leased in land included with cost B_1 and was estimated on an average about Rs. 45213.4. It was higher due to interest paid on fixed assets and was recorded increasing trend with increase the farm size (Sharma *et al*., 2002). In case of cost C_1, imputed value of family labour and value of cost B1 included with this cost, the average cost C_1 was worked out about Rs. 45445.5. Cost C_2 included the value of cost B_2 plus imputed value of family labour and was estimated about Rs. 55445.5 of total cost. The cost C_2 indicated the contribution of family labour in the various operations performed on a cultivation of rapeseed-mustard crop. The cost C_3 included the total cost of production (cost C_2) plus 10 per cent of the cost C_2 as management cost. This cost showed the role of household played their role as a manager in cultivation of the crop.

Table 1 : Cost of cultivation per hectare of groundnut on different cost concepts basis (Rs./ha.)

Costs	Small	Medium	Large	Overall average
Cost A_1	24346.2	34881.7	41299.3	33509.1
Cost A_2	24346.20	34881.71	41299.27	33509.1
Cost B_1	25868.20	36606.71	43165.27	35213.4
Cost B_2	35868.20	46606.71	53165.27	45213.4
Cost C_1	41444.60	45356.71	49535.27	45445.5
Cost C_2	51444.60	55356.71	59535.27	55445.5
Cost C_3	56589.06	60892.38	65488.80	60990.1

Cost of production:

The cost of production per quintal of groundnut on different cost concepts basis is given in Table 2. It is evident from Table 2 that the overall cost of production per quintal of groundnut was Rs. 2399.9 on C_3 basis. The cost of production on c_3 per quintal small, medium and large farms was Rs. 2485.3, Rs. 2381.5 and Rs. 2332.9, respectively.

Table 2: Cost of production of groundnut on different farm size holdings (Rs./Qtl.)

Cost	Small	Medium	Large	Overall average
Cost A_1	831.9	1199.2	1325.0	1118.7
Cost A_2	831.9	1199.2	1325.0	1118.7
Cost B_1	909.9	1277.6	1402.7	1196.7
Cost B_2	1422.7	1732.1	1819.4	1658.1
Cost C_1	1708.7	1675.3	1668.1	1684.0
Cost C_2	2221.5	2129.9	2084.8	2145.4
Cost C_3	2485.3	2381.5	2332.9	2399.9

Profitability of groundnut:

The production per hectare of groundnut and gross returns on sample farms are given in Table 3. This table revealed that on an average, productivity of groundnut was 21.8 quintals per hectare. The yield was highest (24.0 quintals) on large farms, followed by medium farms (22.0 quintals) and small farmers (19.5 quintals) which indicated that the size of holding increased the productivity of groundnut in the study area. The gross returns increased with increase in the size of holding (Gaddi *et al*., 2002). On an average Rs. 64055.8 was worked out as a gross income from the crop in the sowing area.

Table 3 : Profitability per hectare of groundnut cultivation on different size holdings

Size holding	Yield main (q/ha)	Value of main product	By-product (q/ha)	Value of By-product	Gross income (Rs. /ha.)
Small	19.5	49432.5	32.5	8125	57557.5
Medium	22.0	55770	34.0	8500	64270
Large	24.0	60840	38.0	9500	70340
Average	21.8	55347.5	34.8	8708.3	64055.8

Income from groundnut cultivation:

A comparison of various income measures from groundnut cultivation in Jaipur district are given in Table 4. It is evident from Table 4 that on an overall basis, gross income per hectare of groundnut cultivation was Rs. 64055.83 on sample farms. It was Rs. 57557.5, Rs. 64270.0 and Rs. 70340.0, on small, medium and large farms, respectively. The gross income per hectare from groundnut cultivation was highest on large farms as compared to medium and small farms (Adisarwanto *et al*., 2000) mainly because of higher productivity on large farms. Return over variable cost was worked out by deducting the cost A_1 from the gross income and found higher on small farms than the medium and large farms due to less variable cost, which was Rs. 33211, Rs. 29388 and Rs. 29041 small, medium and large, respectively. Farm business income represents returns over variable cost and rent paid for leased in land (Cost A_2) as it was returns from variable cost because no leased in land was operated by farmers. In case of family labour income cost B_2 was deducted from the gross income, it was Rs. 21689.30, Rs. 17663.29 and Rs. 17174.73, respectively on small, medium and large farms. On an overall, family labour income was worked out Rs. 18842.44 per hectare. The overall net income from groundnut cultivation was Rs. 8610.31 per hectare. Among different size groups, it was Rs. 6112.90, Rs.8913.29 and Rs.10804.73 per hectare on small, medium and large, farm size of holdings, respectively. The net income increased with increase in size of holding (Grover and Singh, 2007). Returns to management was estimated Rs. 1.12, Rs.1.16 and Rs. 1.18 on small, medium and large farms, respectively. The overall basis return per rupee was Rs. 1.16. The return per rupee was highest on large farms followed by medium and small farms.

Table 4 : Returns from cultivation of groundnut crop on different farm size holdings (Rs./ha.)

Particulars	Category of the farmers			Overall average
	Small	Medium	Large	
Gross income	57557.50	64270.00	70340.00	64055.83
Returns over variable cost	33211.30	29388.29	29040.73	30546.77
Farm business income	33211.30	29388.29	29040.73	30546.77
Family labour income	21689.30	17663.29	17174.73	18842.44
Net income	6112.90	8913.29	10804.73	8610.31
Returns to mgt.	968.44	3377.62	4851.20	3065.75
Returns per rupee	1.12	1.16	1.18	1.16
Returns per rupee without rental value of own land	1.39	1.42	1.42	1.41

Returns per hectare on different cost concept basis:

The net return on different cost concept basis was worked out by deducting the respective cost from the gross income minus cost A_1, A_2 etc. and are presented in Table 5. An overall basis, returns from the cost A_1, and A_2, was same Rs. 30546.77 and on cost B_1, B_2, C_1, C_2 and C_3 were Rs. 28842.44, Rs. 18842.44, Rs. 18610.30, Rs. 8610.30 and Rs. 3065.75 per hectare of groundnut cultivation, respectively. The net returns decreased with increase in size of holding mainly because of higher costs incurred on medium and large farms (Rajput and Verma, 2000).

Table 5: Returns per hectare from groundnut cultivation on different cost concepts basis

Particulars (Rs./ha.)	Category of the farmers			Overall average
	Small	Medium	Large	
Cost A1	33211.3	29388.3	29040.7	30546.77
Cost A2	33211.3	29388.3	29040.7	30546.77
Cost B1	31689.3	27663.3	27174.7	28842.44
Cost B2	21689.3	17663.3	17174.7	18842.44
Cost C1	16112.9	18913.3	20804.7	18610.31
Cost C2	6112.9	8913.3	10804.7	8610.31
Cost C3	968.4	3377.6	4851.2	3065.75

Returns per rupee of investment:

Returns per rupee of investment from groundnut cultivation on the basis of different cost concept are given in Table 6. An average, the returns per rupee of investment on cost A_1, A_2, B_1, B_2, C_1, C_2 and C_3 were Rs. 1.97, Rs. 1.97, Rs. 1.87, Rs. 1.44, Rs. 1.41, Rs. 1.15 and Rs. 1.05, respectively. The return per rupee increased with increase in size of holding (Rajput *et al*., 1998).

Constraints in production of groundnut:

The analysis of production constraints revealed (Table 7) that all farmers faced the problems such as no availability of quality seed in time, recommended dose of seed rate, problems in timely sowing due to availability of machine labour, seed, insecticides etc. Among the production constraints, majority of the farmers (80 %) of study area facing the problem in weeding due to non availability of hired labour during weeding time. About 71 per cent farmers reported that labour was the major problem especially during harvesting and weeding time. On an average 63 per cent farmers reported the problem of erratic electricity supply for operating tube well. About 30-40 per cent majority of the farmers faced the problems of seed availability, seed treatment, recommended seed rate etc. In the study area. 30 per cent farmers reported that they are not getting fertilizers in sufficient quantity timely.

Table 6: Returns per rupee of investment from groundnut cultivation in Jaipur district

Particulars	Category of the farmers			Overall average
	Small	Medium	Large	
Cost A_1	2.36	1.84	1.70	1.97
Cost A_2	2.36	1.84	1.70	1.97
Cost B_1	2.23	1.76	1.63	1.87
Cost B_2	1.60	1.38	1.32	1.44
Cost C_1	1.39	1.42	1.42	1.41
Cost C_2	1.12	1.16	1.18	1.15
Cost C_3	1.02	1.06	1.07	1.05

Conclusion:

The major groundnut producing states of the country are Gujarat, Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra, Rajasthan and Uttar Pradesh. The present study was conducted in the Rajasthan as it is one of the major producing states of groundnut in India. Among the number of oilseeds crops grown in Rajasthan state, groundnut crop was selected on the basis of highest area under this crop. Jaipur district for groundnut was selected for the study. Both primary as well as secondary data were used for the present study. For cultivation of groundnut, farmers spent average

Table 7: The constraints in production of groundnut crop confronted by farmers

Production (%)	Small	Medium	Large	Average
Timely not availability of seed	28.7	37.6	45.2	37.2
Unaware about seed treatment	36.7	27.6	22.8	29.0
Unaware about recommended seed rate	52.4	43.4	28.6	41.5
Problems in timely sowing	19.3	13.2	9.5	14.0
Timely not - availability of irrigation	27.5	34.2	41.9	34.5
Timely not - availability of fertilizers	23.4	29.9	36.6	30.0
Timely not - availability of insecticides and pesticides	11.4	16.2	21.7	16.4
Weeds problems	71.6	80.4	89.2	80.4
Timely not - availability of labour	59.2	68.7	87.3	71.7
Timely not - availability of electricity	55.2	64.7	70.1	63.3

Rs. 56885 on one hectare land. The cost of cultivation was highest (Rs. 61335.3) on large farm followed by medium and small farms. About 77 per cent costs were estimated as variable cost. Among variable cost, the highest cost (22.6 %) was recorded for causal hired labour followed of imputed value of family labour (18 %) and seed (11.4 %). Among fixed cost, rental value of owned land was found highest (17.6 per cent) of the total cost. The overall cost of production was Rs. 2399.9 on cost C_3 basis. The per quintal cost was higher on small farms followed by medium and large farms. On an average, gross income per hectare of groundnut cultivation was Rs. 57557.50. It was higher on large farms as compared to the medium and small farms. Return over variable cost was Rs. 30546.77. On an average family labour income was estimated Rs. 18842.44. It was higher in small farms followed by medium and large farms. The net income was worked out about Rs. 8610. It was recorded higher in large farms followed by medium farms. Return on per rupee with rental value of owned land was Rs. 1.16 and without rental value Rs. 1.41. The study of constraints in production of groundnut crop revealed that the farmers of study areas faced the problems. Among the various production problems, the major problem was timely not availability of human labour especially during weeding and harvesting time. About 69 per cent farmers of the study area reported this problem. Erratic electricity supply was another major problem for which about 51 per cent farmers reported. Timely not availability of seed, fertilizers and irrigation were the common problems.

Suggestions and policy implications:

Government price policy: Government price policy should ensure better minimum support price by the Commission on Agricultural Costs and Prices (CACP) to the oilseeds growers for their produce, with a view to encourage the increase in area and production.

Electricity supply as per need should be made available to the farmers for adequate irrigation of oilseeds crops.

Agricultural credit: The central and state government should promote timely and adequate flow of agricultural credit, particularly to the small and medium farmers to adopt modern technology for increasing output and productivity and to avoid distress sale of their produce.

The seed certification system should be reformed to encourage seed producers with integrity. Seed laws should be upgraded to enhance the availability of quality seeds with variety of options to the farmers.

Government should provide recommended package of practices to the farmers at the grass root level.

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