Economic analysis of cost of production and return of groundnut in Jamnagar district of Gujarat, India

Abstract

In the years 2021–2022, researchers conducted the current study, which is named "An Economic Analysis of Production and Marketing of Groundnut in Jamnagar District of Gujarat. “The study chose 90 participants from among those 6 using a multistage sampling and random sampling technique a few villages. A well-structured questionnaire was used to collect the study's data.This study showed that the cost of production per hectare, gross income, net income from farm investments, cost of production, and input to output ratio of groundnut were calculated altogether. The findings showed that marginal, small, and semi-medium farms paid, respectively, Rs. 67984.59/ha, Rs. 66206.25/ha, and Rs. 64579.85/ha in costs. Marginal, small, and semi-medium farms received gross returns per hectare of (Rs. 103785/ha), (Rs. 111000/ha), and (Rs. 119325/ha), respectively. Marginal, small, and semi-medium farms reported net returns per hectare of 35800.41, 44793.75, and 54747.15 rupees, respectively. The ratio of marginal (1:1.53), small (1:1.68), and medium (1:1.85) input to output per hectare, respectively. For marginal, small, and semi-medium businesses, the cost of production per quintal was, respectively, Rs. 3635.54, Rs. 44793.75, and Rs. 54745.15.

Key word: Price Concepts, groundnut, marketing efficiency, production

Introduction

The groundnut, or Arachis hypogea L., is thought to have originated in Brazil and spread to Peru, Argentina, and Ghana before being brought to Jamaica, Cuba, and other West Indies islands. Portuguese traders brought the plant to Africa, where it was then brought to North America. It was brought to one of China's Pacific islands during the first part of the sixteenth century, having previously been sent there from either Central America or South America.

The legume, or "bean" family, includes the peanut and groundnut species. The lowlands of Paraguay are likely where the peanut was first domesticated and grown as a crop. It is a perennial herbaceous plant that reaches heights of 30 to 50 cm (1.0 to 1.6 feet). The leaves are

opposite, pinnate, with four leaflets that are each one to seven centimeters long and one to three centimeters wide (two opposite pairs; no terminal leaflet Peanuts are incredibly nourishing. They contains 567 kcal Calories, 16 g total carbohydrate, 9 g dietary fiber, 4g sugar, 26 protein, 49 g total fat, 7g saturated fat, 16 g polyunsaturated fat, 24 g mono saturated fat, cholesterol 0 mg, sodium 18 mg, potassium 705 mg, vitamin b1 0.9 mg, vitamin b2 0.2mg, niacin 17.6 mg, vitamin b6 0.5 mg, calcium 134 mg, iron 6.7 mg, magnesium 245 mgper100gms.

Crushed for oil, more than half of the groundnuts harvested globally. Groundnuts grown in emerging nations are traded in large quantities on home marketplaces. The major forms of groundnuts traded internationally are in-shell (pods), shelled (kernels), and meal (cake). Each year, 44,041,913 tonnes of peanuts are produced globally. With an annual production of 6,857,000 tonnes, India is the second-largest producer of peanuts. Groundnut is a significant oilseed crop, and in 2021–2022, With a total production of 84 lakh tonnes, it is cultivated on an area of roughly 85 lakh hectares in India. Gujarat, Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra, Madhya Pradesh, Uttar Pradesh, Rajasthan, Punjab, and Orissa are the only states in India where it is primarily grown. The first five States only account for about 80% of the country's land area and 84% of its total production. Gujarat has a groundnut production of roughly 1190 kg/ha, whereas Tamil Nadu has the greatest productivity at 1604 kg/ha.

Methodology

Due to Gujarat having the biggest area covered in groundnuts, the district of Jamnagar was purposefully chosen. All six Jamnagar district blocks were grouped in ascending order by the amount of groundnut farming, and the top block, Lalpur, was chosen for this study. Out of these, six communities were chosen at random. A list of every farmer growing groundnuts in the six villages that were chosen was compiled and classified into three categories: marginal (below 0- 1 ha), small (1-2 ha), and other (medium and large) farms (above 2 ha). 30 small, 30 medium, and 30 big farms were randomly chosen for the sample. 90 farmers were so chosen at random from six proportionally chosen communities from each category. This information was gathered through a personal interview with a pre-planned timetable, and the tabular and statistical tools were used to analyze the information.

Price Concepts

Farm business revenue, family labor income, and farm investment income were the three efficiency indicators that were produced using the cost concept to estimate cost of production. Cost A1, Cost A2, Cost B1, Cost B2, Cost C1, Cost C2 and Cost C3 were the cost ideas used in the current investigation, and their derivations are as follows:

Cost A1: Every genuine cost related to the production.

Cost A1

- Value if hired human labour.
- The cost of hired labor for bullocks
- The labor cost of an owned bullock.
- The labor value of the machine you own.
- Fees for Hired Equipment.
- The cost of seed, both farm-produced and bought.
- The worth of pesticides and insecticides.
- Purchased and owned manure value
- Value of fertilizer.
- Depreciation on implements and farm buildings.
- Irrigation charges.
- Land revenue, cesses and other taxes.
- Interest on working capital.
- Miscellaneous expenses (Artisans etc.)

- **Cost A2**: Cost A1 + rent paid for leased in land.
- Cost B1: Cost A2 + interest on value of own fixed capital assets.
- Cost B2: Cost B1 + rental value of own land.
- Cost C1: Cost B1 + imputed value of family labor.
- Cost C2: Cost B2 + imputed value of family labor.
- Cost C3: Cost2 + 10 % of cost C2to account for managerial input of farmer.
    - Cost C3: Cost C2* + value of management input at 10 percent of total cost (C2*)
    - Total costs = Total variable cost (TVC) + Total Fixed Cost (TFC)
        - Interest on working capital: It was calculated @4% per annum for half of the crop period. Interest on fixed capital: It was calculated @10% per annum for the crop period.

- Rental value of owned land: It was calculated based on the prevailing rates in the sampling villages.
- Depreciation: It presents the value by which a farm resource decreased in value as a result of cause other than a change in general Groundnut of the item. Straight line method was used for calculating the depreciation:

Income measures

a. Gross income: It includes the final Groundnut of main product and by product of the crop.

b. Net income: Net income = Gross income – Cost C2

c. Family labour income: It is measured on earning of a farmer and his labour and managerial work. It is equal to gross income minus total expenses excluding wage of unpaid family labour. Family labour income = Gross income - Cost B2

d. Farm business income: It is a measure of earning of farmer and his family for his capital investment, labour and managerial work. Farm business income = Gross income – Cost A1

e. Farm investment income: This is the sum of net income, rental value of owned land and interest on fixed capital. B. C. Ratio (Input output ratio) = O / I Where, I = Total input and O = Total output B. C. Ratio (Input output ratio) = O / I Where, I = Total input and O = Total output.

Results and Discussion

Cost of cultivation and returns from Groundnut

The description of cost of cultivation and returns from main and by product of groundnut is given below.

Table 1 Component wise cost of cultivation of groundnut (Rs)

Sr. No.	Particulars	marginal	small	semi medium	Average
1	Hired labour	8560 (12.59)	8185.5 (12.36)	7971.5 (12.34)	8239 (12.43)
2	Machinery labour charges	1926 (2.83)	1765.5 (2.67)	1712 (2.65)	1801.17 (2.72)

3	Cost of seed	11770 (17.31)	11877 (17.94)	11984 (18.56)	11877 (17.93)
4	Cost of manures	4815 (7.08)	4654.5 (7.03)	4467.25 (6.92)	4645.6 (7.01)
5	Cost of fertilizers	8474.4 (12.47)	8287.15 (12.52)	8078.5 (12.51)	8280.67 (12.50)
6	Cost of irrigation	3317 (4.88)	2782 (4.20)	2568 (3.98)	2889 (4.36)
7	Cost of plant protection	4681.25 (6.87)	4547.5 (6.87)	4467.25 (6.92)	4565.3 (6.89)
8	Interest on working capital 8%	3217.49 (4.73)	3156.5 (4.77)	2926.45 (4.53)	3100.1 (4.68)
9	Depreciation on fixed capital	2354 (3.46)	2241.65 (3.33)	2166.75 (3.36)	2254.1 (3.40)
10	Rental value of own land	10700 (15.74)	10700 (16.16)	10700 (16.57)	10700 (16.51)
11	interest on fixed capital 12%	4424.45 (6.51)	4424.45 (6.80)	4173 (6.46)	4340.6 (6.55)
12	Family labour charges	3745 (5.51)	3584.5 (5.41)	3365.15 (5.21)	3564.9 (5.38)
13	Total cost of cultivation	67984.59	66206.25	64579.85	66256.9

Table1: reveals that the average cost of different production activities and process like hired labour Rs. 8560; machinery labour charges Rs. 1926; cost of seed Rs.11770; cost of manures Rs. 4815; cost of fertilizers Rs. 8474.4; irrigation charges Rs. 3317; plant protection charges Rs.4681.25; Interest on working capital Rs.3217.49; depreciation on fixed capital Rs. 2354; Rental value of own land 10700; Interest on fixed capital 4424.45; family labour charges Rs. 3745 and total cost of cultivation was Rs. 67984.59.The average cost of various production activities and processes for medium-sized farmers includes hired labor charges of Rs. 8185.5, machinery labor charges of Rs. 1765.5, cost of seed charges of Rs. 11877, cost of manures charges of Rs. 4654.5, cost of fertilizers charges of Rs. 8287.15, irrigation charges of Rs. 2782, plant protection charges of Rs. 4547.5, interest on working capital charges of Rs. 3156.5, depreciation on fixed capital charges of Rs. 66206.25.In the large size farmers the average cost of different production activities and process like hired labour Rs. 7971.5; machinery labour charges Rs. 1712; cost of seed Rs.11984; cost of manures Rs. 4467.25; cost of fertilizers Rs. 8078.5; irrigation charges Rs. 2568; plant protection

charges Rs.4467.25; Interest on working capital Rs.2926.45; depreciation on fixed capital Rs. 2166.75; Rental value of own land 10700; Interest on fixed capital 4173; family labour charges Rs. 3365.15 and total cost of cultivation was Rs. 64579.85.

Average costs for various production processes and activities include hired labor at Rs. 8239; machinery labor at Rs. 1801.17; seed costs at Rs. 11877; manure costs at Rs. 4645.6; fertilizer costs at Rs. 8280.67; irrigation costs at Rs. 2889; plant protection costs at Rs. 4565.3; interest on working capital at Rs. 3100.1; depreciation on fixed capital at Rs. 2254.1; rental value of own land at Rs. 10700; interest based on fixed capital of 4340; family labor costs of 3564.9; and a total cost of 66256.9 rupees for agriculture.

Table 2 average composition of economics of groundnut production & return (Rs)

Sr. No.	Particulars	Marginal	Small	Semi medium	Sample average
1	Cost A1	49115.14	47497.3	46341.7	47651.38
2	Cost A2	59815.14	58197.3	57041.7	58351.38
3	Cost B	64239.59	62621.75	61214.7	62692.01
4	Cost C	67984.59	66206.25	64579.85	66256.90
5	Yield	18.7	20	21.5	20.07
6	Sale price	5550	5550	5550	5550.00
7	Gross return per hectare	103785	111000	119325	111370.00
8	Net return per hectare	35800.41	44793.75	54745.15	45113.10
9	Cost of production /qtl	3635.54	3310.31	3003.71	3316.52
10	Benefit-Cost ratio	1:1.53	1:1.68	1:1.85	1:1.68

Table 2: Reveals that the different component of economics of production and return in small size farm group like Cost A1 Rs. 49115.14; Cost A2 Rs.59815.14; Cost B Rs. 64239.59; in medium size famers Cost A1 Rs.47497.3; Cost A2 Rs. 58197.3; Cost B Rs. 62621.75; Cost C Rs.67984.59. and among the large size farm group Cost a1 Rs.46341.7; Cost A2 Rs.57041.7; Cost B Rs.61214.7 and cost C Rs.64579.85. The sample average of different type of cost like Cost A1, Cost A2, Cost B and Cost C was 47651.38; 58351.8; 62692.01 and 66256.90 respectively. In small size farm average yield 18.7 qtl. Gross return per ha Rs.103785; net return per ha Rs.35800.41; cost of production per qtl. 3635.54 And input – output ratio 1:1.53. In medium size farm average yield 20 qtl. Gross return per ha Rs.111000; net return per ha Rs.44793.75; cost of production per qtl. 3310.31 And input –

output ratio 1:1.68. And in large size farm average yield 21.5 qtl. Gross return per ha Rs.119325; net return per ha Rs.54745.15; cost of production per qtl. 3003.71 And input – output ratio 1:1.85.

The average of sample farm size group yield 20.7 qtl. Gross return per ha Rs.111370; net return per ha Rs.45113.10; cost of production per qtl. 3316.52 And input – output ratio 1:1.68.

Summery and Conclusion

The results indicated that The cost incurred by marginal, small and semi medium farms (Rs.67984.59/ha), (Rs.66206.25/ha) and (Rs.64579.85/ha) respectively. The gross return obtained per hectare by marginal, small and semi medium was (Rs.103785/ha), (Rs.111000/ha) and (Rs.119325/ha) respectively, net return per hectare marginal, small and semi medium farms (Rs.35800.41/ha), (Rs.44793.75/ha) and (Rs.54747.15/ha) respectively. Input- Output ratio per hectare was marginal (1:1.53), small (1:1.68), and medium (1:1.85) respectively. The cost of production per quintal for marginal, small and semi-medium was Rs.3635.54, Rs.44793.75 and Rs.54745.15 respectively.

Reference

1. **Kadam,S.A.,Navgire,S.D.andR.R.Nirgude.(2015)**.Economic impact of summer groundnut technologies developed by MPKV, Rahuri. *Indian Journal of Economics and Development*, pp.393-400.
2. **Raut, V., Thakkar, K. P., Chaudhary, D. D. And Y.S.Workneh. (2015)**. Cost of cultivation of *groundnut* in Sabarkantha district of Gujarat state. *International Research Journal of Agricultural Economics and Statistics*, **6**(1): 186188.
3. **Pawar, N.D. (2016)**. Marketed surplus and price spread of groundnut - a sample study, Agricultural Marketing.
4. **Chaudhary, R., Rathore, D.S. and A. Sharma. (2017)**. an economics analysis of production and marketing of groundnut in Porbandar district of Gujarat. *Economic Affairs*, 62(3):547-553.
5. **Maurya, S.K., Kushwaha, R.R., Mourya, K.K. and S. Kumar, (2017)**. Price spread and marketing efficiency of groundnut marketing in Gorakhpur Districts of Eastern U.P .*Journal of Pharmacognosy and Photochemistry*, 6(6): 712-715.

6. **Rabadiya, V.D., Bhatt, J.D. and N.M. Thaker, (2019**). Economic analysis of groundnut and cotton in Rajkot district. *International Journal of Agriculture Sciences,* 11(6):8085-8088.

7. **Arora, V.P.S. and Jayaprakash, S.P. (2019)**. Comparative efficiency of alternative marketing agencies of groundnut in Tamil Nadu in respect of marginal, small and large farms. Thirty-ninthAnnual Conference of the India Society of Agricultural Economics, Bangalore, December.

8. **Cauvery, R. (2020).** Groundnut Production in Tamil Nadu-A decomposition analysis Agricultural situation in India.

9. **Tripathi, B.N. and Ballabh, S. (2021)**. A study of Oil seeds Economy of India with particular Reference to Groundnut, Agricultural situation in India.

10. **Tradege, A.; Mundinamani, S.M. and Basararaja, H. (2022)**. Growth and instability of groundnut production in Karnataka. Indian J. Agril.Econ.