An economic analysis of processing of groundnut in Haryana

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ABSTRACT

The study examines the economics of groundnut processing, comparing oil processing units and decorticating units. The analysis revealed that the total cost per quintal was notably higher in oil processing units (Rs 17,289.33/q) than in decorticating units (Rs 8.273.57/q). Similarly, net return was more favourable in oil processing units (Rs 161.55/q) compared to decorticating units (Rs 130.59/q). To maintain profitability without loss, an average processing of 342.81 quintals of groundnut kernels or 81310 quintals of groundnut oil was necessary for decorticating and oil processing units respectively. The research identified key challenges, including scarcity and costly skilled labour during peak seasons, high machinery expenses, inconsistent power supply, difficulties in obtaining repairs and spare parts, intricate bank financing procedures, expensive raw materials and elevated transportation costs.

Keywords: Groundnut; processing; oil; economic analysis; oil processing units; decorticating units

INTRODUCTION

The economics of groundnut processing plays a pivotal role in understanding the financial viability and sustainability of this agricultural enterprise. Groundnut, also known as peanut, is a valuable crop with widespread applications in various industries, primarily as a source of edible oil and protein-rich food products. Groundnut holds significant importance in both economic and nutritional realms for farmers and consumers within the semi-arid tropics. Known for its protein-rich kernels and edible oil content, groundnut contributes substantially to the livelihoods of numerous individuals. Beyond its role as a cash crop, groundnut also serves as valuable animal fodder and a beneficial rotational crop. Its versatility is further exemplified by the multitude of ways in which it is consumed as cooking oil, direct food source or even as snacks. The range of groundnut-based products is vast, encompassing boiled, roasted or salted nuts, groundnut milk and yoghurt as well as diverse culinary creations like groundnut bars, butter and baked goods. This introductory insight underscores the extensive significance of groundnut as a source of sustenance and economic prosperity, embodying a vital component of agriculture and culinary traditions alike.

Groundnut processing is primarily divided into two key categories, each yielding distinct products: oil processing units and decorticating units. Within oil processing units, the central focus is on oil production, with oilcake emerging as a secondary outcome. Conversely, decorticating units prioritize kernel extraction, accompanied by husk generation as a secondary byproduct. Further exploration into the economics of processing led to the segmentation of oil processing units into three categories: indigenous Ghanis, small units and larger units, based on the scale of groundnut processing.

The expansion and development of these processing units have a direct effect on the cultivation of crops necessitating processing prior to consumption. This dynamic interplay calls for strategic attention to the growth of processing units, harmonizing them with effective marketing systems that align with diverse harvests across regions. This symbiotic relationship accentuates the indispensable role of processing units in driving national economic advancement. Consequently, the proliferation of groundnut processing units not only signifies an escalation in groundnut production but also carries the potential to galvanize employment opportunities within the agricultural sector.

This underscores the pivotal role processing units play in shaping the trajectory of the agricultural economy. This field of study delves into the economic intricacies of groundnut processing, examining factors such as production cost, revenue generation, net return and the challenges faced by processing units.

METHODOLOGY

The sampling process for selecting processing units constituted the foundational step of the methodology. A comprehensive approach was adopted, encompassing the selection of the maximum feasible units within the designated districts and adjacent areas. These units were subsequently categorized into two distinct types: decorticating units and oil processing units, classified based on their final product. In this context, 4 decorticating units and 3 oil processing units were identified and selected from the study area, constituting a total of 7 processing units from Haryana.

To gather relevant data from the processors, a meticulously designed interview schedule was formulated and information related to aspects like financial aid, processed products and byproducts, infrastructure and inputs utilization, output yields, input and output prices, the overall economics of groundnut processing units and factors impeding the processing of groundnut during the 2021-22 period was gathered. This interview-based approach provided a holistic understanding of the economic landscape and challenges faced by the groundnut processing units.

The various statistical tools like average, percentage, benefit-cost ratio (B-C ratio) etc were employed to draw valid inferences from the study.

Benefit-cost ratio was calculated as under:

$$\text{Benefit-cost ratio} = \text{Gross return/Total cost}$$

Break-even analysis: Break-even analysis is a specific way of presenting and studying the interrelationship between cost, volume and profit. Here, break-even analysis was done to study the relationship between total costs and total revenue as under:

$$X = F/P - V$$

where X = Volume of processed product (q), P = Price (Rs/q) of output produced, V = Variable cost(Rs/q), F = Fixed cost (Rs)

Total weighted and weighted measure scores were calculated as under:

$$\text{Total weighted score} = \Sigma(\text{Number of responses} \times \text{corresponding score})$$

$$\text{Weighted mean score} = \frac{\text{Total weighted score}}{\text{Total number of respondents}}$$

where Severe constraint – Score 3, Moderate constraint – Score 2, Least severe constraint – Score 1

RESULTS and DISCUSSION

Processing unit: The investment distribution across various categories of groundnut processing units is detailed in Table 1. The total investment necessary for setting up decorticating units (kernel processing units) amounted to Rs 6,517,500 and oil processing units demanded an investment of Rs 28,478,333. The analysis further revealed that building-related expenses constituted a higher proportion in oil processing units (50.33%) compared to decorticating units (40.66%).

Fixed cost: Table 2 outlines the diverse categories of fixed cost associated with groundnut processing, computed on a monthly basis. Notably, the major contributors to fixed cost were expenses related to permanent labour salary, depreciation of building and machinery and the rental value of land. The remaining components constituted minor shares of the overall fixed cost. A distinction was observed between the fixed cost in oil processing units (Rs 57.33/q) and decorticating units (Rs16.55/q), with the former exhibiting higher fixed cost. Similar findings were demonstrated by Dinesh (2011).

Variable cost: The comprehensive variable cost for groundnut oil processing units, computed on monthly basis, amounted to Rs 17,772.00 per quintal. In comparison, decorticating units reported a lower variable cost of Rs 8,257.02 per quintal (Table 3). The prominent contributor to the variable cost was the cost of raw material, forming a substantial portion (96.80% for oil processing units and 95.46% for decorticating units), followed by storage bag expenses (1.50% for oil processing units and 2.49% for decorticating units) and interest on working capital. Conversely, expenses related to office maintenance, transportation and power charges were relatively inconsequential across both

Table 1. Investment cost involved in groundnut processing units (Rs)

Component	Decorticating units (kernel processing)			Oil processing units		
	Value	Cost/q	Percentage*	Value	Cost/q	Percentage*
Factory building	2,650,000	870.28	40.66	14,333,333	4,617.55	50.33
Machinery and accessories	1,280,000	420.36	19.64	8,233,333	2,652.41	28.91
Electric connection & accessories	237,500	78.00	3.64	566,667	182.55	1.99
Furniture and fixtures	22,500	7.39	0.35	40,000	12.89	0.14
Vehicle	190,500	62.56	2.92	4,966,667	1,600.03	17.44
Weighing balance	375,000	123.15	5.75	266,667	85.91	0.94
Water pump	18,750	6.16	0.29	40,000	12.89	0.14
Certification and licensing	28,750	9.44	0.44	31,667	10.20	0.11
Total	6,517,500	2,140.39	100.00	28,478,333	9,174.43	100.00

*Percentage of total investment cost

Table 2. Fixed cost of groundnut processing units (Rs)

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Component	Decorticating units (kernel processing)			Oil processing units		
	Value	Cost/q	Percentage*	Value	Cost/q	Percentage*
Rental value of unit	8,000	2.63	15.88	12,888.89	4.15	7.24
License renewal	1,989.58	0.65	3.95	1,847.22	0.60	1.04
Expenditure on permanent labour	16,750	5.50	33.24	19,333.33	6.23	10.86
Taxes	225	0.07	0.45	361.28	0.12	0.20
Insurance	1,250	0.41	2.48	13,111.1	4.22	7.37
Depreciation on buildings	11,041.67	3.63	21.91	59,722.22	19.24	33.56
Depreciation on machines	10,666.67	3.50	21.17	68,611.11	22.10	38.55
Depreciation on furniture	187.5	0.06	0.37	333.33	0.11	0.19
Interest on fixed capital	501.1	0.16	0.99	1,762.09	0.57	0.99
Total fixed cost	50,386.52	16.55	100.00	177,970.59	57.33	100.00

*Percentage of total fixed cost

Table 3. Variable cost of groundnut processing units (Rs)

	Decorticating units (kernel processing)			Oil processing units		
	Value	Cost/q	Percentage*	Value	Cost/q	Percentage*
Raw groundnut	24,000,000	7,881.77	95.46	53,400,000	17,203.05	96.80
Storage pots/bags/drums	626,625	205.79	2.49	825,000	265.78	1.50
Labour charges	114,000	37.44	0.45	192,000	61.85	0.35
Transportation	77,610	25.49	0.31	135,186	43.55	0.25
Power charges	46,375	15.23	0.18	55,000	17.72	0.10
Repair and maintenance	26,667	0.88	0.01	3,056	0.98	0.01
Packaging and miscellaneous	38,750	12.73	0.15	36,667	11.81	0.07
Interest on working capital	236,607	77.70	0.94	519,146	167.25	0.94
Total variable cost	25,142,634	8,257.02	100.00	55,166,054	17,772.00	100.00

*Percentage of total variable cost

categories. Notably, the higher variable cost for groundnut oil processing units reflected their higher processing capacity per day in comparison to decorticating units.

Cost and return: Table 4 highlights the financial outcomes of groundnut processing. For decorticating units, the gross return from the sale of kernels and husk reached Rs 8,042 and Rs 362 respectively,

summing up to total receipts of Rs 8,404 per quintal. In comparison, oil processing units achieved a higher total receipt of Rs 17,990.88, stemming from the gross return derived from the sale of oil, oilcake and husk, which amounted to Rs 12,617.47, 4,647.27 and 726.14 respectively. Thus it can be concluded that the oil processing units earned more profit through large scale production of oil and other byproducts (oilcake and husk).

In a study in Ratnagiri and Sindhudurg districts of south Konkan region, Maharashtra, Wadkar et al (2015) reported that the proportion of fixed capital was comparatively quite lower than the working capital requirement. Out of total working capital investment, share of raw material was the highest in all cashew processing units. Per factory total cost incurred by processing units varied directly with the size of unit. In all the units, B-C ratio was more than one and net added value varied between 38 to 62 per cent. The capacity utilization in all units was less than installed capacity. The large scale units were most profitable.

Notably, oil processing units yielded a higher net return of Rs 161.55, surpassing the net return from decorticating units (Rs 130.59) (Table 4). The profitability assessment underscored that oil processing units exhibited greater profitability. Additionally, the B-C ratio, an important economic indicator, was slightly higher for decorticating units at 1.02, compared to oil processing units with a ratio of 1.01.

Break-even analysis: The break-even point represents the equilibrium where total costs match total revenue, signifying a balance between losses and gains in business operations. The break-even point for oil processing units stood at 813.10 quintals, a notably higher figure compared to decorticating units with a break-even point of 342.81 quintals (Table 5). This divergence may be attributed to the varying output quantities processed, as oil processing units typically handle larger volume as compared to decorticating units. Similar were the observations of Shreeharsha (2000). Khorne et al (2022) reported that break-even point of ground mills in Maharashtra was higher in small size as compared to medium and large size oil mills.

Constraints in groundnut processing: The significant challenges encountered by the surveyed respondents were identified and are documented in Table 6. The primary issue raised by a majority of processors was the scarcity and elevated wages of skilled labour during peak season. Another prominent constraint highlighted by them was the high cost associated with machinery. Irregular and unreliable power supply emerged as a major problem affecting numerous processors. Difficulties pertaining to local repair services and spare parts availability, intricate and

Table 4. Cost and return of groundnut processing units (Rs)

Component	Decorticating units (kernel processing)		Oil processing units	
	Value	Cost/return/q	Value	Cost/return/q
Total fixed cost (TFC)	50,386.52	16.55	177,970.59	57.33
Total variable cost (TVC)	25,142,633.9	8,257.02	55,166,054	17,772.00
Total cost (TFC + TVC)	25,193,020	8,273.57	55,344,024.6	17,829.33
Return from products				
Kernel	24,487,500	8,042	—	—
Husk	1,103,175	362	2,254,000	726.14
Oil	—	—	39,165,900	12,617.47
Oilcake	—	—	14,425,600	4,647.27
Gross return	25,590,675	8,404	55,845,500	17,990.88
Net return	397,654.55	130.59	501,475.4	161.55
B-C ratio	1.02	1.02	1.01	1.01

Table 5. Break-even point of groundnut processing units

Component	Total fixed cost (Rs)	Variable cost (Rs/q)	Total receipts (Rs/q)	Break-even quantity (q)
Decorticating units (kernel processing)	50,386.52	8,257.02	8,404.00	342.81
Oil processing units	177,970.59	17,772	17,990.88	813.10

Table 6. Constraints faced by processors in groundnut processing (n = 7)

Constraint	Severe (3)	Moderate (2)	Least severe (1)	Total weighted score	Weighted mean score	Rank
Scarcity & high wages of skilled labour in peak season	5	2	0	19	2.71	I
Costly machinery	5	1	1	18	2.57	II
Erratic power supply	3	3	1	16	2.29	III
Problem in repairs and spare parts locally	3	2	2	15	2.14	IV
Complex & lengthy procedure of bank finance	3	2	1	14	2.00	V
Expensive raw material	2	2	3	13	1.86	VI
High cost of transportation	2	1	4	12	1.71	VII

protracted bank finance procedures, costly raw material and elevated transportation expenses were additional hurdles impeding their quest for greater return. Shuaibu (2021) in a study conducted on women groundnut growers in Kano state, Nigeria, reported that the major problems militating against the women were inadequate capital and high cost of raw materials. Ibrahim et al (2010) evaluated the economic empowerment potentials of groundnut processing by women in rural areas of northcentral Nigeria state and reported that the major constraints confronting the processing of groundnut included inadequate capital for expansion and lack of processing machines.

CONCLUSION

Itcan be concluded that groundnut processing proves highly profitable, particularly for oil processing units, which benefit from economies of scale. To enhance net return for decorticating units, improving efficiency through increased capacity utilization and working capital, along with providing quality raw material, necessary infrastructure, skilled labour and tax reductions, was crucial. These economic indicators underscore the overall profitability of groundnut processing in Haryana.

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