



Study on marketing of Makhana(*Euryale Ferox*) in Madhubani district of Bihar

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Abstract:-The study conducted in Madhubani district of Bihar from 2020-2024 utilized a descriptive research design to investigate the marketing of Makhana. It involved 120 farmers from traditional pond systems and 30 from modern field systems, along with various stakeholders in the marketing chain. The research aimed to understand the socio-economic conditions of farmers, identify marketing channels, costs, efficiency, and constraints in marketing Makhana. Findings revealed higher yields and net returns in the field system compared to the pond system, highlighting the need for processing machinery development. Additionally, the study emphasized the importance of addressing constraints like lack of ownership of ponds, the role of human labor in processing, and the need for improvements in processing, packaging, and market infrastructure to enhance the demand and value of Makhana products.

IndexTerms:-Makhana,Marketing cost,Socio-economic,Marketing Channels,Constraints and Suggestion.

INTRODUCTION

Makhana, scientifically known as *Euryale ferox*, is a flowering plant in the water-lily family and the only extant member of the genus *Euryale*. It thrives in stagnant bodies of water like lakes and ponds, primarily in tropical and subtropical climates. In recent years, it has gained popularity as a profitable crop, particularly in regions like Mithila in Bihar, India, where it has received a Geographical Indication (GI) tag to support local farmers. This superfood is derived from the seeds of the makhana plant and is highly nutritious, offering a range of health benefits. It's a staple in Indian cuisine, especially during fasting periods, due to its versatility and nutritional value. Makhana is packed with protein, carbohydrates, fiber, and various essential micronutrients such as calcium, magnesium, potassium, and phosphorus. One of its main advantages is its low calorie and fat content, making it an excellent snack option for those aiming to manage their weight. Moreover, it's gluten-free, catering to individuals with gluten sensitivities or celiac disease.

In the modern makhana market, large factories drive production for global demand, employing organized supply chains, branding, and packaging. Exporting to multiple countries, makhana is available in diverse retail settings, contrasting with traditional markets reliant on small farmers and local transactions, emphasizing community involvement and seasonal demand. Wholesale makhana is usually packed in big bags or cartons made of simple materials like plastic or cardboard, focusing on being easy to transport and store in warehouses. But when it comes to selling to individual consumers, makhana is packaged in smaller pouches with zippers to keep them fresh. These pouches are colorful and have catchy labels and branding to attract shoppers and keep them interested.

USES OF MAKHANA:-Makhana, a super healthy dry fruit, is enjoyed as snacks and incorporated into various dishes. Roasted makhana adds flavor to sweet treats like pudding and halva, while also thickening and enhancing curries. In Manipur, different parts of the makhana plant are used in salads. Considered auspicious, makhana is favored during fasting. Additionally, it's a popular choice for festival gifting.

NEED OF THE STUDY.

The makhana, also known as foxnut, is a nutritious food product that has gained popularity in recent years due to its health benefits and culinary versatility. Madhubani district in Bihar is one of the major production centers of makhana

in India, with a large number of farmers engaged in its cultivation and processing. Despite the growing demand for makhana in the domestic and international markets, there is limited information available on the marketing practices and strategies employed by the farmer in the value chain. This study aims to investigate the marketing of makhana in Madhubani district of Bihar, with a focus on identifying the constraints, channels, and factors that influence the production, distribution, and consumption of makhana. By analyzing the marketing dynamics of makhana, the study seeks to generate insights that can inform the development of effective marketing interventions and policies that support the growth and sustainability of the makhana industry in Madhubani.

RESEARCH METHODOLOGY

SAMPLING PROCEDURE

A multistage sampling technique was used to selection of commodities, market, farmer which are described as below:

Selection of the District

The study was conducted in Madhubani district of Bihar as it has good number of makhana growers. A total of **38 districts in Bihar** from which Madhubani district was purposively selected to study about marketing of makhana.

Madhubani district comprises the following Sub-Divisions: Madhubani, Jaynagar, Benipatti, Jhanjharpur, Phulparas. In Madhubani district, there are **21 block**. Makhana is grown in all the block. Among these blocks, Benipatti was selected purposively for the present study. There are 80 villages in Madhubani. 10% villages is selected randomly where Makhana cultivation is done on commercial scale. Out of these 10 % of village i.e; 8 villages are Rajnagar, Babubarhi, Pandaul, Kala, Ladania, Basopatti, Harlakhi, Madhwapur. A list of Makhana growers was prepared and arranged based on their land holding size. Allowing for the size, 10% of Makhana growers were selected randomly from different villages for the purpose of study. Three marketing channels were identified in makhana pop marketing in the study area.

DATA AND SOURCES OF DATA

A. Primary data

Primary data was collected from the selected makhana growers and market intermediaries from the study a pre-structured questionnaire encompassing some variables area which helps to arrive at the conclusions. Data were also collected regarding the constraints faced by the farmers and the market intermediaries. After collection of information, the classification and tabulation of data was done keeping in view the objectives of the study.

B. Secondary data

The secondary data determination to the area, production, and productivity was collected from articles, newspapers, district horticulture office or marketing secretariate and other related websites.

ANALYTICAL TOOLS

a) Marketing Cost:-

$$C = C_f + C_{m1} + C_{m2} + C_{m3} + \dots + C_{mn}$$

where; C = Total cost of marketing, C_f = Cost borne by the producer farmer from the produce leaves the farm till the sale of the produce, C_{mn} = Cost incurred by the i^{th} middlemen in the process of buying and selling.

b) Price Spread

$GMM = P_c - P_{fb}$, Where, **GMM** = Gross Marketing Margin, **P_c** = Price Paid by consumer, **P_{fb}** = Price received by produce.

c) Marketing Margin

Marketing Margin = Retail or Selling price - Actual cost

d) Marketing Efficiency

$MME = \frac{RP}{MC + MM}$ Where, **MME** = Measurement of marketing efficiency, **RP** = Retail Price, **MC** = Marketing cost, **MM** = Marketing margins.

e) Garrett Ranking Technique:

$$\text{Percent Position} = \frac{100*(R_{ij}-0.50)}{N_j}$$

Where, R_{ij} = the rank given to i^{th} item by the j^{th} individual and N_j = the number of items ranked by the j^{th} individual.

RESULT AND DISCUSSION**Table:- Comparison of costs of makhana in pond system and field system.**

S.No	Particulars	Pond system	Field system
1.	Total cost(in Rs)	57253.98	63048.71
2.	Yield (in kg)	1048.94	1286.76
3.	Cost of cultivation (per kg)	54.58	48.99
4.	Gross return (in Rs)	78,670.50	96,507
5.	Net return (in Rs)	21,416.52	33,458.29

The comparison between pond and field systems for cultivating makhana reveals that while the total costs are higher in the field system, the net returns are 56.22% higher compared to the pond system. This is attributed to the higher yield of 22.67% in the field system, demonstrating its greater profitability despite the increased costs.

Table :-Marketing Cost, Marketing Margin, and Marketing Efficiency in Channel I

S.No	Particulars	Per kilogram of makhana	Percentage of consumer price
FARMERS			
1.	Gross price received by farmer	300	67.22
2.	Packaging cost	9.75	2.18
3.	Transportation cost	11.25	2.5
4.	Market cost by farmer (2+3)	21.00	4.7
5.	Net price received by farmer	279.00	62.51
PROCESSOR			
6.	Sale price of farmers/ purchase price of processor	300	67.22
7.	Processing cost	48.70	10.91
8.	Transportation cost +storage	32.15	7.20
9.	Market cost by processor (7+8)	80.85	18.11
10.	Margin of processor {11-(6+9)}	19.29	4.32
RETAILER			
11.	Sale price of processor/ purchase price of retailer	400.14	89.65
12.	Market fee @ 1%	4.00	0.89
13.	Loading and unloading charges	7.20	1.61
14.	Transportation cost	9.80	2.19
15.	Market cost by retailer (12+13+14)	21.00	4.70
16.	Margin of retailer	25.29	5.66
17.	Purchase price of consumer	446.29	100
18.	Total marketing cost (4+9+15)	122.85	
19.	Price spread(17-1)	146.29	
20.	Marketing efficiency (5/18+16+10)	1.66	

In channel I, the farmer receives Rs 300/kg of makhana pop, which is 67.22% of the consumer price. The processor's margin is Rs 19.29/kg, and the retailer's margin is Rs 25.29/kg. Total marketing cost is Rs 122.85, with a price spread of Rs 146.29/kg and a marketing efficiency of 1.66.

Table:- Marketing Cost, Marketing Margin, and Marketing Efficiency in Channel II

S.No	Particulars	Per kg of makhana pop	Percentage of consumer price
FARMER			
1.	Gross price received by farmer	300.00	55.29
2.	Packaging cost	9.75	1.79
3.	Transportation cost	11.25	2.07
4.	Market cost by farmer (2+3)	21.00	3.8
5.	Net price received by farmer	279.00	51.42
PROCESSOR			
6.	Purchase price of processor	300	55.29
7.	Processing cost	48.70	8.97
8.	Transportation cost +storage	32.15	5.92
9.	Market cost by processor (7+8)	80.85	14.90
10.	Margin of processor {11-(6+9)}	17.11	3.15
WHOLESALE			
11.	purchase price of wholesaler	397.96	73.3
12.	Market fee @ 1%	3.97	0.73
13.	Loading and unloading	8.35	1.53
14.	Grading	6.74	1.24
15.	Packaging	8.21	1.51
16.	Storage	11.00	2.02
17.	Rottage and shrinkage	5.54	1.02
18.	Transportation cost	11.90	2.19
19.	Local tax or VAT @0 %	0	0
20.	Market cost by wholesaler	55.71	10.26
21.	Margin of wholesaler {22-(11+20).	28	5.1
RETAILER			
22.	Purchase price of retailer	481.67	88.6
23.	Market fee @ 1%	4.81	0.88
24.	Loading and unloading charges	8.35	1.53
25.	Transportation cost	12.11	2.23
26.	Market cost by retailer (23+24+25)	25.27	4.65
27.	Margin of retailer (28-(22+26))	36.28	6.68
28.	Purchase price of consumer	542.55	100
29.	Total marketing cost (4+9+20+26)	182.83	
30.	Price spread (28-1)	242.55	
31.	Marketing efficiency	1.05	

In channel II, the farmer gets Rs 300/kg, comprising 55.29% of the consumer price. The wholesaler's margin is Rs 28/kg, and the retailer's margin is Rs 36.28/kg. Total marketing cost is Rs 25.27, with a price spread of Rs 242.55/kg and a marketing efficiency of 1.05.

Table:- Marketing Cost, Marketing Margin, and Marketing Efficiency in Channel III

S.No	Particulars	Per kg of makhana pop	Percentage of consumer rupee
FARMERS			
1.	Gross price received by farmer	300	45.55
2.	Packaging cost	9.75	1.48
3.	Transportation cost	11.25	1.70
4.	Market cost by farmer (2+3)	21.00	3.18

5.	Net price received by farmer	279.00	42.36
PROCESSOR			
6.	Purchase price of processor	300	45.55
7.	Processing cost	48.70	7.39
8.	Transportation cost +storage	32.15	4.88
9.	Market cost by processor (7+8)	80.85	12.27
10.	Margin of processor	16.24	2.46
LOCAL WHOLESALER			
11.	Sale price of processor / purchase price of wholesaler	397.09	60.29
12.	Market fee @ 1%	3.97	0.60
13.	Transportation charge upto Delhi market	70.84	10.75
14.	Loading and unloading	14.10	2.14
15.	Grading	9.89	1.50
16.	Packaging	10.50	1.59
17.	Storage	9.28	1.40
18.	Rottage and shrinkage	5.58	0.84
19.	Local tax (VAT) @0%	0	0
20.	Commission agent's share @ 4% of wholesale selling price	22.42	3.40
21.	Central sale tax @ 0%	0	0
22.	Market cost borne by local wholesaler	146.58	22.25
23.	Margin of wholesaler {24-(11+22)}	16.83	2.55
DISTANT WHOLESALER			
24.	Selling price of local wholesaler / purchase price of distant wholesaler	560.50	85.10
25.	Transportation charge	9.81	1.48
26.	Storage charge	10.05	1.52
27.	Market fee	5.60	0.85
28.	Market cost by distant wholesaler (25+26+27)	25.46	3.8
29.	Margin of distant wholesaler {30-(24+28)}	17.77	2.69
DISTANT RETAILER			
30.	Purchase price of retailer	603.73	91.6
31.	Market fee @ 1%	6.03	0.91
32.	Loading and unloading	10.21	1.55
33.	Transportation cost	11.11	1.68
34.	Market cost by retailer (31+32+33)	27.35	4.15
35.	Margin of retailer {36-(30+34)}	27.50	4.17
36.	Purchase price of consumer	658.58	100
37.	Total marketing cost	301.24	
38.	Price spread (36-1)	358.58	
39.	Marketing efficiency approach (5/37+35+29+23+10)	0.73	

In channel III, the farmer receives Rs 300/kg, making up 45.55% of the consumer price. The local wholesaler's margin is Rs 16.83/kg, and the distant wholesaler's margin is Rs 17.77/kg. The retailer's margin is Rs 27.50/kg. Total marketing cost is Rs 27.35, with a price spread of Rs 358.58/kg and a marketing efficiency of 0.73. Marketing efficiency of channel-I is 1.66 which is more than other two channels. So, channel-I is more efficient than other two channels.

Garrett Ranking Technique:-**Table:- Constraints in Production of Makhana in Madhubani district of Bihar**

S.No	Constraints	Number of farmers giving different ranks							*G.S	Overall Rank
		I	II	III	IV	V	VI	VII		
1.	Lack of scientific knowledge of cultivation	12	10	90	10	3	17	8	54.8	III
2.	No ownership of pond or land	100	10	10	10	5	5	10	68.33	I
3.	Lack of improved variety seed	8	10	12	98	7	5	10	50.56	IV
4.	Highly skilled operation	15	95	13	10	5	10	2	62.12	II
5.	Lack of credit facility	7	9	12	0	99	12	17	45.96	V
6.	Short lease period	4	6	7	11	9	98	15	38.76	VI
7.	Labour intensive cultivation	0	7	8	12	17	8	97	31.14	VII

The primary constraints in makhana production include lack of land ownership, requiring farmers to lease ponds or lands with poor maintenance. Skilled labor is scarce, particularly for activities like pond maintenance and harvesting. Additionally, there's a lack of scientific knowledge, improved seed varieties, and access to credit, exacerbating challenges in cultivation.

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