Value Chain Analysis of Makhana in Madhubani District, Bihar

*Sugandha R. Sinha**

ABSTRACT

The title of the project is Agriculture Value chain Analysis of Makhana in Madhubani District of Bihar. The Host organization is Bihar Rural Livelihood Project (Jeevika), Patna. Shakti Sudha Industries is a processor and exporter of Makhana providing technical support to the beneficiaries, particularly producers in this project. A comprehensive business analysis considering both financial and operational aspect of different activities involved in value chain was carried out to understand the various perspectives for the initiative taken by BRLPS (Bihar Rural Livelihood Promotion Society or JEEVIKA) with the support of World Bank and Government of Bihar. In order to identify the different challenges in scaling up of Makhana crop; as it is an unrecognized crop, different tools and concepts were identified. The period of the study was from the 29thOctober 2009 to 15th January2010.Bihar is one of the major Makhana producing state which contributes up to 80% of total Makhana production happening in India.

Keywords: *Value chain; Market margin; Marketing in Makhna.*

1.0 Introduction

Agriculture is the key to the overall development of the State economy. Agriculture is the backbone of Bihar's economy. The population employed in agriculture production system in Bihar is estimated to be 81%, which much higher than the national average. Nearly 42 per cent of GDP of the state (2004-05) has been from agriculture sector (including forestry and fishing).

Bihar has a total geographical area of about 93.60 lakh hectare, out of which only 56.03 lakh hectares is the net cultivated area and gross cultivated area being 79.46 lakh hectares. The principal crops are paddy, wheat, pulses, maize, potato, sugarcane, oil seeds, tobacco and jute. Rice, wheat and maize are the major crops. Although, Horticulture (Fruits, vegetables, spices, honey, medicinal and aromatic plants) occupies 15 percent of land area but income generated from horticulture is much higher. The state has a monopoly in production of litchi and Makhana and continues to grow various fruits, vegetables, spices and floriculture is catching the imagination of people, reflected in their growing interest, across the state, ion diversification of horticulture.

Although Makhana is not a major crop but its cultivation is one the significant livelihood activities of a sizable section of population in the Districts of Bihar. Despite having not attracted much attention of the Agro-Economist or Government it has great domestic and export market potential. Looking at it as a potential activity BRLP's (Word Bank funded) has undertaken a project to explore the livelihood promotion opportunities through Makhana value chain. It has been one of the main secondary occupations, however never thought off as an important income generating activity by the local people. The role of BRLPs is to unite the Makhana producers so as to get the economies of scale and finally the execution of various processing and collective marketing of the produce.

**Assistant Professor, Faculty of Management Studies, Parul University, Vadodara, Gujarat, India (E-mail: sugandha.sinha24159@paruluniversity.ac.in)*

2.0 Research Objectives and Methodology

2.1 Objectives of the study

This study deals with

- Assess production conditions and trends.
- Understand the structure, performance and competitiveness of Makhana market.
- Map the value chains and identify factors that affect the competiveness of Makhana.

2.2 Methodology

The study entailed a detailed review of literature together with collection and analysis of primary and secondary data. Sample design acknowledges sample collection, both primary and secondary data and deciding tools for data collection and FGD to identify bottlenecks and leverage Points.

2.3 Research design

Madhubani District of Bihar was selected for an exhaustive exploratory and qualitative as well as quantitative research study. The reason for the selection is that, Madhubani District has great inventory of Government and Private Ponds and contributes 40% of total Makhana production in Bihar.

2.4 Sample design

2.4.1 Sampling method and sample size

As the number of target population was very vast we have decide to go for random sampling. The sample population includes Farmers, middleman, Traders, Retailers, Processing units and exporters. The sample size is taken as 200 Farmers, 6 Middlemen, 4 Traders, 10 Retailers and 100 Consumers.

3.0 Literature Review

The central government has given its final nod to the Bihar government's plan for Makhana Processing Plants in Darbhanga and Madhubani. Last year, the Bihar government had also commissioned IL&FS to prepare a blue print of the action plan to facilitate processing and packaging centers for Makhana (Gorgon nut).

"Makhana's potential to make inroads into foreign markets as well as into the domestic snack market, which alone must be worth Rs 20,000 crores a year, has remained untapped so far," said Mr. T.N. Jha of National Bank for Agriculture and Rural Development (NABARD).

In 2007, a project report on export promotion of Makhana from Bihar was compiled by Mr. AK Garg. The report underlines the need "to introduce mechanized processing to standardize processed products in order to boost export demand."

Under the plan several Common Facility Centre (CFC) would be setup. The CFC would facilitate procurement, storage, grading, processing, value additional and packaging. A website will also be setup to provide market linkages and comprehensive information on Makhna. The Makhana Cluster Plan also envisages digging and construction of ponds in at least 2000 acres of land. (Ajit Kumar- January 16, 2009)

Makhana growing water bodies are ideal reservoirs for air-breathing fishes like Singhi, Magur, Kawai etc., which derive their nutrition from the heavy organic detritus in the pond bottom. Leathery leaves during the peak growth period of the plants (between April to July) hardly leave any

open surface to facilitate the dissolution of atmospheric oxygen to the pond water. Dearth of dissolved oxygen in the arched water surface makes it unsuitable for the growth of carp fishes.

A major share of the profit in Makhana industry is usurped by the middle men. The producer's share in the consumer price is only 53 percent and the remaining 47 per cent is absorbed in different marketing functions (Prakash and Choudhary 1994).

4.0 Makhana Production & Its Economic Analysis

4.1 Demographic and socio-institutional setting of makhana cultivators

The Makhana growers in the district are from the mallah /machhuara/ keot caste with fishing and Makhana cultivation as their major economic activity. Generally, they will not do the menial job on Makhana ponds. On the other hand, Chaabh and Koal sub-caste groups have the dominant demographic presence, and are most resource poor and illiterates. They are the actual divers and guri harvesters. The group generally harvests the seeds in 2-3 lots on contract basis either on share of seeds or cash amount. They having low literacy also possess the unique and the exclusive skill in Makhana pop processing.

The whole family is indulge in Makhana cultivation and popping of Makhana or work as laborers. Cultivating Makhana crop which included sowing (if required) transplanting and harvesting guris.

Although the mallah community is the traditional grower of Makhana other castes have also moved into the business of Makhana cultivation and created their own niches in this market. They cultivate Makhana either on their own ponds or sub leased government ponds by engaging the services of mallah as wage earner.

4.2 Lease system of government ponds

Government ponds, earmarked for Makhana cultivation are leased at prescribed rates with preference of Fishermen Co-operative Societies which in turn lease it to its members. These societies are registered under the Bihar Co-operative Societies Act 1935. The ponds are leased in the name of the Secretary of the society who sub-lets the government ponds to the members. In some villages, it was seen that the entire community in the village jointly cultivated Makhana ponds with equal sharing in the output as well as labour and other inputs. The secretaries are elected by the members and these societies are governed by the rules under the 1935 co-operative act. The government pond is given on lease to Secretary Fishermen's Co-operative Society by the district administration at prescribe rates. As per Government rules rental value of the pond is calculated by measuring the area of the pond. According to area and condition of the pond Government officials predict the production and calculate the market value of the produce (Guri) by assuming a constant price for a year (18 Rs./Kg for 2009). The rental value of the pond is 10% of the total market value of the produce. But the Leasing takes place by open bidding system which increases the cost of the pond drastically.

The Secretary in turn would sub-lease the pond to its members either in group or individually for one year at higher rates. However the third party lease of ponds by members of the Fishermen's Co-operative Society was common. Instance of government ponds not being leased on account of being declared idle was also observed in certain cases.

4.3 Credit availability

In absence of institutional credit facility they are dependent on moneylenders. For that credit support moneylenders charges 60%-120% interest per annum. In addition to pay high interest rates, sometimes growers have to sell their produce to that trader only.

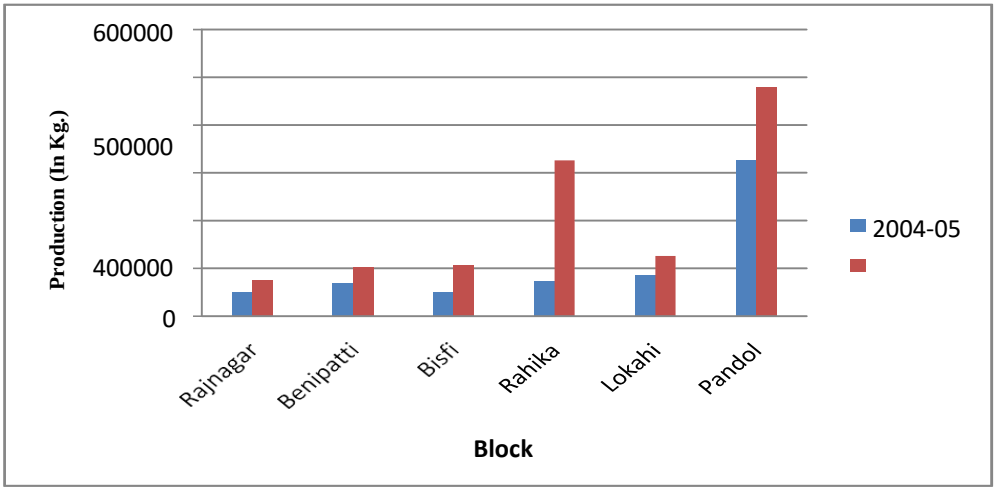
4.4 Makhana production trend in Madhubani

The District has 21 Blocks. The District is a hub of water resources with an average rainfall of 1273.2mm. Flood cycle repeats itself almost every year. This District has a total of 5183 ponds, out of which number of government ponds 3430 with an aggregate water spread area of 2051.50 ha. Madhubani is one of the major producing district of Bihar. It contributes 40% of total Makhana production of the state.

Government ponds, with a share in number of ponds and area were higher for government ponds) than private ponds Makhana seed/guri is cultivated in only 41.5% of water pond tank area in the district. Besides the large low lying chaur land (approximately 10 thousand ha) also offers technical potential for Makhana guri cultivation in the district as has been the experience in Madhubani district.

4.5 Production trends in six major Makhana producing blocks of Madhubani district

Figure 3: Production Trend in Madhubani

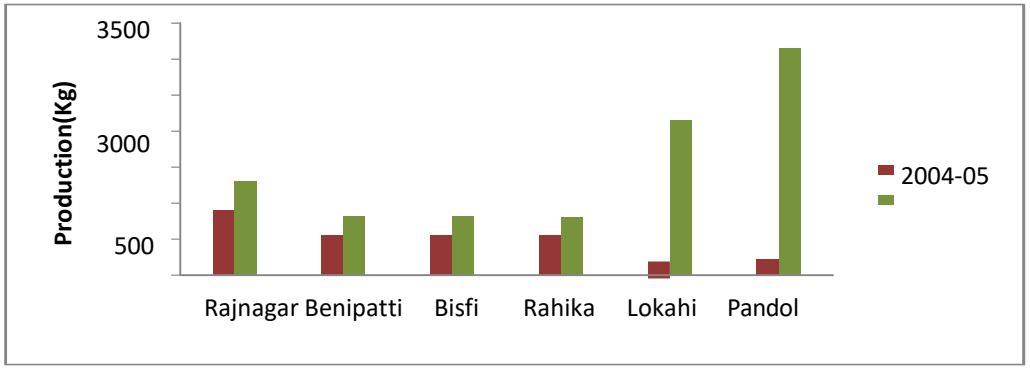


Source: District Fisheris Office

The graph shows the cumulative production of six blocks viz. Rajnagar, Benipatti, Bisfi, Rahika, Lokahi and Pandol. As seen from the graph, the total production is significantly increasing from 2004-05 to 2008-09. This can be ascribed to better cultivation practices, increase in cultivation area and use of low land (chaur land) as pond for Makhana cultivation.

4.6 Yield trend in six major Makhana producing blocks of Madhubani district

Figure 4: Yield Trend in Madhubani



As seen from the graph yield (Kg/ha.) is continuously increasing due to improved cultivation practices like proper maintenance of spacing, use of fertilizers (if required) and use of fungicides. As shown in the graph yield of Lokahi and Pandol has increased significantly. This is due to pond conditions of these two blocks are good.

4.7 Economics of Makhana cultivation

Economics of Makhana Cultivation on Own Pond (Private Pond)/Acres

Sr. No.	Particulars	Amount
A.	Revenue	34125
B.	Cost incurred	
1.	Material cost	584
2.	Operational cost	
i.	Water filling	2000
ii.	Labour cost	11400
	Total cost incurred	13984
	Profit	20141
	B:C*	**1.5:1**

Source: Field Survey, 2009

Economic Analysis of Makhana/Guri Cultivation on Leased Pond/Acre

Sr. No.	Particulars	Amount
A.	Revenue	30712
B.	Cost incurred	
a.	Pond leasing cost	1843
b.	Material cost	884
c.	Interest on Borrowed capital	663
d.	Operational cost	
i)	Water filling	2000
ii)	Labour cost	---
	Total cost incurred	5390
	Profit	25322
	B:C*	**4.7:1**

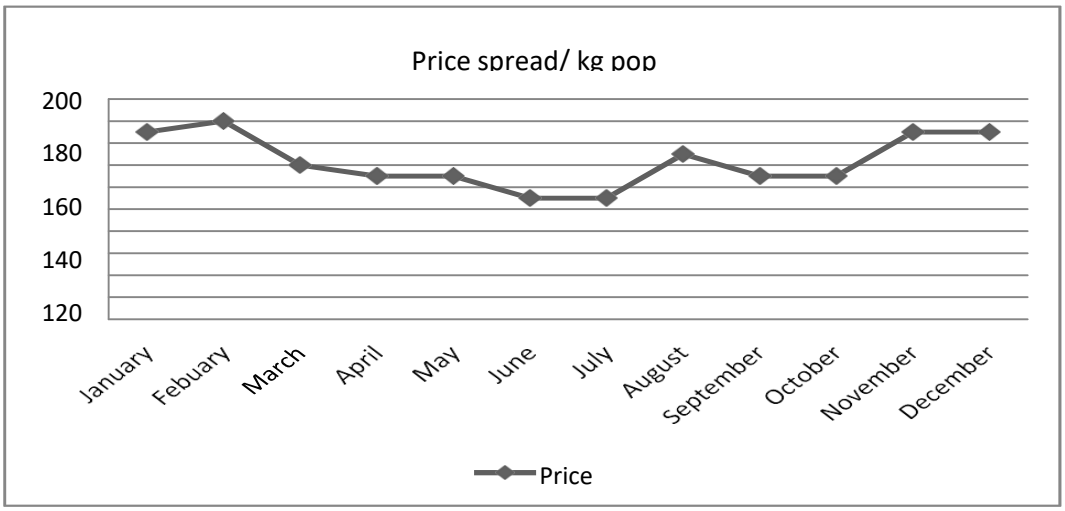
Source: Field Survey, 2009

4.8 Price spread

Price of guri as well as popped Makhana varied widely across seasons and regional locations. For guri in August when arrivals starts in market price increases. But at peak arrivals when 95% of guri concentrating during September-October its prices remained low in the range of 18-22 Rs/kgs and it reaches up to 30 Rs/kg by December. Prices of guri is also fluctuate by the fluctuation in prices of popped Makhana which is by and large determined by the wholesale in Kanpur, Varanasi and Delhi, it was those traders who commanded and absorbed most of the demand for Makhana pop.

Prices of Makhana pop are also showed seasonal fluctuation. Both wholesale and retail prices were low at peak arrival and while higher in month of January- February. It also go up during seasons of festival and marriages.

Figure 5: Price Spread of Pop Makhana/Kg



Source: Market survey 2009

4.9 Makhana international trade

India is one of the major exporters of Makhana. Makhana sector is highly unorganized and this crop is unexploited and unrecognized by GOI. Its presence in export market is virtually absent as it exports under the name of "Other commodities", therefore export data is not available. Makhana is essentially an original product with good dietary and medicinal properties to generate adequate export demand particularly in the European and American Countries. India export Popped Makhana to Gulf countries in large quantity. Popped Makhana has great potential of export as popping is done exclusively in India.

5.0 Makhana Processing System, Grading, Quality and Market

5.1 Makhana processing (value addition)

Processing of Makhana seed is labor intensive, tedious and time consuming which is done manually and cause injury to processors hand. Processing of Makhana involves following steps.

- Sun drying and storage
- Sun drying and size grading
- Preheating and Tempering
- Roasting and Popping

6.0 Conclusion and Recommendations

Makhana sector is highly unorganized and unrecognized crop by Government. But it has great potential of export as it has negligible fat content and high nutritious value. To take advantage of increasing demand and export potential, production needs to be increase with quality improvement and reduction in marketing cost. Farmers are in great need of credit facility as they are asset less. There is wide information gap between market and farmers. Due to lack of information accessibility and proper market linkage maximum profit is got by large traders and exporters of other state who are on the top of supply chain. Large traders and exporters of other states they make profit because of their knowledge about terminal markets and their own infrastructure like processing units and storage house etc.

7.0 Recommendations

7.1 Market linkage

Poor infrastructure and lack of market information accessibility remains the major reason for high marketing cost. Transaction and marketing cost can be lowered by shortening the length of the marketing chain. Reduction in marketing cost will help in improving the farmers share in final price and also lower the domestic price of Makhana. Another point of consideration is increasing the collaboration between growers to initiate the collective selling which helps in negotiate with the traders and other market players.

Promotion and support of "Contract farming" is another way of minimizing the marketing cost and increasing the farmers share in final price. The international market of Makhana is dominated by demand for popped Makhana. There is need to capture the international market. This can be captured by adopting integrated marketing for Makhana.

7.2 Processing (value addition) technologies

Makhana processing industry is completely dependent on manual power as till now there is no successful invention for harvesting and processing of Makhana. There is a great need for develop new technology for harvesting and processing of Makhana. It will also reduce the domestic price as well.

7.3 Credit and storage facility

Farmers need to support by providing timely credit at low interest rate to come out form the vicious debt cycle. At the farmers level the guri is stored in an indigenous manner with construction of temporary structure in their home. In absence of proper storage facility farmers sell their produce while there is glut in the market and prices are low. There is need to develop storage structure so farmers can fetch better price by selling their produce at the time when prices are high.

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