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Study on the marketing of eggplant in Prayagraj district of Uttar Pradesh

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Abstract

The present study entitled “Marketing of Eggplant (Brinjal) in Prayagraj District of Uttar Pradesh” was conducted to analyze the marketing system, socio-economic characteristics of farmers, marketing channels, marketing costs, price spread, producer’s share in consumer’s rupee, marketing efficiency, and constraints faced by eggplant growers in the study area. The study was based on both primary and secondary data. Primary data were collected from 120 eggplant growers selected through multistage random sampling from Meja block of Prayagraj district, while secondary data were obtained from government reports and published literature. The collected data were analyzed using statistical tools such as averages, percentages, ratios, and cost-return analysis. The findings revealed that most respondents were small and marginal farmers with moderate educational levels, and agriculture as the primary occupation. The average family size was 6.72 members, indicating the importance of family labour in farming activities. The majority of farmers belonged to the middle-age group, reflecting active participation in agricultural operations. The average landholding was 2.46 hectares, with 0.84 hectares under eggplant cultivation. Three major marketing channels were identified: Producer → Consumer, Producer → Retailer → Consumer, and Producer → Wholesaler → Retailer → Consumer. Among these, the Producer-Retailer-Consumer channel was the most commonly used due to ease of access and quick payment. However, direct marketing (Producer → Consumer) was found to be the most efficient channel with the highest producer’s share in consumer’s rupee, while channels involving multiple intermediaries showed lower efficiency. The study further revealed that marketing costs and price spread increased with intermediaries, resulting in reduced farmer income. Major constraints identified included price fluctuations, high transportation costs, lack of storage facilities, exploitation by middlemen, and inadequate market information. In conclusion, improving market infrastructure, direct marketing systems, Farmer Producer Organizations (FPOs), and market information services can significantly enhance marketing efficiency and farmer income in the study area.

Keywords: Eggplant (Brinjal), marketing channels, marketing cost, price spread, marketing efficiency, producer’s share, socio-economic profile, farmer income, Prayagraj district

Introduction

Eggplant (brinjal) is one of the most widely grown and consumed vegetable crops in India and holds significant importance in the dietary pattern of the population due to its affordability, year-round availability, and nutritional value. It is a rich source of vitamins, minerals, dietary fiber, and antioxidants, making it a popular component of daily meals across rural and urban households. Owing to its adaptability to diverse agro-climatic conditions, eggplant cultivation is practiced in almost all states of India, with major production concentrated in Uttar Pradesh, West Bengal, Odisha, Bihar, Maharashtra, and Karnataka. In recent years, eggplant has also gained commercial importance due to rising urban demand, expansion of organized retail markets, and increasing consumption in hotels, restaurants, and food processing units. In Uttar Pradesh, vegetable cultivation plays a vital role in agricultural diversification and income generation for small and marginal farmers. Prayagraj district, in particular, has emerged as an important hub for vegetable production due to favorable soil conditions, availability of irrigation facilities, and proximity to urban markets. Eggplant is widely cultivated in the district by farmers of different socio-economic backgrounds, contributing significantly to their household income. The produce is supplied to local vegetable markets, mandi systems, roadside vendors, retail shops, supermarkets, hotels, and nearby urban centers. However,

despite its high production potential and market demand, eggplant growers in the district face several marketing-related constraints that affect profitability and market efficiency. Marketing of eggplant involves a series of activities such as harvesting, grading, packaging, storage, transportation, and distribution through different marketing channels. Being a highly perishable vegetable, eggplant requires careful handling and quick disposal to avoid post-harvest losses. The marketing system generally consists of producers, commission agents, wholesalers, retailers, and consumers. In many cases, farmers depend heavily on intermediaries for selling their produce, which often leads to reduced share in the consumer's price. Inefficient transportation facilities, lack of cold storage infrastructure, seasonal price fluctuations, and absence of organized marketing platforms further add to the challenges faced by growers. The present study titled "A Study on Marketing of Eggplant in Prayagraj District of Uttar Pradesh" aims to examine the existing marketing system of eggplant and identify the major constraints faced by farmers and traders in the study area. It also focuses on analyzing the socio-economic characteristics of eggplant growers, including age, education, farming experience, landholding size, income level, and access to market information, which influence their production and marketing decisions. The study further investigates different marketing channels, marketing costs, price spread, market margins, and overall marketing efficiency of eggplant in Prayagraj district. It highlights issues such as inadequate storage and transport facilities, lack of scientific grading and packaging practices, price instability, and dependence on middlemen. Additionally, the study evaluates the role of different stakeholders such as wholesalers, retailers, and commission agents in the marketing system. By analyzing these aspects, the study aims to identify existing gaps and suggest suitable measures to improve marketing efficiency, reduce post-harvest losses, strengthen market linkages, and enhance the income of eggplant growers, thereby contributing to the sustainable development of vegetable marketing in the district.

Objectives

To study the socio-economic profile of respondents in the study area. Identify the different marketing channels involved in marketing of eggplant.

Research Methodology

Sampling Design

For the study titled "A Study on Marketing of Eggplant in Prayagraj District of Uttar Pradesh", a multistage sampling design was used. In the first stage, Prayagraj district was selected purposively due to the importance of eggplant cultivation and marketing in the area. In the second stage,

blocks with higher concentration of eggplant production were selected, followed by random selection of villages in the third stage. In the final stage, respondents including eggplant growers, wholesalers, retailers, commission agents, traders, and consumers were selected.

This design was used to collect relevant data on marketing practices, costs, price spread, efficiency, and constraints in eggplant marketing.

Selection of District

The present study was conducted in Prayagraj district of Uttar Pradesh. The district was selected purposively because it is one of the important vegetable producing districts in the state where eggplant (brinjal) is cultivated on a considerable scale. A large number of farmers in this district are engaged in vegetable cultivation and supply their produce to nearby markets and urban centers. Prayagraj district has favorable climatic conditions, fertile soil, and well developed market facilities that support the production and marketing of vegetables including 36 brinjal. Due to these factors, the district was considered suitable for studying the marketing system of eggplant.

Selection of Blocks

Prayagraj district consists of several blocks such as Meja, Kaurihar, Chaka, Bahadurpur, Holagarh, Soraon, Saidabad, Phulpur, and Karchhana. Among these blocks, Meja block was selected purposively for the study because of the larger area under eggplant (brinjal) cultivation and the presence of a significant number of eggplant growers.

Selection of Villages

villages of Meja block was obtained from the District Agriculture and Horticulture Department, Prayagraj. Out of the total villages in the block, five villages were selected randomly for the purpose of the study.

Selection of Respondents/Farmers

A list of eggplant (brinjal) growers in the selected villages was obtained from the District Agriculture Office and Horticulture Department, Prayagraj. From this list, 100 eggplant growers were selected randomly for detailed investigation.

The selected respondents were studied with respect to

- Socio-economic characteristics
- Production practices
- Marketing channels
- Marketing cost and margin
- Price spread and marketing efficiency
- Constraints faced in eggplant marketing

Table 1: Classification of Respondents

Sr. No.	Category of Farmers	Production/Marketing Capacity (Approx.)
1	Marginal	Up to 200-300 kg
2	Small	300-700 kg
3	Semi-Medium	700-1500 kg
4	Medium	1500-3000 kg
5	Large	Above 3000 kg

From this classification, 100 respondents were selected randomly through proportionate allocation to ensure proper representation of all farm size groups.

Analysis of data/ analytical tools used

The study titled "A Study on Marketing of Eggplant in Prayagraj District of Uttar Pradesh" used both primary and

secondary data. Primary data were collected from eggplant growers and market intermediaries, while secondary data were taken from government reports and published literature. The data were analyzed using simple statistical tools such as averages, percentages, and ratios. The study focused on marketing channels, costs, price spread, marketing margins, market efficiency, transportation, storage, and constraints in eggplant marketing.

Analytical techniques employed

$$\text{Arithmetic Mean} = \text{AM} = \frac{1}{n} \sum_{i=1}^n a_i$$

Where,

- AM = Arithmetic Mean
- n = Number of values
- a_i = Data set values

$$\text{Weighted Mean} = W = \frac{\sum_{i=1}^n w_i X_i}{\sum_{i=1}^n w_i}$$

Where,

- W = Weighted average
- n = number of terms to be averaged
- w_i = Weight applied to x values
- X_i = Data values to be averaged

2. Chi-Square Test

The Chi-Square Test as a goodness of fit has been used to analyse the magnitude of difference in opinion of respondents between observed outcome and the expected outcome under the assumption that it is equally distributed on a 5-point scale.

$$\text{Formula used: } \chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where,

- χ^2 = chi squared
- O_i = Observed value
- E_i = Expected value

1. Cost and returns per hectare

- Cost of soybean production Cost- A1
- value of hired human labour Value of hired bullock labour Value of owned bullock labour Value of owned machinery labour Hired machinery charges
- Value of seed (both farm produced and purchased) Value of insecticide and pesticide
- Value of manures (owned and purchased) Value of fertilizer
- Depreciation on implements and farm buildings Irrigation charges
- Land revenue, cases and other taxes Interest on working capital Miscellaneous expenses (artisans etc.)
- Cost A2: Cost A1 + rent paid for leased in land
- Cost B1: Cost A1 + interest on value of owned fixed capital assets (excluding Land)
- Cost B2: Cost B1+ rental value of owned land (net of land revenue) and rent paid for leased-in land Cost C1: Cost B1+ imputed value of family labour

- Cost C2: Cost B2+ imputed value of family labour
- Cost C2: Cost C2 adjusted to take into account valuation of human labour at market rate or statutory minimum wage rate whichever is higher

Cost C3: Cost C2+ value of management input at 10% of total cost (C2) Cost C is the total cost of cultivation

1. Farm business income = Gross income - Cost A1 or A2
2. Family labour income = Gross income - Cost B
3. Net income = Gross income - Cost C
4. Farm investment income = Farm business income - imputed value of family labour

Result and Discussion

The socio-economic characteristics of eggplant growers influence their production practices, marketing decisions, and income generation. Factors such as age, education, family size, farming experience, and landholding size affect the cultivation and marketing behavior of farmers.

Therefore, the present study on “A Study on Marketing of Eggplant in Prayagraj District of Uttar Pradesh” examined the socio-economic profile of respondents to understand their role in eggplant production and marketing in the study area.

Socio-Economic Profile of Respondents

Table 2: Family Composition of Respondents

Particulars	Unit	Value	Percentage
Male members	Average	2.98	44.35
Female members	Average	2.47	36.76
Children	Average	1.27	18.89
Total family size	Average	6.72	100

The average family size of eggplant growers was 6.72 members. Male members formed the largest share (44.35%), followed by females (36.76%) and children (18.89%). This indicates relatively large farm families, providing sufficient family labour for farming activities.

Table 3: Educational Status of Respondents

Education Level	Number	Percentage
Illiterate	7	5.83
Primary	21	17.50
Secondary	56	46.67
College	36	30.00

Most farmers (46.67%) had secondary education, while 30% had college education. Only a small proportion were illiterate, indicating a generally moderate to good educational level among respondents.

Table 4: Age Distribution of Farmers

Age Group (Years)	Number of Farmers	Percentage
18-30	18	15.00
31-50	62	51.67
Above 51	40	33.33

The majority of farmers (51.67%) belonged to the middle-age group (31-50 years), which is considered the most active and productive group in agriculture, followed by older and young farmers.

Table 5: Farm Size and Area under Eggplant Cultivation

Particulars	Marginal	Small	Medium	Overall
Number of farms	30	50	40	120
Avg. cultivated area (ha)	0.78	2.08	4.52	2.46
Area under eggplant (ha)	0.32	0.82	1.38	0.84

Eggplant cultivation is practiced across all farm categories, but small and marginal farmers dominate in number. The overall average land under eggplant cultivation was 0.84 hectares.

Conclusion

The present study on “Marketing of Eggplant (Brinjal) in Prayagraj District of Uttar Pradesh” analyzed the socio-economic profile of farmers, marketing channels, marketing costs, price spread, producer’s share, marketing efficiency, and major constraints in the study area. The findings revealed that most farmers were small and marginal with moderate education levels and large family sizes, where family labour plays an important role in farming activities. Three major marketing channels were identified, with the producer-retailer-consumer channel being the most commonly used, while direct marketing provided the highest producer’s share and marketing efficiency.

Marketing costs and price spread increased with the involvement of more intermediaries, reducing farmers’ income. The study also found that farmers faced several constraints such as price fluctuations, high transportation costs, lack of storage facilities, exploitation by middlemen, and inadequate market information, which forced distress sale of produce. In conclusion, eggplant marketing in the study area can be improved by strengthening cold storage facilities, improving rural transportation infrastructure, promoting direct marketing systems, and developing regulated markets. The establishment of Farmer Producer Organizations (FPOs), better market information systems, training in post-harvest management, and value addition activities can further enhance farmers’ income.

Additionally, strengthening agricultural extension services and implementing price stabilization measures will help reduce price volatility and improve marketing efficiency. Overall, these policy interventions will contribute to better price realization for farmers

Summary

The study on “Marketing of Eggplant (Brinjal) in Prayagraj District of Uttar Pradesh” was conducted using data from 120 farmers. The findings revealed that most of the respondents were small farmers, followed by medium and marginal farmers. The average family size was 6.72 members, indicating availability of family labour for agricultural activities. A majority of farmers had secondary level education, and agriculture was the primary occupation, though some farmers were also engaged in dairy, business, and service activities. Most respondents belonged to the middle-age group, showing active participation in farming. The average farm size was 2.46 hectares, with a significant portion of land under eggplant cultivation. The study identified three marketing channels, out of which the Producer-Retailer-Consumer channel was the most commonly used. Marketing costs and price spread increased with the number of intermediaries, being lowest in direct selling and highest in channels involving wholesalers and retailers. Similarly, the producer’s share in the consumer’s

rupee was highest in direct marketing and lowest in the longest channel. The study also found that direct marketing was the most efficient channel, while the channel involving wholesalers and retailers was least efficient. Major constraints faced by farmers included price fluctuations, high transportation costs, lack of storage facilities, exploitation by middlemen, and inadequate market information. Overall, the study concluded that improving infrastructure and promoting direct marketing systems can enhance profitability and marketing efficiency for eggplant growers.

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