Estimation of Marketing Potential and Factor Analysis of Herbicides Agrochemicals in Chandauli District of Uttar Pradesh

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ABSTRACT

This study evaluates the marketing potential and adoption factors of herbicide agrochemicals in Chandauli district, Uttar Pradesh—a significant agricultural region known for paddy and wheat production. Increasing weed pressure and labor shortages have enhanced the importance of herbicides. Using multistage random sampling, primary data were collected from 100 farmers across six villages and categorized based on landholding size. Tools such as chi-square, Garrett ranking, and descriptive statistics were employed. The study identifies key factors influencing herbicide adoption, including socio-economic conditions, price sensitivity, brand preference, and marketing channels. It reveals that while herbicide usage is increasing, barriers such as limited awareness, high costs, and insufficient extension services persist. Market analysis shows UPL, Syngenta, and Bayer dominate the local herbicide market, with wheat and sugarcane being the primary consumers. Channel II (Producer–Retailer–Consumer) was the most commonly used distribution path. Recommendations include improving extension services, price rationalization, and customized promotional strategies. These insights help agrochemical companies, policymakers, and extension agencies promote sustainable weed management in the region.

Keywords: Herbicides, Agrochemicals, Marketing Potential, Chandauli, Weed Control, Price Sensitivity

INTRODUCTION

Herbicides are critical in modern agriculture, enabling effective weed control and improving crop yields. In India, their use is expanding due to rising labor costs, crop intensification, and changing farming practices. Chandauli, known as the "Rice Bowl of Uttar Pradesh," presents high herbicide demand, especially in rice, wheat, and sugarcane cultivation. Despite the growing market, adoption faces hurdles.

Many farmers lack technical knowledge, access to credit, and marketing support. The increasing presence of multinational agrochemical firms has expanded product variety, but farmer decision-making remains influenced by pricing, peer opinion, and retailer advice. This study aims to estimate the market potential of herbicides and analyze the factors shaping their adoption in Chandauli.

RESEARCH METHODOLOGY

The study was conducted in Chandauli district using a multistage stratified random sampling technique. From the Chandauli block, six villages (Baburi, Dharauli, Bedaha, Sultanpur, Kata, Gahiri) were selected. A total of 100 farmers were randomly surveyed based on farm size classification: marginal, small, semi-medium, medium, and large

TOOLS USED

1. **Descriptive Statistics** – Mean, percentages
2. **Chi-Square Test** – Association between variables
3. **Garrett's Ranking Technique** – Constraint analysis
4. **Price Sensitivity Analysis** – Distribution across companies
5. **Marketing Cost and Margin Analysis**

Data were collected through structured schedules and interviews during the 2024–2025 agricultural year.

RESULTS AND DISCUSSION

- Age Distribution: 54% of farmers are in the 36–50 age group
- Education: 30% had primary-level education, 15% were illiterate
- Gender: 84% male, 16% female
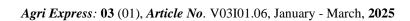- Family Type: 77% nuclear, 23% joint
- Annual Income: 35% earn < ₹1 lakh, 30% ₹1–2.5 lakh, 25% ₹2.5–5 lakh, 10% > ₹5 lakh

1. **Socio-Economic Profile**

Farm Size: 28% medium, 26% semi-medium, 17% small, 16% marginal, 13% large

Table: Distribution of farmers according to farm size.

S.No.	Categories(members)	Respondents	
		Number	**Percentage (%)**
1.	**Marginal (<1 hectare)**	16	16
2.	**Small Farmers (1- 2 hectares)**	17	17
3.	**Semi Medium Farmer (2-4 hectares)**	26	26
4.	**Medium Farmers (4- 10 hectares)**	28	28
5.	**Large Farmers (Above 10 hectares)**	13	13
	Total	**100**	**100.00**

2. Competitive Analysis of Herbicide Companies

- UPL leads with 25% market share, followed by Syngenta (20%), Bayer (18%), and BASF (15%).
- Price range varied from ₹200 to ₹2,000 per liter/kg.

Table: Distribution of the major herbicides company product, price range and market share.

Company	Popular herbicides	Target crop	Price range (per lit/kg)	Market share
UPL	Glycel, Metrix, Ronstar	Wheat, Rice, Sugarcane	300-1200	25%
SYNGENTA	Gesapax, dualgold, topik	Maize vegetables	400-1500	20%
BAYER	Atlantis, Alisar, Liberty	Wheat, Mustard, Soybeans	500-2000	18%
BASF	Nominee, Clomate, Raxil	Rice, Potato	350-1800	15%
DHANUKA	Total (glyphosate), Tata maida	Cotton, Sugarcane	250-1000	12%
PI INDUSTRY	Pioneer (pendimethalin)	Wheat, Pulses	200-900	10%

3. Herbicide Demand by Crop

- Wheat (35%), Sugarcane (25%), and Rice (20%) account for 80% of demand.

Table: Distribution of the crop wish demand of the herbicides.

S.NO	CROP	DEMAND (% OF HERBICIDES)
1	Wheat	35%
2	Sugarcane	25%
3	Rice	20%
4	Maize	10%
5	Vegetables	5%
6	Others	5%

4. Price Sensitivity Analysis

- Highest sensitivity found among marginal farmers.

- PI Industries (22%) and Dhanuka (17%) attracted most price-sensitive buyers due to lower pricing.

Table: Distribution of the farmers according to the price sensitivity.

Company	Price rang	Price sensitivity of the farmers				Total	Percentage
	per lit/kg	Marginal	Small	Medium	Large		
UPL	300-1200	5	4	5	4	18	18.00
SYNGENTA	400-1500	2	3	4	5	14	14.00
BAYER	500-2000	2	2	4	5	13	13.00
BASF	350-1800	5	5	4	2	16	16.00
DHANUKA	250-1000	7	6	2	2	17	17.00
PI INDUSTRY	200-900	9	8	3	2	22	22.00
TOTAL		**30**	**28**	**22**	**20**	**100**	**100**

5. Marketing Channels

- Channel I: Digital/web-based direct marketing – 34% preference.

- Channel II: Traditional retail network – 56% preference.

Table: Distribution of respondents based on their preference for marketing channels.

S.No.	Channel Type	No of respondent	Percentage (%)
1.	Channel–I	34	34.00
2.	Channel-II	56	56.00
Total		**100**	**100.00**

6. Constraints in Marketing (Garrett Ranking)

Table: Constraints in the marketing of herbicides and agrochemicals in the study area.

S.No.	Constraints	Frequency	Ranking
1	High cost of transportation	29	I
2	Shortage of trading	18	II
3	Price fluctuation	16	III
4	High prices	14	IV
5	Storage problem	12	V
6	Delayed sales	11	VI
	Total	100	

CONCLUSION

Herbicide use is expanding in Chandauli due to rising labor costs and changing cultivation practices. Despite this growth, adoption is limited by low awareness, price sensitivity, and weak extension services. Agrochemical companies should focus on rural engagement, product demonstrations, and affordable options. Policy support for credit and awareness programs will further enhance adoption and improve farm productivity.

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