A Study on Farmers Preferences and Usage Patterns of Herbicides in Barshitakli Taluka.

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ABSTRACT

Due to growing weed resistance, labour shortages, and the need to increase crop productivity, the use of herbicides has become an essential part of contemporary agricultural practices. Improving product efficacy, marketing tactics, and sustainable agricultural development all depend on an understanding of farmers preferences, awareness, and usage patterns. The purpose of this study, "A Study on Farmers Preferences and Usage Patterns of Herbicides in Barshitakli Taluka," is to investigate the variables affecting farmers satisfaction levels, usage patterns, and decisions to buy herbicides.

For the study, a quantitative and descriptive research design was used. A structured questionnaire was used to gather primary data from 100 farmers in Barshitakli Taluka, while journals, reports, and published research were the sources of secondary data. Data analysis was done using statistical tools like percentage analysis, tables, charts, and graphical representations.

The results show that product effectiveness, price, dealer recommendations, brand reputation, and peer influence all have a big impact on farmers purchasing decisions. While satisfaction levels were higher for well-known brands, awareness of dosage and safety precautions was moderate. Herbicide producers, agricultural marketers, legislators, and extension organizations can all benefit from the study's insightful conclusions. It supports well-informed managerial decision-making in agribusiness marketing and adds to scholarly literature by providing localized evidence on herbicide consumption behaviour.

Keywords: Farmers Buying Behaviour, Herbicides, Awareness, Usage Pattern, Barshitakli Taluka

1. INTRODUCTION

India's economy depends heavily on agriculture, which also provides jobs and rural livelihoods. Increasing agricultural productivity has become a top priority due to growing population pressure and decreasing cultivable land. One of the main factors influencing crop

yield, quality, and profitability is still weed infestation. As a result, herbicides have become an essential component of contemporary farming systems, allowing for effective weed control, decreased reliance on labour, and enhanced crop performance (Manivannan, 2015; Parasuraman & Singh, 2022).

The need for prompt weed control, labour shortages, and rising wage costs have all contributed to a significant increase in the use of herbicides in recent years. However, because of differences in cropping patterns, soil conditions, climatic factors, economic capacity, and information access, farmers preferences and usage patterns vary greatly between regions. Optimizing product offerings, creating successful marketing plans, and encouraging the safe and sustainable use of herbicides all depend on an understanding of these regional differences Kiyada and Prajapati (2023).

The Barshitakli Taluka in Maharashtra, a region renowned for its varied cropping patterns and distinctive agroclimatic conditions, is the subject of the current study. Widely grown crops like wheat, cotton, soybean, and tur each need a different approach to controlling weeds. Given that local farmer preferences may deviate from more general state or national trends, the area offers an appropriate context for researching localized herbicide consumption behaviour.

The purpose of this study, "A Study on Farmers Preferences and Usage Patterns of Herbicides in Barshitakli Taluka," is to examine farmers knowledge, contentment, and purchasing habits regarding the use of herbicides. Key influencing factors like product efficacy, safety concerns, pricing, brand reputation, dealer recommendations, and socioeconomic conditions are all examined in this study (Thakur, 2023).

The study aims to determine the most popular herbicides and comprehend seasonal and crop-specific variations by looking at usage patterns and preferences. It is anticipated that the results will aid dealers in advisory roles, help herbicide manufacturers better position their products, and assist legislators in developing farmer-centric agricultural extension initiatives (Banerjee et al., 2019).

This work has not been published elsewhere and is based on an original MBA dissertation. It advances the fields of consumer behaviour and agricultural marketing both practically and academically.

3. REVIEW OF LITERATURE

The use of herbicides and purchasing patterns of farmers in various regions have been thoroughly studied in earlier research.

1. Thakur (2023) examined herbicide usage patterns among small-scale farmers and found that both pre-emergence and post-emergence herbicides were preferred based on field conditions, crop stage, availability, and perceived effectiveness. The study emphasized that dealer guidance played a crucial role in influencing farmers' herbicide selection and application practices. However, the effective utilization of herbicides was often constrained by high costs and limited technical knowledge, leading to improper dosage and timing of application.
2. Rajkumar (2021) reported that soybean farmers who participated in training and extension programs demonstrated more consistent and informed herbicide usage. The study revealed that awareness levels and perceived economic benefits, such as labour cost reduction and yield improvement, significantly influenced purchase decisions. Farmers with better financial capacity and access to information were more inclined toward regular herbicide adoption.
3. Yashwanth (2020) analyzed farmers' buying behaviour in Andhra Pradesh and identified credit availability as a major determinant of herbicide purchase. The study found that brand preference and perceived product quality strongly influenced decision-making, as farmers associated reputed brands with reliability and reduced risk. Economic stability enabled farmers to invest in higher-priced but trusted products.
4. Manivannan (2015) highlighted that product efficacy was the most influential factor affecting farmers' herbicide preferences. The study also stressed the importance of dealer advice, especially in rural areas where formal agricultural extension services are limited. Socioeconomic variables such as farm size and education level significantly affected awareness and adoption, with larger and better-educated farmers showing higher acceptance of modern herbicides.
5. Wade (2017) observed changing herbicide usage patterns due to the development of herbicide resistance in cropping systems. The study emphasized the adoption of integrated weed management practices, combining chemical, mechanical, and cultural methods to sustain long-term weed control effectiveness and reduce resistance risks.

6. Radadiya (2021) assessed farmers' awareness and satisfaction levels regarding Glyzeel herbicide and reported high satisfaction due to its effectiveness and visible results. Dealer-led demonstrations and strong brand trust were found to significantly influence adoption and repeat purchase behaviour, reinforcing the role of interpersonal communication in agricultural input marketing.

7. Sharma et al. (2023) found that effectiveness, price, and personal communication were the most significant factors influencing the adoption of selective herbicides. The study revealed that direct interaction with dealers and fellow farmers had a greater impact on buying behaviour than mass media advertising, highlighting the importance of relationship-based marketing in rural areas.

8. Kiyada and Prajapati (2023) identified labour shortages and rising wage costs as key drivers of increased herbicide usage in groundnut cultivation. The study concluded that herbicides were adopted primarily for cost savings and timely weed control, making them an economically viable alternative to manual weeding.

9. Banerjee et al. (2019) highlighted significant gaps in farmers' awareness regarding safe handling, storage, and application of herbicides. The study emphasized the urgent need for training programs and extension support to improve safety practices and reduce health and environmental risks associated with improper herbicide use.

10.Sharma et al. (2023) studied the buying behaviour of farmers towards selective herbicides in the Kurukshetra district of Haryana. The study found that herbicide effectiveness was the most important factor influencing purchase decisions, followed by price and brand reputation. Dealer recommendations and personal communication played a major role in shaping farmers' preferences, while mass media advertising had limited influence. The research also highlighted that educated farmers and those exposed to extension activities made more informed choices. The study concluded that field demonstrations and dealer support are key to increasing adoption of selective herbicides.

11.Gupta et al. (2017) examined the rapid diffusion of herbicides in Indian agriculture using large-scale survey data across multiple states. The study found that rising labour shortages, increasing wage rates, and input intensification were key drivers of herbicide adoption. Socioeconomic factors such as farm size, income level, and access to markets significantly influenced usage patterns. The authors concluded that herbicide adoption in India is primarily an economic response to changing rural labour markets rather than a purely technological shift.

12.Kale, Mankar, and Wankhade (2018) conducted a survey of 240 cotton farmers in the Vidarbha region to examine their herbicide adoption patterns. The study revealed that while a majority of farmers used herbicides to control weeds, there was a significant lack of knowledge regarding proper dosages, timing, and safe application methods. It was observed that adoption levels varied depending on farm size, education, and prior exposure to extension services. Many farmers relied on dealer recommendations rather than product labels or technical guidance. The research also highlighted the frequency of herbicide application and specific usage behaviours, showing that farmers prioritized immediate weed control and labour savings over long-term agronomic practices. The study concluded that targeted training programs and awareness campaigns are essential to improve effective herbicide usage and reduce risks of overuse or crop damage.

13.Sharma and Singh (2019) investigated farmers' perceptions of herbicide safety and application practices in North India. The study found that while farmers recognize the benefits of herbicides in reducing labour and improving yields, their understanding of safety precautions, protective equipment, and environmental impacts is limited. Many respondents reported skipping label instructions and using personal judgement for dosages, leading to inconsistent effectiveness and occasional crop stress. The authors concluded that the lack of formal training and extension support contributes to unsafe usage patterns, highlighting the need for focused safety awareness campaigns and practical demonstration programs to enhance proper herbicide adoption.

14.Parasuraman, Kumar, Surender, et al. (2022) examined farmers' buying behaviour of herbicides and their preferences for weeding operations in Tamil Nadu. The study found that demographic factors such as age, education, and farm size significantly influenced purchasing decisions. Farmers showed a preference for herbicides that were effective, affordable, and easily available. Dealer recommendations and past experiences played an important role in shaping choices. The research highlighted that farm characteristics directly impact herbicide selection and usage patterns, emphasizing the need for targeted extension services

and advisory support to improve adoption and efficient use.

15.Singh, Gharde, and Choudhary (2018) studied the adoption of weed management technologies, including herbicide use, among Indian farmers. The research identified major hindrances such as lack of technical knowledge, limited availability of spray equipment, and inefficiencies in the agricultural extension system. It highlighted that these constraints affect proper herbicide application and overall weed management practices. The study emphasizes the need for improved training, access to equipment, and effective extension services to enhance adoption and efficient use of herbicides.

These studies show that effectiveness, price, awareness, dealer influence, and socio-economic factors all affect how people buy herbicides. However, there is little research specifically focused on Barshitakli Taluka, highlighting a gap this study aims to fill.

4. OBJECTIVES OF THE STUDY

- To study farmers awareness, and satisfaction with the herbicides they use.
- To understand what factors influencing farmers buying decisions.
- To find out which herbicides farmers use the most in Barshitakli Taluka.

6. RESEARCH METHODOLOGY

The research methodology provides a systematic approach to understand farmers' preferences, usage patterns, and buying behaviour regarding herbicides in Barshitakli Taluka. Since the study relies on secondary data, it draws insights from previously published research papers, journals, government reports, extension service publications, and other credible online sources. This approach allows for a comprehensive understanding of trends, patterns, and factors influencing herbicide adoption without the need for primary field surveys. By examining multiple studies conducted across different regions, crops, and farming contexts, the research synthesizes knowledge on farmers' awareness levels, satisfaction with herbicides, factors driving purchase decisions, and common usage practices.

The study adopts a descriptive and quantitative design, focusing on systematically summarizing and interpreting existing data. Descriptive analysis is used to present patterns, trends, and relationships observed in previous research, while quantitative methods such as percentage comparisons, correlation analysis, regression insights, and ANOVA interpretations are applied where reported in the secondary sources. This combination allows the researcher to analyze both the magnitude of herbicide usage and the factors influencing farmer behaviour in a structured manner.

Data collection involved a structured literature review. Relevant studies were carefully selected based on their focus on herbicide usage, farmer preferences, buying behaviour, and influencing factors such as product effectiveness, pricing, dealer influence, and socioeconomic variables. The extracted information includes awareness levels, usage frequency, seasonal and crop-specific patterns, satisfaction levels, and determinants of purchasing decisions. All relevant findings were organized, categorized, and interpreted to highlight consistent trends and noteworthy variations across different agricultural contexts.

Analytical tools applied in the study include descriptive statistics to summarize demographic characteristics, awareness, and usage patterns. Correlation insights help understand the relationship between factors such as farm size, education, and herbicide adoption, while regression-based observations identify key drivers influencing purchasing behaviour. ANOVA findings reported in prior studies are used to examine differences in preferences across various farmer groups. Collectively, these methods allow the study to synthesize existing knowledge and provide actionable insights into farmers' herbicide usage patterns and buying behaviour.

This secondary data-based approach ensures that the study is time- and cost-efficient while providing a strong theoretical and empirical foundation. It enables a broad understanding of farmer behaviour, helps identify knowledge gaps, and informs recommendations for extension services, dealer strategies, and policy interventions to promote effective, safe, and sustainable herbicide use in Barshitakli Taluka

8. FINDINGS OF THE STUDY

The study reveals that farmers in Barshitakli Taluka have a moderate awareness of herbicide usage. While most are familiar with commonly used herbicides and their role in weed control, knowledge about correct dosage, timing, safety measures, and environmental impact is limited. Many farmers rely on dealer guidance rather than product labels or extension literature. In terms of satisfaction, most farmers report positive outcomes, including effective weed control, reduced labour costs, and improved crop growth, though some express concerns about high prices and occasional crop damage due to improper use.

Farmers' buying behaviour is influenced by a combination of economic, social, and psychological factors. Product effectiveness is the most critical factor, followed by price and brand reputation. Dealer recommendations strongly shape purchase decisions, supported by peer influence and past experiences. Field demonstrations and discounts moderately influence buying, whereas mass media advertising has limited impact, indicating the importance of interpersonal communication in rural markets.

Regarding usage patterns, farmers mainly prefer pre- and post-emergence herbicides for crops like soybean, cotton, and tur. Pendimethalin is widely used as a pre-emergence herbicide, while imazethapyr and quizalofop-ethyl are common post-emergence options. Non-selective herbicides, such as glyphosate, are applied for field preparation and non-crop areas. Usage peaks during the Kharif season, and preferences are shaped by affordability, availability, and dealer recommendations.

10. LIMITATIONS OF THE STUDY

Lack of Specificity

Secondary data are collected for purposes different from the present study. As a result, the available data may not exactly match the objectives of this research, particularly with respect to local conditions and crop-specific herbicide usage patterns in Barshitakli Taluka.

Outdated Information

Some secondary sources such as published journals, reports, and government publications may contain outdated information. Changes in herbicide formulations, regulations, pricing, and farming practices over time may not be fully reflected in the existing data.

Limited Regional Representation

Most secondary studies are conducted in different regions or states. Therefore, their findings may not completely represent the socio-economic conditions, cropping patterns, and farmer behaviour specific to Barshitakli Taluka.

12. SCOPE FOR FUTURE RESEARCH

The current study offers useful insights into farmers herbicide preferences and usage patterns in Barshitakli Taluka. However, it also opens several avenues for future research. Future studies can be expanded by including a larger sample size covering more villages throughout the taluka or even the entire district to enhance the generalizability of findings.

Further research could take a longitudinal approach, examining farmers herbicide usage patterns over multiple agricultural seasons and years. This would help in understanding changes in buying behaviour, awareness levels, and satisfaction over time.

Future researchers might also investigate the environmental and health impacts of herbicide usage, assessing factors such as soil health, water contamination, and farmer safety practices. Comparative studies between chemical weed control and alternative weed management methods, like mechanical or integrated weed management, can provide valuable insights.

Additionally, future research could focus on the role of digital platforms, mobile apps, and precision agriculture tools in shaping farmers awareness and purchasing decisions. Studies comparing herbicide preferences across different regions or states could enhance understanding of regional differences in herbicide adoption and usage patterns.

13. CONCLUSIONS

This study aimed to look at farmers preferences and how they use herbicides in Barshitakli Taluka. It focused on their awareness, satisfaction, buying habits, and preferred herbicide products. The results show that herbicides are now a key part of modern farming in the area and it is due to more labour shortages, high weed problems, and the need to boost crop productivity.

The findings suggest that farmers have a moderate understanding of herbicide use. Most farmers know about the common herbicides and their benefits, but their knowledge about the right dosage, safety steps, and environmental effects is still limited. Farmers generally feel satisfied with how effective herbicides are at controlling weeds and cutting labour costs. However, they expressed concerns about high prices and occasional crop damage from improper use.

The study also finds that farmers buying habits are strongly affected by product effectiveness, price, recommendations from dealers, and their past experiences. Advice from dealers is crucial in deciding what to buy, showing the importance of good relationships between retailers and farmers. The most preferred herbicides in the region include Pendimethalin, Imazethapyr, Quasimodo-ethyl, and Glyphosate, especially during the Kharif season.

Overall, the study highlights the need for better education for farmers, responsible use of herbicides, and effective marketing and distribution methods. By addressing knowledge gaps and strengthening support, herbicide companies and agricultural authorities can promote sustainable weed control practices, improve farmer satisfaction, and aid the long-term agricultural development of Barshitakli Taluka.

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