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Study of Awareness of Paddy Crop Diseases among Stakeholders

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Abstract
Paddy, or rice, is a staple food crop in many countries, particularly in Asia. Ensuring its healthy yield is critical for food security. This study investigates the awareness of paddy crop diseases among stakeholders, including farmers, agricultural extension officers, input suppliers, and policymakers. Through surveys and interviews, the research assesses stakeholders' knowledge levels, identifies gaps, and recommends interventions to improve awareness and management practices. The study emphasizes the importance of education, timely dissemination of information, and collaboration for effective disease management.
Paddy, or rice, is a critical food crop in many parts of the world, particularly in Asia, where it sustains millions of rural households and ensures national food security. However, paddy cultivation is highly susceptible to various diseases such as rice blast, bacterial leaf blight, sheath blight, and tungro virus, which significantly reduce yield and income. The effective management of these diseases depends largely on the level of awareness among stakeholders, including farmers, agricultural extension officers, input suppliers, and policymakers.
This study aims to assess the awareness levels of stakeholders regarding paddy crop diseases and to identify the sources of information and existing gaps in knowledge dissemination. A mixed-method approach was employed, involving surveys, interviews, and focus group discussions across three major rice-growing districts. The findings reveal that while extension officers and input suppliers possess moderate to high levels of awareness, a significant portion of farmers have limited knowledge and rely heavily on informal sources such as fellow farmers. The study also highlights the underutilization of agricultural extension services and digital information platforms.
The research underscores the need for improved stakeholder training, stronger extension outreach, and the integration of digital tools in disease awareness programs. Enhancing stakeholder awareness can lead to better disease management practices, higher yields, and more sustainable paddy cultivation systems.

Keywords - stakeholders, diseases, Agriculture, farmers

1. Introduction

Paddy, commonly known as rice, is one of the most vital staple crops, particularly in Asia, where it plays a crucial role in ensuring food security and supporting rural livelihoods. However, paddy cultivation is frequently threatened by a range of diseases such as rice blast, sheath blight, bacterial leaf blight, and viral infections like rice tungro. These diseases not only reduce yield and grain quality but also pose significant economic challenges to farmers and the agricultural sector as a whole.

Fig 1: Bacterial Leaf Blight

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Fig 3: Bacterial Panicle Blight

Effective management of these crop diseases hinges significantly on the awareness and knowledge levels of various stakeholders involved in paddy production. These stakeholders include farmers, agricultural extension officers, seed and pesticide dealers, local leaders, researchers, and policymakers. While some stakeholders, such as agricultural professionals, may have access to technical knowledge and resources, others—particularly small and marginal farmers—often rely on informal sources of information, which may be outdated or inaccurate.

Understanding the current awareness level of stakeholders regarding paddy diseases is essential to designing targeted interventions for disease prevention, diagnosis, and control. Lack of proper knowledge may lead to incorrect usage of agrochemicals, delayed response to infections, and overall reduced productivity.

This study aims to examine the degree of awareness among different stakeholders, identify the sources of information they rely on, and highlight the gaps in knowledge and communication. The findings of this study can help in formulating educational programs, improving extension services, and promoting sustainable disease management practices, thereby enhancing the resilience and productivity of paddy cultivation systems.

Paddy cultivation forms the backbone of agriculture in many developing countries. However, its productivity is often hampered by a variety of crop diseases such as blast, sheath blight, bacterial leaf blight, and tungro virus. Effective management of these diseases largely depends on the awareness and preparedness of stakeholders. These stakeholders include not just farmers, but also agricultural officers, pesticide dealers, researchers, and policymakers.

Despite advancements in agricultural technology, many farmers continue to rely on traditional practices and may lack up-to-date information about disease symptoms, causes, and control measures. This study aims to analyze the current level of awareness among stakeholders and explore ways to improve it.

2. Objective of the study

1. To study the awareness of paddy crop diseases amongst the stakeholders.

3. Literature Review

Previous studies have highlighted the impact of crop diseases on rice yield and the critical role awareness plays in disease management. According to the International Rice Research Institute (IRRI), yield losses due to diseases like blast and bacterial leaf blight can range from 20% to 50% if not managed properly.

Singh et al. (2021) conducted a study in northern India and found that 65% of farmers had only basic knowledge of common paddy diseases, and most relied on fellow farmers for information. In contrast, studies in countries like Vietnam and China show higher awareness levels due to strong agricultural extension systems and government support.

Technology such as mobile apps and automated disease detection systems are being introduced, but their adoption remains limited due to lack of training and awareness among rural farmers.

Paddy cultivation remains central to the agricultural economies of many countries, particularly in Asia, where it is both a staple food and a primary source of income for millions of farmers. However, paddy crops are highly vulnerable to a wide range of diseases caused by fungi, bacteria, viruses, and nematodes. Diseases such as rice blast (Magnaporthe oryzae), sheath blight (Rhizoctonia solani), bacterial leaf blight (Xanthomonas oryzae), and rice tungro virus continue to cause significant yield losses globally. Awareness and timely management of these diseases are critical for minimizing their impact.

According to the International Rice Research Institute (IRRI, 2020), yield losses due to rice diseases can range from 10% to over 50%, depending on the severity and stage of infection. The institute emphasizes the role of farmer education, early detection, and integrated disease management practices in ensuring sustainable rice production.

Several studies have explored the level of awareness among stakeholders. For example, a study by Singh et al. (2021) in Uttar Pradesh, India, revealed that more than 60% of farmers could recognize basic symptoms of rice blast and bacterial leaf blight but lacked knowledge of preventive measures. The majority of these farmers depended on fellow farmers and local agro-dealers for information, often leading to delayed or inappropriate responses to disease outbreaks.

Another study by Nguyen and Tran (2019) in Vietnam highlighted the positive impact of strong extension networks on disease awareness. In areas where agricultural extension officers regularly interacted with farmers, awareness levels and adoption of recommended practices were significantly higher. The use of demonstration farms and farmer field schools also proved effective in improving knowledge and practices.

The role of input suppliers (such as seed and pesticide dealers) as key information providers has also been noted in research. While these stakeholders often act as first responders during disease outbreaks, their advice may sometimes prioritize commercial interests over scientific accuracy (Kumar & Das, 2018).

Digital tools are increasingly being used to bridge the awareness gap. Mobile apps, SMS advisories, and community radio have shown promise in disseminating timely and localized information. However, their effectiveness is often limited by barriers such as poor digital literacy, lack of access to smartphones, and inadequate training in their use (FAO, 2019).

Policymakers and agricultural planners also play a vital role. According to Sharma (2020), integrating disease awareness campaigns into national agricultural schemes can help scale up outreach and provide structured support to farmers. Unfortunately, awareness initiatives are often fragmented and short-term, limiting their long-term impact.

Overall, the literature indicates that while some progress has been made in raising awareness of paddy crop diseases, significant gaps remain. These include inconsistent extension services, reliance on informal information networks, and a lack of tailored communication strategies for different stakeholder groups. Addressing these challenges requires a coordinated approach involving education, technology, and policy support.

4. Methodology

4.1 Research Design

A mixed-method approach was used, combining quantitative and qualitative data collection techniques.

The research design for this study is structured to effectively assess the level of awareness of paddy crop diseases among various stakeholders and to analyze the factors influencing this awareness. A **mixed-method approach** combining both quantitative and qualitative techniques was adopted to ensure a comprehensive understanding of the issue.

Research Type

The study is descriptive and exploratory in nature. The **descriptive** component focuses on identifying the current awareness levels, while the **exploratory** part aims to investigate the sources of information and identify the gaps in communication and knowledge transfer.

Study Area

The study was conducted in Pune district. This region were chosen to reflect diversity in terms of farming practices, access to extension services, and educational backgrounds of farmers.

Population and Sampling

The target population includes various stakeholders involved in paddy cultivation:

- Farmers
- Agricultural extension officers
- Input suppliers (e.g., seed and pesticide dealers)
- Policymakers and researchers

A **stratified random sampling** method was used to ensure representation from each stakeholder group. The sample size included:

- 100 farmers
- 20 agricultural officers
- 20 Fertilizer suppliers
- 10 researchers

Graph 1:

This stratification allowed for meaningful comparisons across different stakeholder categories.

Data Collection Tools

To collect both quantitative and qualitative data, the following tools were used:

- **Structured Questionnaires**: Administered to farmers and input suppliers to collect data on their awareness of diseases, sources of information, and practices used.
- **Semi-structured Interviews**: Conducted with extension officers and policymakers to gain deeper insights into institutional roles and communication strategies.

Variables Studied

Key variables considered in the study include:

- Level of disease awareness (knowledge of symptoms, causes, and control measures)
- Frequency of interaction with extension services
- Use of technology and information sources
- Education level and farming experience
- Access to disease management training

Data Analysis

The collected data were analysed using a combination of:

- **Descriptive statistics** (mean, frequency, percentage) to quantify awareness levels
- **Cross-tabulations** to examine relationships between stakeholder characteristics and awareness
- **Thematic analysis** of qualitative data from interviews and FGDs to identify common patterns, challenges, and suggestions

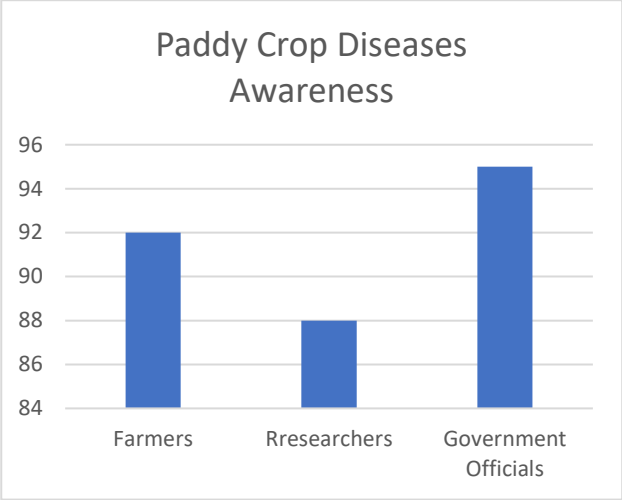
This design allowed for a robust understanding of the current state of awareness, its determinants, and the avenues for improvement across different stakeholder groups.

5. Results and Discussion

5.1 Awareness Levels

- 92% of farmers identified paddy diseases.
- 88% farmers and researchers recognized the diseases.
- 95% Officers and dealers had high awareness.

Graph 2:



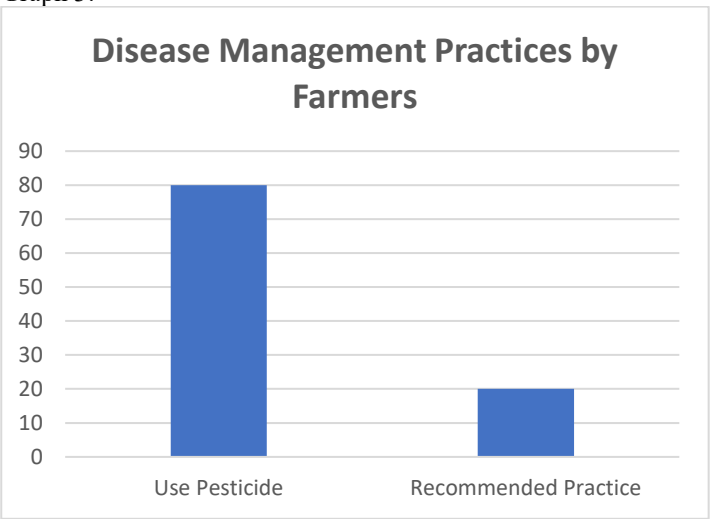
5.2 Sources of Information

- Farmers (70%)
- 20% Fertilizer suppliers.
- 10% Government officials
- 10% researchers.

5.3 Use of Disease Management Practices

- 80% of farmers are using chemical pesticides, often without proper diagnosis.
- Only 20% followed recommended cultural practices like crop rotation and resistant varieties.
- A significant number lacked knowledge about Integrated Pest Management (IPM).

Graph 3:



5.4 Gaps Identified

- Infrequent extension visits
- Limited access to training programs
- Poor digital literacy and mobile access
- Lack of local language resources

6. Recommendations

1. Strengthen Extension Services: Increase field visits and establish community resource centers for regular training.
2. Use of Artificial Intelligence to detect the diseases.
3. Use of ICT Tools: Develop user-friendly cause effect model and mobile apps and/or SMS services in local languages.
4. Capacity Building: Train input dealers and farmer leaders to act as information multipliers.
5. Awareness Campaigns: Use radio, community events, and posters to disseminate information about symptoms and control measures.
6. Policy Support: Government schemes should include a component for disease management awareness and training.

7. Conclusion

The study reveals that although there is some level of awareness among stakeholders about paddy crop diseases, it is often inadequate and fragmented. There is an urgent need for a coordinated effort to enhance stakeholder knowledge, especially at the farmer level. With improved education, better use of technology, and stronger extension services, effective disease management is achievable, leading to better yields and food security.

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