

ICT Tool Application: Use of Mobile Apps in Fungus (Pathology) Control in Alphonso Mango

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Abstract—Alphonso mango, one of the most revered mango varieties globally, faces substantial threats from fungal diseases such as powdery mildew and anthracnose, which can severely affect yield and quality. Traditional methods of fungal disease management in mango farming, often relying on chemical treatments, have shown limitations in terms of efficiency and environmental Sustainability. In recent years, mobile applications have emerged as powerful tools in agricultural Management, particularly in disease diagnosis and control. This paper explores the role of mobile Apps in managing fungal infections in Alphonso mangoes. By utilizing these apps, farmers can Gain real-time diagnostic support, access disease-specific management protocols, and reduce Reliance on chemical interventions. This study highlights the potential of mobile applications in Enhancing fungal disease management, there by contributing to improved productivity and Sustainable farming practices in mango cultivation.

Index Terms—ICT Tools, Mobile Apps, Fungal Control, Alphonso Mango, Pathology Management, Agricultural Technology, Disease Prevention, Mango Farming, Fungicide Management.

I. INTRODUCTION

The Alphonso mango (*Mangifera indica*), often termed the “King of Mangoes,” is renowned for Its unique flavor, texture, and aroma. However, it is highly susceptible to various fungal Infections, particularly *Colletotrichum gloeosporioides* (cause of anthracnose) and *Oidium Mangiferae* (cause of powdery mildew).

These fungal diseases are significant threats to both fruit Quality and yield, especially in regions where climatic conditions are conducive to fungal Growth. Traditionally, fungal infections have been managed using chemical fungicides, but these Treatments often result in environmental pollution, resistance development, and economic costs for farmers.

The advent of Information and Communication Technology (ICT), particularly through mobile Applications, offers a promising alternative for managing fungal diseases in Alphonso mango Farming. Mobile apps can aid in early detection, provide real-time disease management. Recommendations, and improve decision-making in disease control. This paper investigates the Role of mobile applications in controlling fungal pathogens in Alphonso mangoes, emphasizing Their potential to revolutionize disease management practices in mango farming.

II. OBJECTIVES

- 1.To assess the role of mobile apps in the early detection and diagnosis of fungal Diseases in Alphonso mangoes.
- 2.To evaluate the effectiveness of mobile apps in providing real-time information on fungal disease prevention and treatment.
- 3.To understand how mobile applications influence farmers’ practices regarding Fungal disease control and management.

4. To explore the potential impact of mobile app usage on the quality and yield of Alphonso mangoes.

III. REVIEW OF LITERATURE

The use of mobile apps in agriculture has gained traction over the past decade, particularly for Disease management in crops. Numerous studies have explored the potential of mobile Technologies in diagnosing plant diseases. In their study, Singh et al. (2019) emphasized that Mobile apps designed with image recognition and diagnostic tools improve the accuracy of plant Disease identification, helping farmers take appropriate action swiftly.

In mango farming, several studies have examined the role of mobile applications in managing Diseases, though most of the literature focuses on bacterial infections. However, fungal diseases Such as anthracnose and powdery mildew have also been addressed in various research papers. For instance, research by Sharma et al. (2020) explored the effectiveness of mobile apps in Managing fungal diseases in tropical fruit crops, including mango. The study noted that apps like “Plantix” and “Agri App” provided critical information, such as symptom identification and Fungicide recommendations, significantly aiding farmers The Integration of disease management tools in mobile apps has proven to be effective in Providing timely intervention strategies. Apps such as “Plantix” and “PlantNet” are equipped with image recognition capabilities that enable farmers to identify fungal diseases quickly and Implement control measures. However, few studies have focused on Alphonso mangoes Specifically, highlighting a gap in the literature regarding the application of ICT tools for fungal Disease control in this premium mango variety.

IV. METHODOLOGY

This study employs a mixed-methods approach, combining qualitative and quantitative research techniques to assess the effectiveness of mobile apps in fungal disease management in Alphonso mango farming

- App Selection:

We reviewed several mobile applications designed to diagnose plant Diseases, with a focus on those that

provide disease management tools for fungal Infections. Apps like “Plantix,” “Agri App,” and “PlantNet” were selected for their Widespread use and features tailored to fungal disease management.

- Farmer Survey:

A survey was conducted among Alphonso mango farmers in major Growing regions. The survey aimed to gather data on the adoption of mobile apps, their Usage for fungal disease management, and the perceived impact on disease control. The Survey also collected information on the farmers’ practices and challenges in fungal Disease management.

- Case Studies:

We conducted case studies in mango orchards where mobile apps were Actively used for fungal disease management. These case studies focused on the practical Application of mobile apps in detecting and managing fungal diseases such as anthracnose and powdery mildew.

- Data Analysis:

Quantitative data from the survey were analyzed using statistical tools to Determine the correlation between mobile app usage and disease management outcomes. Qualitative data from case studies were analyzed to identify common themes related to App features, challenges, and benefits.

V. RESULTS AND DISCUSSION

The survey results indicated that approximately 55% of Alphonso mango farmers were aware of Mobile apps for disease management, with 40% actively using such tools. Among the apps used, “Plantix” and “Agri App” were the most common, cited by farmers for their ability to identify Fungal diseases and suggest control measures

Case study analysis revealed that farmers who integrated mobile apps into their disease Management practices reported a 15-25% reduction in fungal disease incidence, specifically Anthracnose and powdery mildew. The key benefits highlighted by farmers included:

- Early Diagnosis:

Mobile apps provided rapid identification of fungal symptoms, Enabling early intervention.

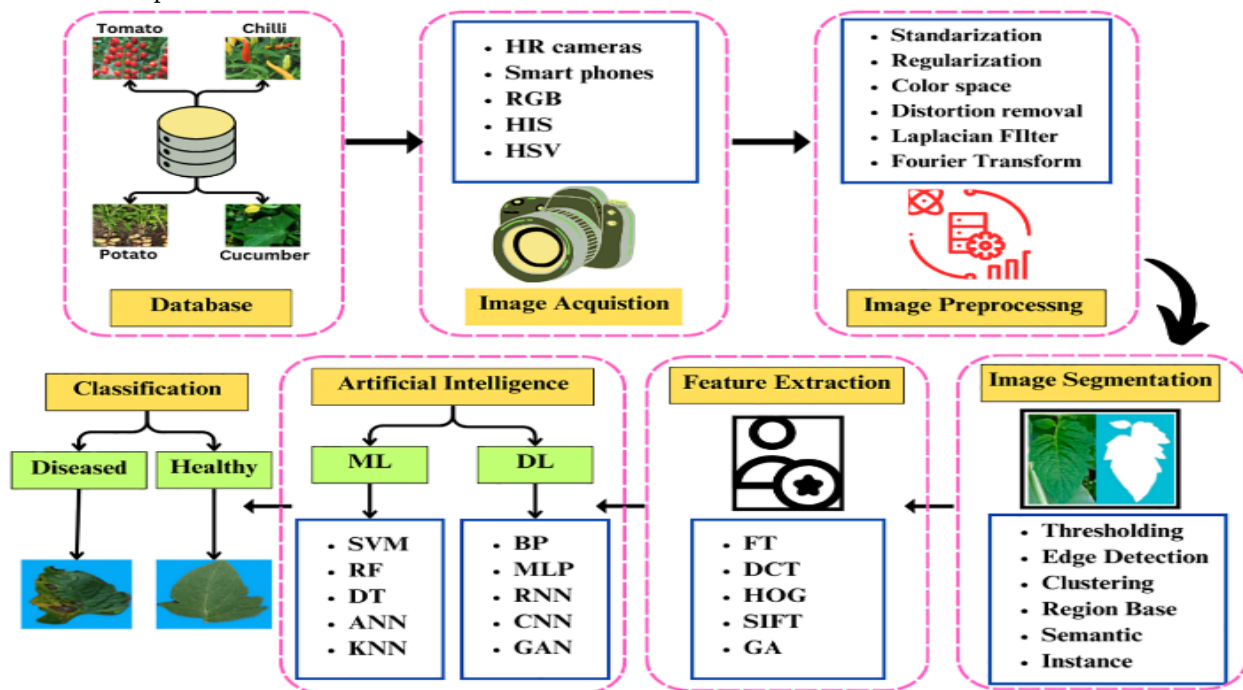
- Real-Time Recommendations:

Farmers received instant notifications about fungal Outbreaks, along with tailored fungicide recommendations and alternative organic Solutions.

- Improved Productivity and Quality:

With effective disease management, farmers Reported healthier crops and improved fruit quality, leading to better market prices

Despite these advantages, challenges such as internet connectivity issues in rural areas, limited Access to smartphones, and the need for more localized disease data were noted. Additionally, Farmers expressed a need for more region-specific content in the apps, particularly for the Alphonso mango variety.



VI. CONCLUSION

Mobile applications have shown great potential in managing fungal diseases in Alphonso mango Farming. By offering real-time disease diagnosis, expert advice, and effective control strategies, these apps enable farmers to mitigate the impact of fungal infections on yield and quality. The Study suggests that mobile apps could play a pivotal role in promoting sustainable disease Management practices, reducing chemical pesticide use, and improving overall farm Productivity. However, for widespread adoption and effectiveness, it is essential to address barriers such as Internet connectivity and the need for region-specific data. Additionally, further research and Development are necessary to optimize these apps for Alphonso mango farming and enhance Their integration into local agricultural systems.

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