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Kisan Suvidha: Empowering Farmers with Technology

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ABSTRACT: KisanSuvidha app an integrated Android-based digital platform developed to address the diverse needs of Indian farmers through a single, user-friendly application. The app provides a direct marketplace where farmers can sell or promote their produce and agricultural products by sharing contact information, while agricultural suppliers can post details of fertilizers, pesticides, and other items to facilitate trusted connections. Key features include real-time weather updates, information on government schemes, and a machine learning-based crop disease prediction system that helps farmers detect and manage crop issues early. Additionally, the app offers a comprehensive directory of nearby soil testing laboratories, allowing farmers to gain insights into their soil health. Based on...

Keywords—Government Schema, market prices, expert advisory, crop management, disease prediction, direct marketplace, machine learning, agricultural inputs, soil health, pest control, productivity, income enhancement, digital farming solutions.

I. INTRODUCTION

Agriculture is the backbone of India's economy, supporting millions of farmers who are essential for ensuring food security and sustaining livelihoods. However, many farmers continue to face significant challenges, including low incomes, inefficient practices, and limited access to vital resources. In response to these issues, the KisanSuvidha app has been developed as an integrated Android-based digital platform designed to address the diverse needs of Indian farmers through a single, user-friendly application. The KisanSuvidha app serves as a direct marketplace, enabling farmers to promote and sell their produce while connecting with agricultural suppliers who provide essential inputs such as fertilizers and pesticides. By facilitating trusted connections, the app reduces the dependency o...

II. RELATED WORK

The research conducted in 2023 examines farmers' perceptions of the Kisan Suvidha App, aiming to explore the connection between farmers and marketplaces. [1]The app provides daily market price updates sourced from government APIs; however, it serves primarily as a market platform without offering advisory support or crop disease prediction. This highlights the potential for your app to enhance connectivity by integrating market data along with advisory features for farmers [2]. Another study presents the SMART KISAN app, which focuses on disease and weather prediction using an integrated TensorFlow model. While it addresses important aspects of agricultural assistance, it lacks information regarding government schemes. Incorporating weather forecasts and government scheme details into your ...

III. PROPOSED SYSTEM

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Kisan Suvidha app is designed to provide a complete solution for Indian farmers by including features that solve various agricultural problems and promote sustainable practices. The proposed methodology includes the following steps:

Data Collection and Analysis: The app gathers information from different sources like government APIs, research institutes, and real-time weather providers. This data helps offer insights on market prices, weather updates, crop recommendations, and government schemes.

Crop Disease Prediction Using Machine Learning: One of the main features is crop disease prediction using a Convolutional Neural Network (CNN) model. The model is trained to identify diseases from images of healthy and diseased crop leaves. Farmers can upload pictures of their crops, and the app will analyze them to detect any diseases and suggest solutions.

Market Price Tracking: The app provides real-time market prices for different crops based on the user's state and district. This helps farmers stay aware of price changes and make informed decisions about when and where to sell their produce to get the best prices.

Biodegradable Waste Management: The app guides farmers on how to manage agricultural waste effectively. It suggests ways to convert crop residues and other waste into useful products like compost or organic fertilizers, reducing waste and improving soil quality.

Multilingual Support and Easy Navigation: The app is available in multiple regional languages to cater to farmers from different parts of India. It is designed with a simple interface to make it easy for all users, even those not familiar with smartphones, to use the app without any hassle.

Expert Advisory and Community Platform: Farmers can ask questions about crop management, disease control, and government policies through the app. Experts respond to these queries with personalized advice. Additionally, farmers can share their experiences with each other, creating a community of shared knowledge.

Information on Government Schemes and Subsidies: The app provides details about various government schemes and subsidies based on the farmer's location and crop type. This helps farmers access government support easily and use it for their farming needs.

IV. IMPLEMENTATION

Module Module 1: Soil Testing Laboratory Information

This module integrates APIs to provide farmers with information about nearby soil testing laboratories based on their location. It displays a list of laboratories with contact details, types of tests offered, and pricing information. The app utilizes geolocation services to recommend the nearest laboratories, allowing users to view detailed profiles, including services, reviews, and operating hours. Additionally, it facilitates appointment scheduling for soil testing services.

Module 2: Crop Analysis

This module assists farmers in analyzing crop performance and suitability based on environmental and soil conditions. It gathers data related to crop yield, growth conditions, and pest or disease occurrences. The app uses algorithms to assess crop viability by considering soil data, climate conditions, and pest pressures. It suggests suitable crops for planting based on this analysis and utilizes historical data and predictive modeling to forecast potential yields. Alerts and recommendations for pest management are provided based on crop health analysis.

Module 3: Biodegradable Waste Management

This module focuses on educating farmers about sustainable agricultural waste management practices. It contains a repository of resources detailing best practices for biodegradable waste management and collaborates with local organizations and government initiatives. The app offers guidelines on composting, utilizing waste for bioenergy, and recycling agricultural by-products. It also provides access to articles, videos, and workshops on sustainable practices and allows farmers to share their experiences related to waste management.

Module 4: Weather Forecasting

This module integrates reliable APIs to fetch real-time weather data, including temperature, humidity, precipitation, and wind speed. The app delivers personalized weather updates based on users' locations and sends alerts for extreme weather conditions, enabling farmers to take necessary precautions.

Module 5: Market Price Tracking

To empower farmers with market insights, this module integrates government and local market APIs to fetch daily market price updates for various crops. The app allows farmers to compare prices across different markets and regions and sends notifications when prices reach desirable selling levels, helping them make informed selling decisions. This feature enables farmers to maximize their profits by timing their sales according to market trends.

Module 6: Government Schemes Information

This module provides farmers with comprehensive information about various government schemes and subsidies available for agriculture. It includes a searchable database of schemes, eligibility criteria, application processes, and deadlines. The app sends notifications about new schemes and updates on existing ones, ensuring that farmers have access to the financial assistance they need. Additionally, it allows users to ask questions and receive guidance on how to apply for these schemes.

Module 7: Product Advertisement

This module enables farmers to advertise their products directly through the app. Users can create product listings with details such as images, descriptions, prices, and contact information. The app allows farmers to promote their products to a wider audience, facilitating direct sales to consumers and retailers. It also features a rating and review system, enhancing trust and transparency within the marketplace.

Module 8: Crop Disease Prediction

This module utilizes Convolutional Neural Networks (CNNs) for image-based disease classification. The app integrates a repository of labeled crop images for training the CNN model. Farmers can upload images of their crops for analysis, allowing the app to identify potential diseases. Based on the identification, the app provides suggestions for prevention and treatment, helping farmers take proactive measures.

This updated structure now includes government schemes, market price tracking, and product advertisement modules, providing a comprehensive overview of the implementation work for the Kisan Suvidha App.

V. FUTURE WORK

The Kisan Suvidha App aims to enhance agriculture in India by promoting organic farming and biodegradable practices. Future developments will include features that showcase organic products, provide guidelines for managing biodegradable waste, and offer educational campaigns on organic farming benefits. The app will also guide farmers on obtaining organic certification and create a community forum for knowledge sharing. Additionally, collaborations with NGOs and government initiatives will facilitate workshops and training programs. By emphasizing these aspects, the app can foster sustainable farming practices and improve farmers' economic viability.

VI. CONCLUSION

The KisanSuvidha app is designed to assist Indian farmers by providing a user-friendly platform that addresses various challenges they face. It includes features such as expert advice, market price tracking, information on government schemes, and direct access to marketplaces, all aimed at enhancing productivity and income. By integrating machine learning for disease prediction, the app equips farmers with effective tools for managing their farms. Additionally, KisanSuvidha emphasizes multilingual support and a seamless user experience to cater to a diverse audience. Looking ahead, the app plans to incorporate more advanced data analytics and features to further empower farmers and contribute to a resilient agricultural sector.

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