

JSS COLLEGE OF ARTS COMMERCE AND SCIENCE

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A PROJECT SYNAPSIS ON

“Digital Agriculture Support System”

Submitted in partial fulfillment of the requirements for the award of degree

in **BACHELOR OF COMPUTER APPLICATION**

FROM **JSSCACS, MYSURU**

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Introduction

Agriculture is a vital sector that directly impacts food security and economic stability. Despite technological advancements, many farmers still lack access to timely and accurate information related to soil health, crop suitability, weather conditions, government schemes, market prices, and product availability. This information gap often results in poor crop yield, low income, financial losses, and inefficient farming practices.

The Digital Agriculture Support System is a smart, web-based platform designed to assist farmers by combining machine learning, real-time data, and digital services. The system provides soil classification and crop prediction, APMC live market rate updates, agricultural e-commerce, government yojana notifications, weather forecasting, and a post-sharing platform for farmer interaction.

By offering real-time crop price information from APMC markets, the system helps farmers decide what to grow, when to sell, and where to sell, reducing dependency on middlemen. This integrated solution aims to improve agricultural productivity, income stability, and sustainability through digital empowerment.

Aim

To design and develop a Digital Agriculture Support System that integrates e-commerce, soil classification, crop prediction, APMC live market rate updates, government yojana information, weather reports, and community interaction, providing intelligent, data-driven agricultural support to farmers for improved productivity, profitability, and decision-making.

Scope and Objectives

- Develop a smart Agriculture Platform**

To design and implement a user-friendly digital system that supports farmers with intelligent and real-time agricultural services.

- Apply Machine Learning for Analysis**

To use ML algorithms for soil classification and prediction, helping farmers select suitable crops and improve yield.

- Provide Real-Time Weather Forecasts**

To deliver accurate and timely weather updates that assist farmers in planning farming operations effectively.

- Deliver Live APMC Market Rates**

To provide daily crop price updates from nearby APMC markets, enabling farmers to make profitable selling decisions.

- Enable Online Agricultural Commerce**

To allow farmers to buy agricultural products online, reducing dependency on intermediaries and lowering costs.

- **Promote Knowledge Sharing**

To encourage farmer interaction through posts and discussions, improving awareness, learning, and problem-solving.

Existing System:

In the current agricultural ecosystem, farmers rely on traditional knowledge and local advice for crop selection and soil usage. Soil testing is often manual, costly, and inaccessible. Crop decisions are usually experience-based rather than data-driven.

Market price information from APMC yards is obtained through middlemen or local sources, which may be inaccurate or delayed. Government scheme information is scattered across multiple portals and does not reach all farmers effectively. Weather updates are not integrated with crop planning. Agricultural product sales are mostly offline, resulting in reduced profit margins.

Disadvantages of Existing System

- **Lack of Intelligent Soil and Crop Analysis**

Traditional systems rely on manual testing and experience, leading to inaccurate crop selection and reduced yield.

- **No Real-Time Market Price Updates**

Farmers depend on middlemen for price information, which is often delayed or inaccurate, causing financial losses.

- **Scattered Government Scheme Information**

Information about yojanas is spread across multiple sources, making it difficult for farmers to access and benefit from schemes.

- **No Integrated E-Commerce Platform**

Agricultural purchases are mostly offline, increasing costs and limiting access to quality products.

- **Limited Weather Integration**

Weather data is not linked with crop planning, leading to poor decision-making and risk of crop damage.

- **Poor Knowledge Sharing**

Lack of a digital community restricts farmer-to-farmer learning, innovation, and timely problem resolution.

Proposed System

The proposed Digital Agriculture Support System provides a unified digital platform supporting farmers throughout the agricultural lifecycle. The system uses machine learning algorithms to classify soil types

and predict suitable crops based on soil parameters, weather conditions, and historical data. APMC live crop price updates

Farmers receive:

- Real-time weather forecasts
- Government yojana notifications
- Crop-wise market demand insights

The integrated APMC live rate module allows farmers to check daily crop prices from nearby markets, helping them decide the right time and location to sell produce. The e-commerce module enables direct purchase of seeds, fertilizers, and equipment, reducing dependency on intermediaries.

A post and discussion platform allows farmers to share experiences, ask questions, and receive expert guidance. Vendors manage products, while administrators monitor system performance, predictions, and market analytics.

Advantages of Proposed System

- **Integrated Digital Platform**

Combines soil analysis, crop prediction, weather updates, market prices, e-commerce, and government schemes in a single system, making farming more efficient and data-driven.

- **Machine Learning-Based Soil & Crop Analysis**

Uses intelligent algorithms to classify soil and predict suitable crops, helping farmers improve yield, productivity, and profitability.

- **Real-Time Weather Forecasting**

Provides accurate and timely weather updates, enabling farmers to plan irrigation, sowing, and harvesting effectively.

- **Live APMC Market Rate Updates**

Displays real-time crop prices from nearby APMC markets, helping farmers choose the best time and place to sell for maximum profit.

- **Agricultural E-Commerce**

Allows farmers to buy seeds, fertilizers, and equipment online, reducing dependency on middlemen and ensuring fair pricing.

- **Knowledge Sharing & Community Interaction**

Enables farmers to share experiences, ask questions, and get expert guidance, promoting collaborative learning and problem-solving.

Minimum Requirements For Development:

- **Hardware Requirements**

- System: Intel i3 or higher
- RAM: 4 GB or more
- Hard Disk: 200 GB or more
- Internet connection 2mb/s

- **Software Requirements**

- Operating System: Windows 10 or higher
- Programming Language: Python and C#.
- Front-End: HTML, CSS, and JavaScript.
- Backend: ASP.NET and Flask.
- Database: MySQL.
- ML Libraries: Scikit-learn, Pandas, NumPy.
- Weather API.
- APMC Market Data API.

Modules

1. Farmer / User Module

This module allows farmers to register and securely log in to the system. Farmers can enter soil data, view crop predictions, access weather reports, and check live APMC market rates. It also provides government yojana updates, enables posting and viewing discussions, and allows purchasing agricultural products online.

2. E-Commerce Module

This module enables farmers to browse and search agricultural products easily. It manages shopping carts, order placement, and secure online payments. Users can also track their order history for better purchase management.

3. Soil Classification & Crop Prediction Module

This module analyzes soil parameters using machine learning algorithms to classify soil types. Based on soil and environmental data, it predicts suitable crops and estimates expected yield. This helps farmers in selecting the right crop for maximum productivity.

4. APMC Live Market Rate Module

This module provides daily crop price updates from nearby APMC markets. It supports location-based rate viewing, price comparison, and historical price analysis. The system also suggests the best markets for selling crops to maximize profit.

5. Government Yojana Module

This module displays detailed information about government schemes, eligibility criteria, and benefits. It also sends notifications and announcements to keep farmers informed about new and updated schemes.

6. Vendor Module

This module allows vendors to register, log in, and manage their product listings. Vendors can track orders, manage inventory, and update product details. This ensures smooth product availability and order fulfillment.

7. Admin Module

This module enables administrators to manage users and vendors, monitor system activities, and moderate content. It also tracks crop predictions, market data, and generates analytics and reports for system performance evaluation.

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