

Agrocrops – Smart Organic Farming Platform

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Abstract: *Agriculture plays a vital role in India's economy, but farmers face challenges such as lack of proper guidance, limited access to organic resources, and dependency on intermediaries. AgroCrops is a web-based smart organic farming platform designed to support farmers by providing step-by-step crop guidance, organic product purchasing options, cattle care information, and equipment usage details. The system integrates frontend technologies like HTML, CSS, JavaScript, and Bootstrap with a Flask-based backend and SQLite database. The platform also includes OTP-based secure authentication. The proposed system promotes sustainable farming, increases farmer awareness, and supports digital transformation in agriculture. Future enhancements include AI-based disease detection and IoT-based smart monitoring systems*

Keywords: *Agriculture*

I. INTRODUCTION

India is one of the largest agricultural producers in the world. However, many farmers still rely on traditional methods and lack access to structured digital guidance. Organic farming is becoming increasingly important due to its environmental and health benefits. AgroCrops aims to bridge the gap between traditional farming and modern technology by offering:

- Digital crop cultivation guidance
- Organic input marketplace
- Cattle management information
- Equipment awareness

This platform helps farmers transition toward sustainable and technology-enabled agriculture.

II. LITERATURE REVIEW

Several studies and agricultural portals emphasize the importance of digital agriculture and organic farming practices.

- Indian Council of Agricultural Research highlights sustainable farming practices and organic soil management.
- Ministry of Agriculture & Farmers Welfare promotes digital agriculture initiatives for rural empowerment.
- Vikaspedia provides crop-specific information for farmers.
- Krishi Jagran discusses organic farming trends and modern agricultural tools.
- However, most existing platforms provide only information but lack integrated shopping, authentication security, and structured digital workflow. AgroCrops combines guidance, e-commerce, and secure access in one platform

III. PROBLEM STATEMENT

Farmers face the following problems:

- Lack of structured organic farming guidance



- Limited access to certified organic seeds and fertilizers
- Dependency on middlemen
- Low digital literacy
- Lack of integrated digital platforms

There is a need for a unified system that provides both knowledge and product access in one place.

IV. OBJECTIVES

The main objectives of AgroCrops are:

- To provide step-by-step organic farming guidance
- To promote sustainable agricultural practices
- To create an online marketplace for organic products
- To improve farmer income through direct access
- To integrate secure OTP-based authentication
- To encourage digital transformation in rural areas

V. PROPOSED SYSTEM

The proposed system is a web-based platform that includes:

Modules:

- Crop Search Module
- Shopping Module
- Cattle Care Module
- Equipment Guidance Module
- OTP Authentication System

The system allows users to search crops, learn cultivation steps, add products to cart, verify via OTP, and confirm purchases

VI. METHODOLOGY

The development followed these steps:

- Requirement Analysis
- System Design
- Frontend Development
- Backend Integration using Flask
- Database Configuration using SQLite
- Testing & Debugging

VII. ALGORITHM

User Authentication Algorithm:

Step 1: User enters mobile/email

Step 2: System generates OTP

Step 3: OTP is sent to user

Step 4: User enters OTP

Step 5: If OTP matches → Access Granted

Else → Access Denied



Product Purchase Algorithm:

Step 1: User searches crop/product

Step 2: Selects item

Step 3: Adds to cart

Step 4: Confirms order

Step 5: OTP verification

Step 6: Order completed

VIII. SYSTEM ARCHITECTURE

Frontend Layer:

- HTML
- CSS
- JavaScript
- Bootstrap

Backend Layer:

- Flask (Python)

Database Layer:

- SQLite

User Interface interacts with Backend → Backend connects to Database → Response displayed to User.

IX. ADVANTAGES AND LIMITATIONS

Advantages

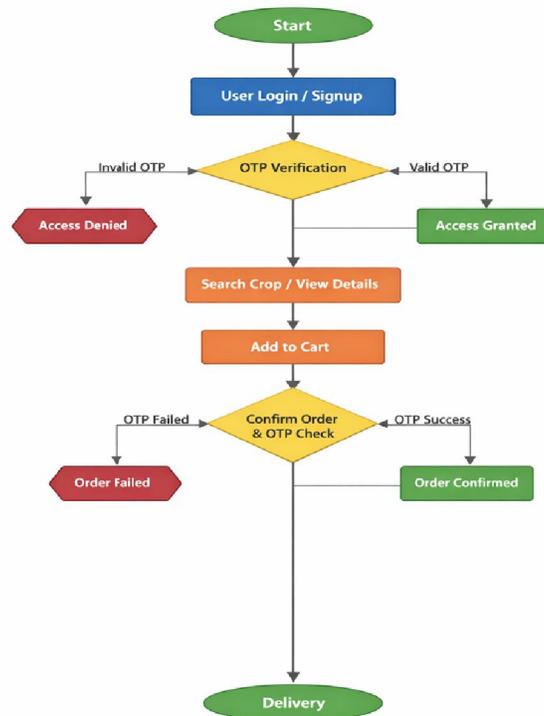
- Promotes organic farming
- Easy-to-use interface
- Low-cost implementation
- Secure OTP-based authentication
- Integrated knowledge + shopping platform
- Scalable system

Limitations

- Requires internet connectivity
- Limited to web platform (currently)
- Basic database (SQLite)
- No real-time AI detection (yet)



X. SYSTEM FLOWCHART



XI. FUTURE SCOPE

- MySQL / Firebase database upgrade
- UPI & Payment Gateway integration
- AI-based crop disease detection
- IoT soil moisture sensors
- Android & iOS mobile application
- Multilingual support (Marathi, Hindi)
- Government scheme integration

XII. CONCLUSION

Agrocrops Is A Smart Digital Platform Designed To Modernize Organic Farming Practices. It Integrates Agricultural Guidance, E-Commerce Functionality, And Secure Authentication Into A Single System. The Platform Promotes Sustainability, Enhances Farmer Awareness, And Reduces Dependency On Intermediaries. With Future Integration Of Ai And Iot Technologies, Agrocrops Has The Potential To Become A Complete Smart Agriculture Ecosystem Supporting Rural Digital Transformation.

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