International Journal of Multidisciplinary Engineering in Current Research - IJMEC
Volume 10, Issue 6, June-2025, http://ijmec.com/, ISSN: 2456-4265

Organic Farming In India: A Web Based Knowledge Hub

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ABSTRACT:

Organic farming in India has gained significant momentum in recent years due to increasing awareness about health, environmental sustainability, and food safety. However, a major challenge remains the lack of accessible, structured, and reliable information for farmers, researchers, and policymakers. This project aims to develop a web-based knowledge hub dedicated to organic farming practices in India. The platform will serve as a centralized repository of region-specific guidelines, best practices, crop calendars, certification processes, market linkages, and government schemes. It will integrate multimedia content, expert articles, and real-time updates to support informed decision-making. By leveraging digital tools and local language support, the knowledge hub aspires to empower Indian farmers, enhance organic agricultural productivity, and contribute to sustainable rural development. The initiative also envisions collaboration with agricultural universities, NGOs, and governmental bodies to ensure credibility and reach. This digital ecosystem is a step toward bridging the information gap and promoting a more resilient and eco-friendlier agricultural sector in India.

Key words: Crop Calendars, Organic Farming, Web-Based

INTRODUCTION:

Agriculture is the backbone of India\'s economy, providing livelihood to over half the population and a major contribution towards rural livelihoods. During decades past, the Green Revolution and its follow-up intensification of chemical agriculture have contributed to ensuring food security at the expense of considerable ecological degradation. Concerns like soil erosion, water contamination, loss of diversity, and diminishing nutritional content of crops have raised the demand for sustainable agricultural methods. Organic farming has thus become a healthy and ecological solution in this regard.

Organic farming has its roots in the concept of ecological equilibrium, replenishing soil fertility, and steering clear of chemical inputs such as pesticides, chemical fertilizers, and genetically modified organisms. Organic agriculture\'s growth in India has been picking up speed in recent times with states such as Sikkim, Uttarakhand, Kerala, and some areas of Madhya Pradesh and Rajasthan being the leaders. Support from the government and Mission Organic Value Chain Development for North Eastern Region (MOVCDNER) has further boosted farmers to shift direction towards organic agriculture.

In spite of all these initiatives, the greatest challenge for the Indian organic farming industry is insufficient available, organized, and localized information. There is incomplete knowledge for farmers regarding organic practices, certification

procedures, pest control, market linkages, and government programs. Even more hindrance comes from language constraints and poor digital literacy in restricting the transfer of essential knowledge to the grassroots.

To fill this gap, the creation of a web-based knowledge center is proposed. This online platform will be a one-stop shop for accessing region-specific resources, training materials, expert opinion, and market data in real time. It will enable stakeholders—ranging from farmers to extension workers, researchers, NGOs, and policymakers—to have access to region-specific information easily. By using technology and encouraging collective learning, the knowledge hub will develop a robust ecosystem for organic farming in India and drive sustainable agricultural development.

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I. RELATED WORK

Organic farming has received growing attention in India, especially as concerns about the sustainability of conventional agriculture increase. Several government initiatives and the National Program for Organic Production (NPOP), aim to promote organic farming through training, certification support, and financial assistance. However, these initiatives primarily operate through offline models, and their online presence is often limited to basic

informational portals, which are not interactive or user-friendly for rural farmers.

The Jaivik Kheti portal, developed by the Ministry of Agriculture and Farmers Welfare, serves as a national platform for organic produce marketing and farmer registration. While it provides some useful features, such as certification details and contact information for producers and buyers, it lacks dynamic educational content, region-specific farming practices, and interactive tools for real-time support. As a result, its effectiveness as a learning and engagement tool is limited.

Academic studies have also explored the role of ICT in agriculture. Kumar et al. (2020) emphasized that digital platforms can play a transformative role in rural agricultural development by bridging knowledge gaps. However, their research focused on general agricultural practices and did not delve into the unique requirements of organic farming, such as pest control without chemicals, composting techniques, and organic certification procedures.

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II. PROPOSED SYSTEM:

The suggested system is a web-based knowledge center designed specifically to facilitate organic farming in India. It has the potential to give farmers convenient access to correct, place-specific, and multilingual information regarding organic methods, certification procedures, government initiatives, and market opportunities. The platform will have learning material like guides, videos, and infographics customized to regional farming requirements, along with interactive tools like expert advice and discussion platforms. It will provide policy updates, organic input vendors, and buyer linkages to enable the farmer to access the market successfully. As compared to current platforms that tend to be scattered or cumbersome, this system

emphasizes ease of use, accessibility, and local applicability. Closing the information and technology gap, the platform enables farmers to make sound choices and promotes the extensive adoption of sustainable agriculture practices.

A. System Architecture:

The diagram depicts the website architecture design for an Indian website aimed at promoting organic farming in India. At the center of this system is an interactive website developed using HTML, CSS, and JavaScript, which offers detailed information regarding organic farming in different Indian states. The site includes a number of functionalities such as information on organic farming in India, agricultural practices state-wise, an interactive map with clickable pop ups, and crop highlights with region-specific produce (e.g., apples in the state of Jammu and Kashmir). Visitors interact with the site, which pulls and displays corresponding information from a backend database. The database holds state-wise data, crop data, images, and text content. The design of the system facilitates ease of access for users to get region-specific, organic-related content, providing them with comprehensive knowledge of organic farming through an informative and interactive web interface.

The system outlined above is a web-based knowledge center designed especially for facilitating organic farming in India. It is intended to offer farmers simple and accessible access to precise, region-specific, and multilingual information on organic processes, government schemes, certification processes, and market offerings. The platform will feature study materials like guides, videos, and infographics specific to local agricultural requirements, as well as interactive elements such as expert advice and discussion boards. It will also provide news regarding policies, organic input providers, and buyer networks to enable farmers to reach the market efficiently. In contrast to other platforms available that may be fragmented or user-unfriendly, this system emphasizes ease of use, accessibility, and local applicability. Through bridging the information and technology gap, the platform enables farmers to make informed decisions and promotes the general uptake of sustainable farming practices.

The illustration shows the architecture design of a website aimed at promoting organic farming practices in India. There is a friendly website developed using HTML, CSS, and JavaScript that forms the centerpiece of this system and gives detailed information regarding organic farming throughout Indian states. The site has various functionalities, such as information about organic farming in India, state-level agricultural practices, an interactive map with clickable pop-ups, and crop highlights with region-specific produce (e.g., apples in Jammu and Kashmir). Users interact with the site, which fetches and displays appropriate content from a backend database.

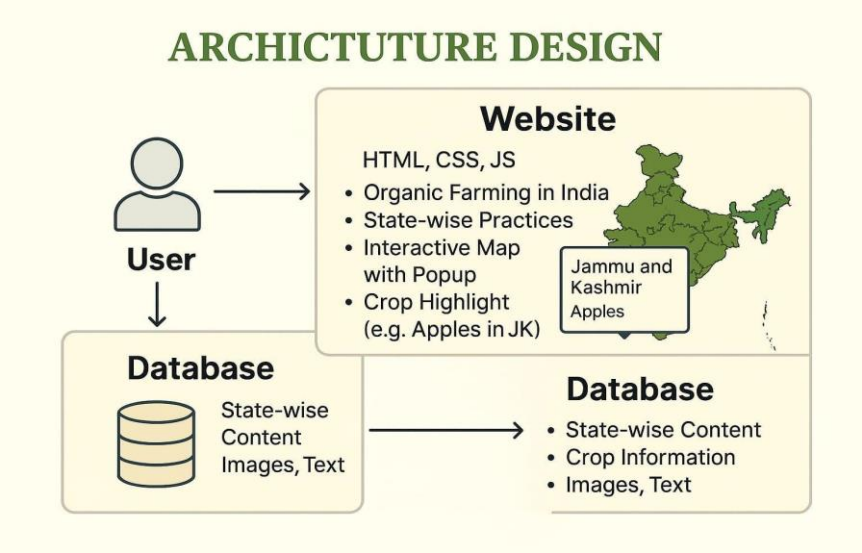

Fig: Architecture Design of Organic Farming in India

B. Data Collection Module:

AI Processing Engine is a sophisticated element embedded in the system to facilitate richer data interpretation, content personalization, and user experience. Using machine learning algorithms and natural language processing, the engine evaluates the aggregated agricultural data, detects patterns, and extracts relevant insights. For instance, it is able to identify trends in organic crop yields per state or recommend best practices based on regional climate and soil data. The AI engine also provides support for dynamic content delivery through personalized information tailored according to user queries or preferences—like suggesting crops appropriate for a particular state. It can also create summaries, automatically tag content, and enhance search results accuracy on the website. With AI integration, the system becomes smarter and more responsive, providing users with a deeper, data-based experience that adapts as data is continuously updated and user interaction takes place.

C. Adaptive Learning Module:

An Adaptive Learning module on Organic Farming in India is a cutting-edge learning strategy tailored to empower farmers, students, and agriculture professionals with tailored, location-specific information on sustainable agriculture techniques. The module uses technology to customize content according to learners\' personal pace, prior knowledge, and local agro-climatic conditions. It encompasses key subjects like soil health, organic fertilizers, rotation of crops, natural pest control, and certification procedures under Indian standards such as PGS-India and NPOP. With integration of local languages, audio-visual media, and mobile-accessible interfaces, the module extends accessibility to farmers from varying literacy levels and geographies. Adaptive testing and instant feedback present learners with a personalized path, enabling them to implement organic farming practices more efficaciously. In addition, the platform can include collaborations with Krishi Vigyan Kendras, ICAR institutions, and farmer-producer organizations to optimize support and implementation at field-level. Not only does this strategy support sustainable agriculture but also rural empowerment through knowledge, leading to food security and environmental well-being in India.

D. Cloud Based deployment:

A cloud-based deployment of organic farming in India refers to employing cloud computing technologies to facilitate, manage, and expand sustainable agriculture methods throughout India. This strategy allows the development of centralized platforms in which information about soil health, weather patterns, availability of organic inputs, pest diseases, and market prices is gathered, stored, and accessed in real-time by farmers, researchers, and policymakers. With adaptive learning modules, farm management software, and mobile advisory services hosted on the cloud, farmers in the most far-flung locations can access customized advice, training, and updates using their smartphones. Cloud platforms also enable the integration of soil and crop monitoring IoT devices, data analytics for productivity forecasting, and blockchain for certification and traceability of organic products. Government agencies, NGOs, and data-driven insights, scaling organic farming ventures. Overall, cloud-based deployment provides Indian organic farmers with technology-enabled solutions, increasing productivity, sustainability, and market access.

E. Intelligent feedback Module:

Intelligent feedback in Indian organic farming is the application of cutting-edge technologies like artificial intelligence (AI), machine learning, and data analytics to offer real-time, customized advice to farmers depending on their particular cultivation practices and circumstances. By processing data from different sources like soil sensors, satellite images, weather forecasts, and past crop performance, intelligent systems can identify trends and produce meaningful suggestions. For example, a farmer can be notified regarding the best use of compost, pest infestations at an early stage, or recommendations on enhancing soil fertility through organic practices such as green manuring or biofertilizers. Such systems are capable of determining compliance with organic certification standards and provide corrective recommendations so as to adhere to best practices. Distributed through mobile applications or voice interfaces in local languages, smart feedback fills the knowledge gap between smallholder farmers and the rest of the world, allowing them to make data-driven decisions improving yields, lowering input prices, and sustaining soil health. This intelligent, data-driven methodology facilitates wider adoption of organic farming in India with assured sustainability and profitability at the grassroots level.

III. MODULE SPLIT-UP

USER: Choose a state and place a cursor on that state to popup. Click state or popup to receive more detail of organic farming percentage and popular organic crop that specific state.

ADMIN: Admin used to upload data to websites. Admin can control data.

SERVER: Execute user functions such as open web pages.

DATABASE: Keeps total data of the website.

IV.ALGORITHM:

STEP1: Start

STEP 2: Define project scope

Title: ORGANIC FARMING IN INDIA

Objective: A Web based knowledge hub.

STEP 3: Research & Data Collection For each of 29 states. Famous crops and its contribution.

STEP 4: Homepage or interactive map page: India Map with clickable states.

Popups/Modal Boxes. Show details of each state\'s contribution.

Organic Farming page: Detailed description of crops.

STEP 5: Plan User Interface (UI), Use HTML for structure, Use CSS for styling Use Java script for interactivity (map clicks on popups)

STEP 6: Develop Core Features and Create HTML layout of image-based Indian Map

Make states clickable using IDs or image map areas and Show popup/modal on state click

Display: State Name, Freedom Fighter, Description, Image.

STEP 7: Test the website cross-browser testing

Responsive design check(mobile/desktop), verify all states and popups work correctly.

STEP 8: Deploy or Present

STEP 9: END

V. IMPLEMENTATION DETAILS:

Implementation refers to the process of putting a plan, decision, or strategy into action to achieve specific objectives. It involves executing the necessary steps to transform theoretical concepts into practical applications. For instance, in a business context, implementation encompasses activities such as allocating resources, assigning responsibilities, and establishing timelines to realize a business plan. In the realm of information technology, it pertains to the deployment of software or hardware systems, ensuring they function as intended within an organization. Effective implementation is crucial for the success of any initiative, as it bridges the gap between planning and actual results, ensuring that goals are not only set but also achieved.

VI. RESULT:

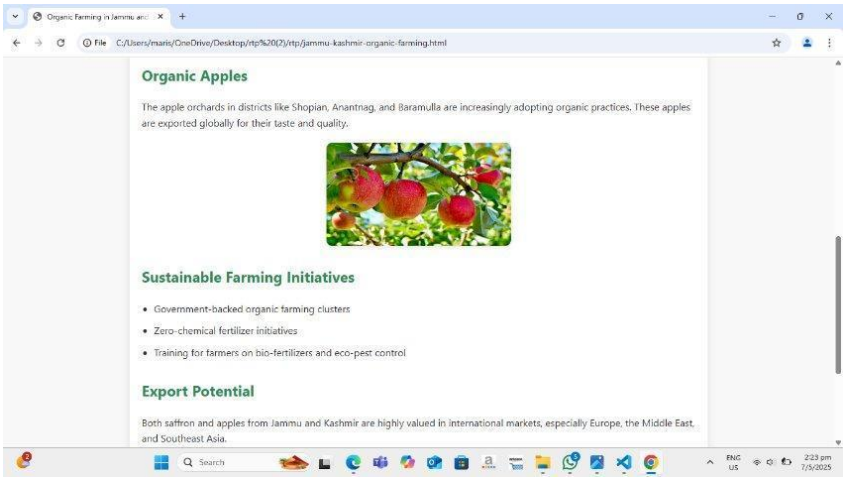

Fig: It shows overview of Organic Farming in Jammu and Kashmir

VII. CONCLUSION:

Organic farming is an imperative and sustainable method of agriculture that can counter conventional farming, particularly in a nation like India where soil degradation and soil health are emerging problems. Yet, its much-needed replication is thwarted by inadequate, region-specific, and practical knowledge for farmers. The envisioned web-based knowledge platform fills the gap by providing an integrated, multilingual platform responsive to Indian organic farmers\' diversified needs.

By harmonizing expert knowledge, government programs, multimedia learning platforms, and market linkages into a single easy-to-use system,

this effort seeks to empower farmers, foster organic practices, and assist the ultimate long-term goal of sustainable farming in India. The system can become an essential tool for awareness, education, and cooperation in the organic farming community.

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