

Success Story: Farmer Using e-Crop to Boost Yield

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The digital revolution has entered the agricultural sector, transforming traditional farming into a data-driven enterprise. The e-Crop system a digital agriculture platform for real-time monitoring, crop management and decision support—has emerged as a game changer for farmers. This article highlights the success story of an Indian farmer who adopted the e-Crop system to optimize inputs, improve crop health, and significantly increase yield and income. The case study demonstrates how technology can empower small and medium farmers to achieve sustainability, profitability, and climate resilience through digital innovation.

Introduction

Agriculture has long been the backbone of India's economy, providing livelihoods for more than half of the population. However, traditional farming practices are often constrained by uncertain weather, poor soil health data, lack of timely advisory services, and inefficient input use. To overcome these challenges, the integration of Information and Communication Technology (ICT) in agriculture has become essential. The e-Crop system, developed under the Government of India's digital agriculture initiative, enables real-time crop registration, monitoring, and advisory services through digital devices. It combines satellite data, IoT-based sensors, and mobile apps to help farmers make data-driven decisions.

Background of the Farmer

A progressive farmer owned four hectares of land where he cultivated paddy and cotton. Despite his hard work and experience, his crop yields consistently remained below the district average around 4.2 tons per hectare for paddy and 15 quintals per hectare for cotton. The main reasons for this low productivity were improper irrigation scheduling and unbalanced fertilizer application, which gradually led to soil degradation and reduced fertility. Frequent pest and disease outbreaks further affected crop health, as they were often identified too late for effective control. Additionally, the absence of real-time data and reliable advisory services made it difficult for him to make timely decisions regarding irrigation, nutrient management, and pest control. Limited access to market and price information also prevented him from obtaining fair returns for his produce, increasing production costs and reducing profitability over time.

- Low productivity due to improper irrigation scheduling
- Unbalanced fertilizer use leading to soil degradation
- Pest and disease outbreaks not detected in time
- Limited access to market and price information



Source: <https://www.linkedin.com/>

Adoption of the e-Crop System

In 2022, the Digital Agriculture Pilot Program introduced by the state government. Through training provided by the Department of Agriculture and local Krishi Vigyan Kendra (KVK), he learned to use the e-Crop mobile application.

Key Components Used:

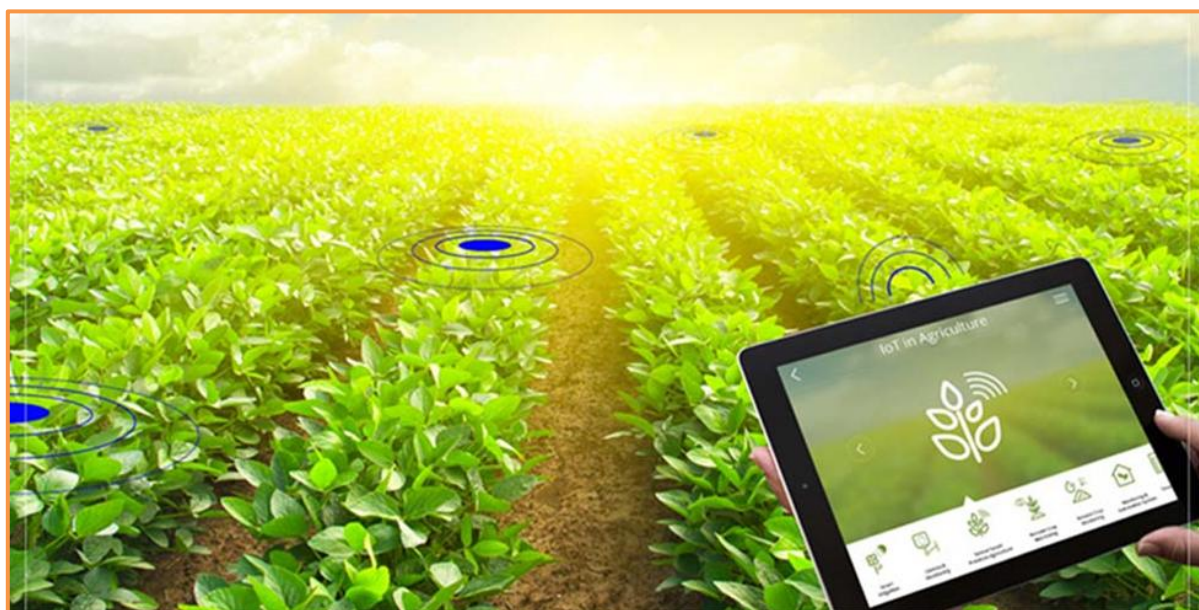
1. **Crop Registration:** His paddy and cotton fields were digitally mapped using GPS-based boundary marking.
2. **Sensor Integration:** Soil moisture and temperature sensors were installed to collect real-time data.
3. **Remote Sensing:** Satellite images and drone surveys helped assess crop growth and stress conditions.
4. **Digital Advisory:** Based on data, the e-Crop system provided automated SMS alerts for fertilizer, irrigation, and pest control.
5. **Market Linkage:** The e-Crop dashboard displayed local market rates and demand forecasts..

Technological Interventions and Implementation

Soil Health and Nutrient Management

The e-Crop platform generated soil nutrient maps using lab test data and satellite imagery. This allowed site-specific nutrient management (SSNM), reducing fertilizer waste and improving soil fertility.

- Fertilizer use was reduced by 18%.
- Soil organic carbon improved from 0.45% to 0.56% within one year.



Sourc: <https://devpost.com>

Water Management through Smart Irrigation

With real-time soil moisture data and weather forecasts, Mr. Yadav adopted sensor-based irrigation scheduling. This minimized overwatering and saved significant resources.

- Irrigation water use reduced by 22%.
- Energy cost decreased by 15% due to efficient pump use.

Pest and Disease Management

Drone-based imaging and e-Crop alerts detected early pest infestations. The AI-driven advisory suggested specific pesticides and biological controls.

- Pest losses reduced by 30%.
- Use of chemical pesticides declined by 25%, promoting environmental safety.

Yield and Economic Impact

The outcome was impressive:

Crop	Before e-Crop	After e-Crop	% Increase
Paddy	4.2 t/ha	5.5 t/ha	+31%
Cotton	15 q/ha	20 q/ha	+33%

The net annual income rose by nearly ₹85,000, while production costs decreased due to optimized input use.

Benefits Observed by the Farmer

Aspect	Benefit
Yield	Higher due to data-driven crop management
Resource Use	Reduced wastage of water, fertilizer, and chemicals
Profitability	Net income increased significantly
Soil Health	Improved due to balanced nutrient management
Decision Making	Real-time advisories enhanced confidence
Climate Resilience	Adapted better to irregular rainfall and heat stress

The e-Crop system “acted as a virtual assistant,” helping him monitor the farm even when he was away.

Challenges and Solutions

Challenge	e-Crop Solution
Poor mobile connectivity	Offline data storage with later synchronization
Lack of digital literacy	Training and KVK workshops for farmers
Sensor calibration issues	Technical support teams provided periodic maintenance
High initial cost	Subsidy under government’s digital agriculture scheme

The integration of local language interfaces and visual dashboards made the system user-friendly even for semi-literate farmers.

Wider Implications and Lessons Learned

The success of Mr. Yadav’s farm illustrates how digital tools can revolutionize agriculture by making it:

- **Efficient** – through precise input use and monitoring.
- **Sustainable** – by conserving soil and water resources.
- **Inclusive** – enabling smallholders to access modern technology.

Wider adoption of e-Crop can support national goals such as Doubling Farmers’ Income, Digital India, and Climate-Smart Agriculture. The case demonstrates that combining local knowledge with digital intelligence can create measurable impacts on productivity and sustainability.

Conclusion

The story of exemplifies the transformative potential of e-Crop systems. By harnessing digital technologies, he achieved higher yields, improved soil health, and better market access. This success highlights that digital agriculture is not just for large commercial farms—it is equally beneficial for small and marginal farmers when combined with proper training and support. The future of farming lies in digitization, and platforms like e-Crop are paving the way for precision, profitability, and sustainability in Indian agriculture.

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