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PRESS RELEASE

The Scope of AI in Transforming Indian Agriculture

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Agriculture remains a cornerstone of the Indian economy, employing over 45% of the workforce and significantly contributing to GDP. However, challenges, including erratic weather, pests, low productivity, and significant post-harvest losses, continue to impact farmer incomes and food supply stability. However, Artificial Intelligence (AI) has emerged as a technology enabler that offers transformative potential to address these multi-dimensional challenges through smarter, data-driven solutions.

Precision Farming and Crop Monitoring

AI-powered precision farming in India is booming and is set to become a $ 250 million industry in 2025, and why not? It utilizes a combination of data from IoT sensors, drones, and satellite imagery to provide real-time insights on soil health, moisture, nutrient needs, and crop conditions. This can enable optimized application of fertilizers, pesticides, and water, and reduce operations and implementation costs with greater returns. In its initial runs in Andhra Pradesh and Telangana, an AI Sowing App delivered an increase in yields by 10-30%.

Pest and Disease Detection

Crop diseases and pests cause substantial losses to Indian crop production. According to the last publicly available data, a loss of about 10% to 35% is incurred due to these. But in recent years, multiple AI-enabled image recognition apps have emerged that can accurately allow early detection of these issues by analyzing photos of the plant affected by a pest or disease. These solutions are deep learning models trained on millions of plant images to provide highly accurate, instant diagnoses and can also provide treatment advice in regional languages, making it very user-friendly to farmers present in various geographies. These tools provide accurate disease diagnosis and treatment recommendations, helping to reduce crop damage and chemical overuse.

Weather Forecasting and Climate Adaptation

AI-driven weather forecasting combines historical and real-time data to deliver localized, hyper-accurate forecasts and climate alerts. These help farmers plan sowing, irrigation, and harvesting to mitigate risks from droughts, floods, or erratic monsoons.

Managing Post-Harvest Risks with AI

India loses approximately a staggering 22% of its foodgrain output, translating to around 74 million tonnes. Key reasons for this are poor storage conditions, inefficient quality checks, logistical delays, and improper warehousing SOPs.

But AI has a solution for this as well, with some game-changing tools to tackle these challenges through:

- **AI-Based Crop Quality Checks:** Predominantly, Farmers had only two ways to get the quality check done in India, one was to get samples manually checked in mandis or through NABL-certified labs. The former provided sub-standard results, and the latter costed time and money to the farmers. But now in India, we have seen the advent of AI-based applications that can not only produce results as quickly as in 90 seconds, but with such accuracy that these solutions are being accredited by NABL itself.

- **Predictive Analytics for Storage:** AI analyzes environmental data and historical trends to predict spoilage risks, optimize storage conditions, and streamline inventory management, reducing waste due to pests, humidity, and temperature fluctuations. These solutions not only tell what's coming next, but also keep the warehouse managers aware of the steps they should be taking to ensure minimum spillage and spoilage of the crop. Due to this, some warehouse management companies have been able to reduce this enormous Storage spoilage and bring it down to a bare minimum of 0.5%. Hence, AI has shown that it can provide transformational results.

Personalized Advisory Services

AI-powered large language-based models running as chatbots and voice assistants deliver tailored advice based on farmer profiles, local soil and climate conditions, and crop history, extending support even to digitally less literate farmers in regional languages.

Challenges and the Road Ahead

Despite its potential, AI adoption in Indian agriculture faces barriers like limited rural digital infrastructure, accessibility, initial cost, and lack of technical capability. Addressing these requires collaborative efforts among government, industry, and NGOs, alongside farmer education and support initiatives.

With ongoing government programs like Digital India and PM-KISAN working towards the digitization and technology adoption in rural India, AI has the potential to expedite the Agri revolution, especially in India, by increasing productivity, minimizing losses, improving sustainability, and boosting farmer incomes.

(The author is Prashant Sharma, Chief Technology Officer, Sohan Lal Commodity Management Limited and the views expressed in this article are his own.)

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