SLCM GROUP IN NEWS

Publication	Date	Online Edition	Article
CXOtoday.com	15 June, 2026	Worldwide	Read More

CXOtoday.com
IT Perspective for Decision Makers

AI APPS BIG TECH CLOUD CYBERSECURITY GOVERNANCE HARDWARE SOFTWARE STARTUPS & SMES TELECOM

Home › Others › How tech and AI can strengthen India's food security

Jun. 15, 2026 at 10:54 am

OTHERS

How tech and AI can strengthen India's food security

CXOtoday News Desk 1 day ago

By Prashant Sharma

India's agricultural landscape is currently defined by a sharp contrast between record-breaking output and persistent systemic leakage. In the 2024-25 crop year, the Nation's food grain production reached a historic high of 357.73 million metric tonnes. However, this productivity is countered by significant post-harvest inefficiencies. National assessments indicate that India suffers an annual food loss estimated at ₹1.52 lakh crore, driven largely by gaps in storage and supply chain infrastructure.

For the technology community, this gap represents a critical supply chain optimization challenge. Transitioning from traditional, passive storage to a "Phygital" warehousing ecosystem, where physical infrastructure is integrated with a digital intelligence layer, is no longer a luxury but a necessity for National food security.

The Infrastructure of Inefficiency

The primary cause of post-harvest loss in India is not a lack of production but a deficiency in scientific management once the crop leaves the farm. Current storage models face three specific technical challenges:

- Environmental Blind Spots: A lack of real-time visibility into temperature and moisture levels often leads to rapid commodity degradation.
- Subjective Quality Grading: Traditional manual testing demands time, frequent churn, and is prone to human error with a lack of standardization, which can lead to value erosion during procurement.
- Liquidity Barriers: Without verifiable data on the quality and quantity of stored grain, it remains difficult for financial institutions to provide credit, often leading to distress sales.

The Phygital Transformation: AI & Tech at Scale

The possibility of integrating Artificial Intelligence (AI) and tech solutions into the agricultural grid today is turning warehouses into active, transparent and secured digital vault.

1. AI-Powered Quality Assurance

Computer vision and Machine Learning (ML) are replacing manual sampling. By analyzing images of grain samples, algorithms can now identify physical parameters such as broken grains, shriveled seeds, and foreign matter in under 120 seconds with approximately 90% accuracy. This ensures that "Digital Quality IDs" are established at the point of entry, preventing the mixing of high-quality produce with substandard batches.

2. Tech-Enabled Real-Time Monitoring

The warehousing and agri-logistics ecosystem is steadily evolving from a reactive operating model to a "Sense-and-Respond" framework powered by AI, IoT, and real-time analytics. By deploying low-power sensors, intelligent surveillance systems, and connected monitoring infrastructure, warehouses can continuously track hyperlocal atmospheric and physical conditions such as temperature, humidity, moisture levels, infestation risks, and stock movement patterns.

- Predictive Prevention: AI-driven monitoring systems can detect anomalies and trigger automated alerts when environmental conditions cross-critical thresholds. This enables timely interventions such as aeration, fumigation, or inventory rotation before spoilage, contamination, or quantitative losses occur.
- Data-Led Decision Making: Continuous data capture helps warehouse operators optimize storage conditions commodity wise, improving shelf life, preserving quality, and reducing post-harvest losses.
- Strengthening Food Security: Real-time visibility across storage infrastructure enhances inventory reliability, minimizes wastage, and supports more resilient food supply chains — critical for a country managing large-scale agricultural production and distribution.
- Centralized Surveillance: Advanced surveillance systems provide 24/7 monitoring, significantly reducing the risks of tampering and mismanagement even in remote locations. That not only secures the entire produce but also strengthens bankers' confidence in commodity managers.

3. Digitizing the Financial Value Chain

The integration of Warehouse Management Systems (WMS) with digital ledgers is converting physical grain into a liquid financial asset. Warehouse Receipts enable a seamless flow of credit, as banks can verify collateral quality and quantity in real-time, significantly reducing loan turnaround time as low as 24 hours.

Future-Proofing the Grid

The next decade of agri-tech will be shaped by the convergence of Cloud Computing, Edge Computing, AI, and autonomous monitoring systems. As India continues to expand its warehousing and storage infrastructure, the focus must shift toward building decentralized networks of intelligent "Smart Warehouses" and digitally connected storage ecosystems capable of preserving grain integrity amid increasing climate volatility and supply chain disruptions.

Cloud infrastructure will play a foundational role by enabling centralized visibility across geographically distributed warehouses, seamless data integration, scalable analytics, and real-time coordination between stakeholders including warehouse operators, financial institutions, quality teams, and supply chain partners. At the same time, edge computing can support faster on-ground decision-making by processing critical environmental data locally and triggering instant alerts without latency.

Together, cloud-enabled platforms, AI-led predictive analytics, IoT sensors, and intelligent surveillance systems can transform warehouses from passive storage facilities into responsive, data-driven infrastructure capable of anticipating spoilage risks, optimizing inventory conditions, and improving supply chain resilience.

For technology professionals, agriculture presents an opportunity to build high-impact, mission-critical infrastructure that directly influences national food security, farmer livelihoods, and supply chain sustainability. By replacing fragmented manual processes with connected digital ecosystems and predictive intelligence, technology can help ensure that India's record-breaking agricultural output translates into long-term food preservation, reduced post-harvest losses, and a more resilient food ecosystem for a billion-plus population.

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