

Advancements in Precision Agriculture and Digital farming in India: A Strategic Analysis

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INTRODUCTION & AIM

- To ensure global food security, technology interventions in the agricultural industry are becoming increasingly prominent and precise by technology and data analytics, and it appears to hold enormous potential for enhanced productivity as well as a financial success.
- Smart farming and precision agriculture are helping to improve the output of traditional agricultural systems and drive them toward sustainability.
- Since the 1990s, Precision agriculture has witnessed a revolution propelled by innovative technologies and applications in digital farming.
- Cutting-edge technologies such as agricultural robotics, smart sensors, mechatronic platforms, Deep learning techniques and autonomous systems are examined role in enhancing efficiency and productivity in farming operations.
- Digital farming spotlighting the crucial role of these technologies in achieving sustainable and efficient farming practices.
- Agriculture apps that use big data analysis feature improved production, weather decisions, and cost-effectiveness in terms of crop yield and pesticide application. Big data analytics solutions tend to optimize the ensuing advantages rather than the expense of operations.
- The absence of uniformity across platforms and fragmented initiatives hampers the development of cutting-edge farm management software systems, rendering data ineffective.

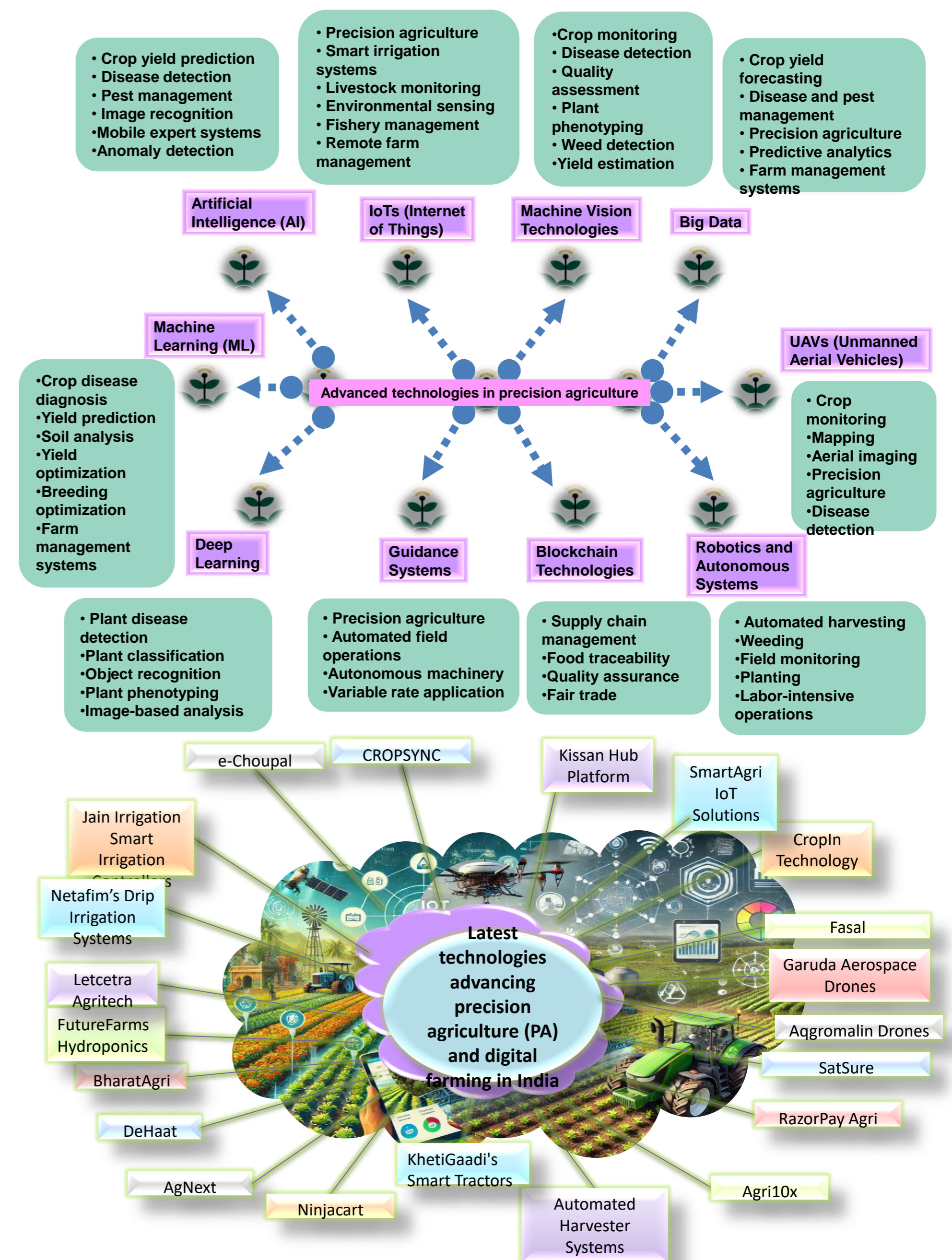
AIM

- To analyze the recent advancements and future prospective in precision agriculture and digital farming in India, focusing on their strategic implications for enhancing agricultural productivity, sustainability, and profitability while addressing challenges in adoption, resource management, and policy development.
- It aims to provide insight into the engaging trends, technology, and innovation in precision agriculture and digital farming in India and its potential impact on Indian agriculture.

METHOD

This systematic review seeks to evaluate and synthesize literature regarding methods for assessing readability and legibility in typography. Secondary data analysis refers to the examination of data that has been previously collected by other researchers (Srivastava and Lal 2021; Kumar et al. 2022; Lal et al., 2023). A thorough literature search was performed across various databases, including Google Scholar, IEEE Xplore, PubMed, ResearchGate, Science Direct, Taylor & Francis, Elsevier & Springer Nature.

RESULTS & DISCUSSION



CONCLUSION

Agriculture as the Backbone: Agriculture remains a cornerstone of India's economy, with precision agriculture and digital farming poised to enhance productivity without degrading land quality.

Addressing Food Insecurity: Advanced technologies can mitigate the global food demand-supply mismatch affecting 26% of the population, fostering food security.

Techno-Green Revolution: Integrating agro-tech, bio-tech, and space technology (RS and GIS) can transform low-yield food production systems into high-yield ones.

Satellite Innovations: Launches like IKONOS-II, Resourcesat-1, Cartosat series, and RISAT (with c-band SAR) support crop monitoring, land-water resource management, and detailed mapping.

Watershed Development: Generation of high-resolution Digital Elevation Models (DEM) is crucial for effective watershed planning and sustainable agricultural practices.

FUTURE WORK / REFERENCES

Karunathilake, E. M. B. M., Le, A. T., Heo, S., Chung, Y. S., & Mansoor, S. (2023). The path to smart farming: Innovations and opportunities in precision agriculture. *Agriculture*, 13(8), 1593. <https://doi.org/10.3390/agriculture13081593>