



## Rajasthan as a “Living Lab” for Agricultural Technology

\*Dr. Narendra Yadav, Dr. Hari Singh and Brijesh

Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan

\*Corresponding Author's email: [ynarendra0988@gmail.com](mailto:ynarendra0988@gmail.com)

Rajasthan, with its diverse agro-climatic zones and vast agricultural landscape, is increasingly emerging as a potential “living laboratory” for agricultural technology companies. The Rajasthan state has 18422557 (53.74 %) hectares of cultivated land, with over 70 percent being rainfed, highlighting both the challenges and opportunities for technological intervention in agriculture. (Rajasthan Agriculture statistics at a glance 2022-23). Agriculture continues to play a crucial role in the state economy. As per the Economic Review 2024–25, the agriculture and allied sector contribute about 26.92 percent to Rajasthan’s Gross State Value Added (GSVA), while recent estimates for 2025–26 place it at around 25–26 percent, indicating its sustained importance despite structural transformation. At the national level, India achieved a record foodgrain production of 357.73 million tonnes in 2024–25, along with 362 million tonnes of horticulture output, reflecting a shift toward high-value agriculture, an opportunity Rajasthan can capitalize on.



**Food Processing (Unlocking Value Addition):** Rajasthan is a major producer of crops such as bajra, mustard, pulses, and spices. Notably, the state contributes around 38.98 percent of India’s total bajra production and 46 percent in rapeseed and mustard, demonstrating its dominance in coarse cereals and oilseeds.

However, much of this produce is marketed in raw form. Strengthening food processing industries can significantly enhance value addition, reduce wastage, and increase farmers’ income. The agriculture GSVA of Rajasthan has already expanded from about ₹1.19 lakh crore in 2011–12 to ₹4.23 lakh crore in 2024–25, indicating strong growth potential for downstream industries.

**Cold Chain Infrastructure (Reducing Losses):** High temperatures and inadequate storage infrastructure lead to substantial post-harvest losses in Rajasthan, particularly in fruits and vegetables. Investment in cold chains, including cold storages, pack houses, and refrigerated logistics, can help reduce these losses and improve market efficiency. With agriculture forming a significant portion of the economy, strengthening supply chains is critical for sustaining growth.

**Organic Farming (A Natural Advantage):** Rajasthan’s low-input farming systems, especially in arid and tribal regions, create a strong foundation for organic agriculture. With increasing domestic and export demand for organic produce, the state has the potential to emerge as a hub for organic millets, spices, and medicinal plants. This aligns with the broader national shift toward sustainable and climate-resilient agriculture.

**Drone-Based Agriculture** (Precision and Efficiency): Technological innovation is gaining traction in the state. Drone-based agriculture enables precision farming practices such as crop monitoring, pesticide spraying, and yield estimation. Given Rajasthan's large landholdings in several regions, the adoption of drones can improve input efficiency and reduce labor costs, making agriculture more productive and sustainable.

**Growth, Investment, and Future Potential:** Rajasthan's economy is expanding rapidly, with GSDP estimated at ₹18.75 lakh crore in 2025–26, growing at over 10 percent annually, indicating a favourable investment climate.

The Rajasthan state is also projected to become a more than 350 USD billion economy by 2028–29, driven by infrastructure, agro-processing, and industrial diversification. At the same time, structural challenges such as water scarcity remain significant, over 70 percent of groundwater units are overexploited, and agriculture accounts for nearly 85 percent of groundwater use. These constraints further strengthen the case for adopting technologies like micro-irrigation, precision farming, and climate-smart agriculture.

### Conclusion

Rajasthan's combination of high agricultural dependence, diverse cropping systems, and emerging technological adoption positions it uniquely as a "living lab" for agri-tech innovation. Strategic investments in food processing, cold chain infrastructure, organic farming, and drone-based agriculture, supported by strong economic growth and policy backing, can transform the state into a model for sustainable, technology-driven agricultural development in India.