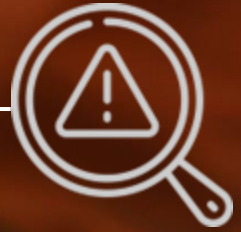
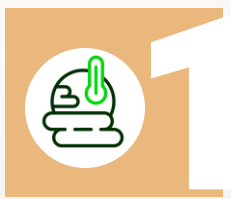




Identified
**Problem
Statements**
for call for proposal
under Maha Agri
AI policy. _____●





Climate Resilience & Crop Management

- ⦿ Hyper-local crop-specific advisories: Farmers require actionable, real-time weather data tailored to their specific location and crop type (e.g., grape growers in Nashik needing frost warnings), which is crucial for making timely decisions on irrigation, pest control, and harvesting.
- ⦿ Optimizing water usage for varied crops in water-stressed regions: Farmers need a system that can provide precise, crop-specific irrigation schedules for different crops based on soil moisture and weather data, to conserve water.
- ⦿ Real-time pest and disease surveillance for horticulture crops: An AI/ML-powered solution using weather data, remote sensing/drone imagery, IoT devices could identify and alert farmers to the earliest signs of stress or infestation before they become widespread.
- ⦿ Assessing crop damage and yield estimation for insurance claims: Following unseasonal rains or hailstorms, the process of assessing crop damage for insurance is slow and manual. A technology-based solution using drones and satellite imagery may provide rapid, objective, and verifiable damage assessments.
- ⦿ Predictive analytics for crop rotation and selection: A system that analyses soil health, historical climate data, and market demand to recommend the most profitable and climate-resilient crops for a specific land parcel and season.





Post-Harvest & Supply Chain



- ⦿ Reducing post-harvest losses through tech-enabled cold chain management: Perishable goods like mangoes and grapes suffer significant losses. An IoT-based solution can monitor and maintain optimal temperature and humidity in storage facilities and during transportation, thereby preventing spoilage.
- ⦿ Traceability and certification for export markets: Maharashtra's produce needs a robust, transparent traceability system to meet international standards. A QR code or block chain based solution may help track a product's journey from the farm to the consumer, verifying its authenticity and quality.
- ⦿ Efficient logistics and aggregation for FPOs: FPOs struggle to efficiently collect and transport produce from multiple small-scale farmers. A platform may optimize pickup routes and coordinate logistics to reduce delays and spoilage.
- ⦿ Real-time market price discovery and demand forecasting: Farmers and FPOs lack information on commodity demand and future prices. An AI-based price forecasting and market intelligence may enable better planning.
- ⦿ Automated quality grading and sorting at the farm-gate: Manual quality checks are time-consuming and inconsistent. An AI-powered vision system may help farmers sort their produce (e.g., oranges, bananas) by size, quality, and ripeness at the farm itself.



Farm Mechanization

- ⦿ Automated farm operations for labour-intensive tasks: The rising cost and scarcity of labour impact all stages of the crop cycle. There's a need for cost-effective, adaptable robotics and small-scale machinery for tasks like weeding, seeding, targeted spraying, and harvesting.
- ⦿ Precision pesticide spraying using drones: Manual spraying is labour-intensive, inefficient, and potentially hazardous. Drones equipped with specialized spraying systems can apply pesticides with extreme precision, reducing chemical usage and the need for manual labour.
- ⦿ Robotic harvesting for high-value crops: For crops like cotton, pomegranates, and grapes, an AI-powered and computer vision-enabled system may help in harvesting the produce and reduce manual effort and minimize damage.
- ⦿ Integrated platform for mechanization services: A digital platform may help connect farmers with nearby custom hiring centres offering advanced machinery and robotics on a "pay-per-use" basis, addressing capital constraints.





Farmer Adoption & Capacity Building



- ⦿ Affordable and accessible tech solutions for small landholdings: Most farmers in Maharashtra have small, fragmented landholdings. Business models like "Farming-as-a-Service" may make expensive agri-tech solutions, especially drone-based services, economically viable for them.



Soil & Input Management

- ⦿ Nutrient management based on real-time soil analysis: Farmers often apply fertilizers without proper soil testing, leading to increased costs and soil degradation. An IoT-based solution that uses soil sensors and AI may provide personalized, crop-based recommendations on nutrient application.
- ⦿ Detection of nutrient deficiencies in crops: Early detection of nutrient deficiencies is critical to prevent yield loss. A solution that uses crop images and AI to identify specific nutrient deficiencies may optimize the input costs.

