

National Hackathon Problem Statement

“Reimagining Agriculture Through AI, Sustainability & Rural Innovation”

(For B.Tech & M.Tech Students Across India)

Background

Agriculture remains the backbone of India’s economy, supporting the livelihood of more than half of the country’s population. However, the sector is currently facing multiple interconnected challenges such as climate change, declining soil fertility, fragmented supply chains, water scarcity, low farmer income, lack of real-time market intelligence, post-harvest losses, and decreasing youth participation in farming.

At the same time, emerging technologies such as Artificial Intelligence (AI), Internet of Things (IoT), Robotics, Drones, Blockchain, Satellite Analytics, Data Science, and Smart Automation have the potential to transform traditional agriculture into a data-driven, intelligent, sustainable, and profitable ecosystem.

India urgently needs scalable, affordable, and inclusive innovations that can empower farmers, strengthen rural economies, improve sustainability, and make agriculture attractive to the next generation.

Grand Challenge

How can technology make agriculture intelligent, profitable, climate-resilient, youth-driven, and economically sustainable for the future of India?

Participants are invited to design innovative technology solutions that can solve real-world agricultural challenges and create measurable social, economic, and environmental impact.

Key Problem Areas

Participants may choose any one or more of the following challenge domains:

1 AI-Based Smart Farming & Decision Support

Develop intelligent systems that can assist farmers in:

- Crop selection
- Pest & disease prediction

- Fertilizer optimization
- Yield forecasting
- Precision farming

Suggested Technologies:

AI/ML, Computer Vision, Drone Analytics, Satellite Data, IoT

2 Climate-Resilient Agriculture

Create solutions to help farmers adapt to:

- Irregular rainfall
- Droughts & floods
- Heat stress
- Crop vulnerability
- Climate risk forecasting

Expected Outcome:

Localized climate intelligence and adaptive farming support systems.

3 Smart Water & Irrigation Management

Design low-cost systems for:

- Soil moisture monitoring
- Automated irrigation
- Water conservation
- Groundwater optimization

Goal:

Reduce water wastage while improving productivity.

4 Farm-to-Market Digital Ecosystem

Build transparent platforms that:

- Connect farmers directly with buyers

- Predict market demand
- Improve logistics
- Enable fair price discovery

Goal:

Increase farmer income and reduce dependency on intermediaries.

5 Sustainable Agriculture & Soil Health

Develop innovations for:

- Soil health monitoring
- Regenerative agriculture
- Organic farming support
- Carbon-smart agriculture

Goal:

Promote long-term agricultural sustainability.

6 Agri Waste to Wealth

Create scalable models for converting agricultural waste into:

- Biofuel
- Biomaterials
- Organic compost
- Green energy

Goal:

Reduce pollution and create rural economic opportunities.

7 Youth-Driven Agri Entrepreneurship

Develop platforms/models that make agriculture:

- Technology-oriented
- Startup-friendly

- Employment-generating
- Innovation-driven

Goal:

Encourage youth participation in agriculture and rural innovation.

 Expected Innovation Areas

Participants are encouraged to integrate:

- Intelligent Application
 - IoT & Embedded Systems
 - Robotics & Automation
 - Drones & GIS
 - Blockchain
 - Cloud & Mobile Technologies
 - Big Data Analytics
 - Sustainable Engineering
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 Evaluation Criteria

Criteria	Weightage
Innovation & Creativity	20%
Practical Feasibility	20%
Social Impact	20%
Scalability & Sustainability	20%
Technical Implementation	20%

 Expected Outcomes

The Hackathon aims to:

- Generate scalable AgriTech innovations

- Encourage startup creation in rural technologies
 - Promote sustainable agriculture practices
 - Strengthen India's digital agriculture ecosystem
 - Inspire engineering students to solve real grassroots challenges
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Eligibility

- B.Tech Students
- M.Tech Students
- Interdisciplinary Engineering Teams
- Innovation & Startup Enthusiasts