

Sustainable Agriculture Track

The Sustainable Agriculture Track focuses on developing innovative, climate-resilient farming systems that ensure food security while protecting natural resources. It explores smart irrigation, precision agriculture, soil health management, vertical farming, and agri-tech solutions powered by data and AI. Participants design scalable strategies that increase productivity, reduce water consumption, minimize environmental impact, and support sustainable food systems for future communities.

Low Agricultural Productivity

Apply precision agriculture and AI-driven monitoring to increase crop yields and resource efficiency.

Limited Market Access

Create digital platforms enhancing supply chain transparency, logistics optimization, and farmer market integration.

Water Scarcity and Resource Efficiency

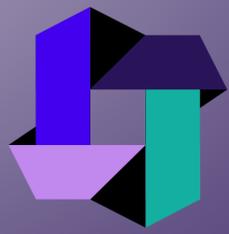
Develop smart irrigation systems using data analytics to optimize water use and minimize losses.

Harsh Climatic Conditions

Design climate-resilient farming solutions leveraging predictive analytics and adaptive agricultural technologies.

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Sustainable Agriculture Track Challenges

The agricultural sector faces critical challenges that directly impact food security and sustainability. This hackathon focuses on four major challenges that require innovative, practical, and scalable solutions aligned with sustainable agriculture goals.

Challenge 1: Water Scarcity and Resource Efficiency

Water scarcity represents a critical challenge to agricultural sustainability.

The National Agricultural strategy emphasizes enhancing water-use efficiency and adopting climate-smart agricultural practices.

Innovative solutions are required to optimize irrigation, reduce water consumption, and improve the resilience of agricultural systems under limited water resources.

Desired Outcome

A prototype Smart system that improves water use efficiency and reduce water losses.

Constraints / Resources

Cost of system and limited data coverage.

Impact

Improve water use efficacy and save the non-renewable resources.

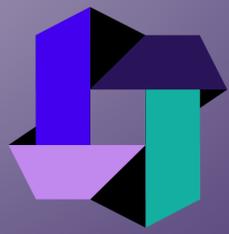
Available support

Access to plant water requirements, water availability information and weather data.
Labs and deferent type of state of are research facilities.

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Challenge 2: Low Agricultural Productivity

Low productivity remains a key barrier to achieving sustainable food systems.

The National Agricultural strategy highlights the importance of modern agricultural practices, technology adoption, and efficient resource utilization.

This challenge focuses on developing solutions that increase crop productivity while reducing environmental and economic costs

Desired Outcome

Solution can enhance the plant productivity.

Constraints / Resources

Adaptation of plant, infertility of soil and harsh condition.

Impact

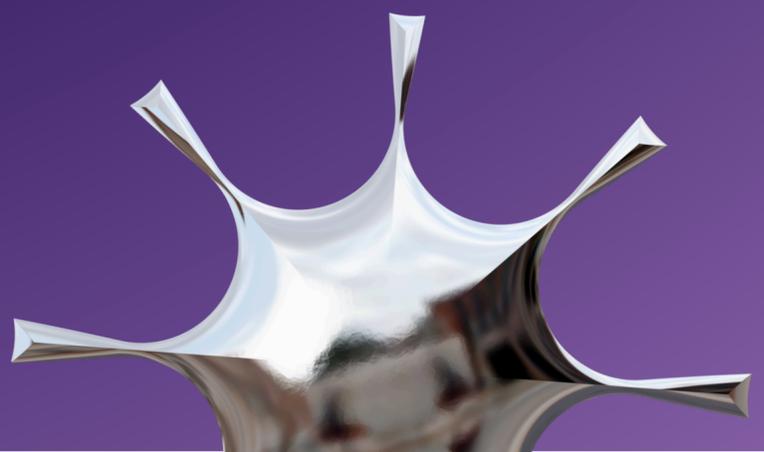
Increase the yield and improve utilization of the natural resources which will reduce the cost.

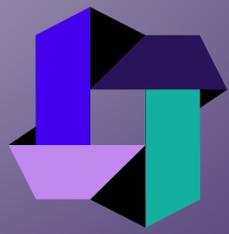
Available support

Access to agronomy data, Labs and deferent type of state of are research facilities.

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Challenge 3: Limited Market Access

Limited access to markets affects farmers' income and the overall sustainability of the agricultural sector.

The National Agricultural vision calls for strengthening agricultural value chains and improving market integration.

Innovative solutions are needed to enhance market access, improve logistics, and support fair and efficient agricultural markets.

Desired Outcome

Solution can enhance logistics and link the supply and demand trade off.

Constraints / Resources

Lack of the real data of production and market information.

Impact

Increase the availability of food, improve the logistic and reduce the losses and increase the farmers income which will enhance the food security.

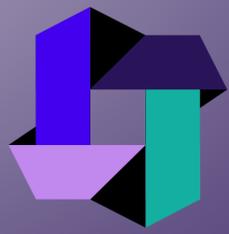
Available support

Access to agronomy and market data, Labs and different type of state of art research facilities.

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Challenge 4: Harsh Climatic Conditions

Harsh climatic conditions pose a significant challenge to agricultural sustainability.

Extreme temperatures, prolonged droughts, and unpredictable weather patterns negatively impact crop growth, yield, and quality. The National Agricultural strategy emphasizes enhancing climate resilience through adaptive agricultural practices, climate-smart technologies, and risk mitigation solutions to ensure sustainable agricultural production under changing climate conditions.

Desired Outcome

Solution can enhance logistics and link the supply and demand trade off.
Improve plant resilient and enhance climate control agriculturey.

Constraints / Resources

Ability of implementation the solution due to cost and readiness of technology.

Impact

Increase the availability of food, reduce the losses and enhance the food security

Available support

Access to agronomy and market data, Labs and deferent type of state of are research facilities.

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