IIT Tirupati Navavishkār I-Hub Foundation

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GEO-INTEL LAB

भारतीय प्रौद्योगिकी संस्थान तिरुपति
TIRUPATI

विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY

ENCODE NATURE

Agriculture

INTELLIGENT IRRIGATION SUPPORT SYSTEM

Pilot District
Vizianagaram, Andhra Pradesh

Geospatial Innovation Accelerator
IIT Tirupati Navavishkar I-Hub Foundation (IITTNiF)

Technology Summary

This Proof-of-Concept brings out a decision support system (DSS) that integrates multiple associated data like soil types, weather data, ML developed field boundaries, SAR derived soil moisture maps, and crop type. Readily available geospatial data like soil types, administrative boundaries and geological features are directly fed to the DSS algorithm. In this POC experiments, a SAR derived soil moisture product has been developed which was validated and showed an accuracy of 63 % with an rmse% of 30.8, showing high feasibility for further improvements in the model accuracy with added points. Further these near-real time data is fed to the DSS algorithm to obtain insights and communicated to the stakeholders.

Technology Readiness Level:
3

Value Proposition:

a. Water Conservation: Expected reduction in water usage through optimized irrigation scheduling, helping conserve precious water resources while maintaining crop health.

b. Increased Productivity: Improved crop yields through data-driven irrigation decisions, ensuring optimal soil moisture levels at critical growth stages.

c. Farmer Empowerment: Providing farmers with accessible, actionable insights to make informed decisions about irrigation timing and water allocation.

d. Sustainable Agriculture: Contributing to long-term agricultural sustainability by promoting efficient resource management and reducing environmental impact.

Environmental/Social Impact:

a. Reduces Pollution: Optimal usage of water helps us to stop leachate of fertilizers to other ground water sources, thereby protecting ground water and surface water sources from chemical pollution load.

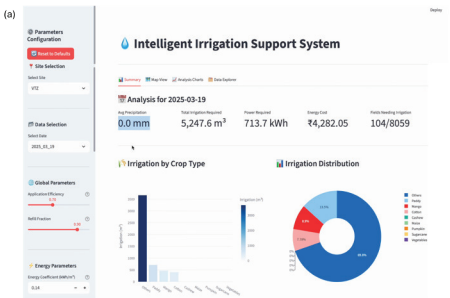
b. Increasing Farmer Income: This tech when implemented, it would decrease the spending of the farmers during the crop growth stages and increase their income due to expected high growth yield. This is in line with the national policy to improve farmer income by multifold

Contribution to Sustainable Development Goals (SDGs):

2,6,12,13

Product / Application Image:

SAR derived Soil Moisture – Plot level. Decision support system – in final stretch of production.



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