Patent Search

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Abstract:

The invention provides an integrated, intelligent system for predicting agricultural flooding and autonomously activating rapid-drainage mechanisms to prevent crop dama system employs an IoT environmental sensing network to collect real-time rainfall, soil-moisture, water-table, and field-condition data, supplemented by meteorological, hydrological, and geographical datasets. A Machine Learning Prediction Engine analyzes these inputs to generate accurate, plot-level flood-risk forecasts. A Control and De Unit interprets the predictive output and actuates pumps, valves, and drainage pipelines through an automated drainage-actuation module. A communication interface er continuous data exchange, while cloud analytics and a user-alert interface support monitoring and model refinement. The system achieves proactive drainage, reduces cr risk, and provides a scalable, adaptive flood-mitigation solution for agriculture.

Complete Specification

Description:FIELD OF THE INVENTION

[001] The present invention relates to the domains of hydrological engineering, precision agriculture, environmental analytics, automated civil infrastructure, and machir learning–based disaster-mitigation systems. More particularly, the invention concerns an integrated flood-prediction and automated rapid-drainage infrastructure syster designed to protect agricultural crops from flood damage by combining multi-source environmental data processing, machine learning–based hydrological forecasting, Ic enabled field monitoring, and intelligently actuated drainage mechanisms. The invention lies at the intersection of predictive environmental modeling, smart irrigation ar drainage engineering, embedded sensor networks, and autonomous water-management systems, enabling proactive removal of rainwater from farmlands based on dynamically computed flood-risk predictions.

BACKGROUND OF THE INVENTION

[002] Agricultural lands in monsoon-prone and flood-susceptible regions frequently suffer irreversible crop loss due to sudden accumulation of rainwater, inadequate drainage, and the absence of real-time hydrological intelligence. Existing water-management and drainage infrastructures are predominantly manual, reactive, and dependent on human intervention. Such systems generally rely on fixed-capacity drains or rudimentary pumps that are activated only after significant waterlogging has occurred. Consequently, conventional systems fail to protect crops during rapid rainfall events, short-duration cloudbursts, or consecutive rainfall cycles where drainage

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