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(57) Abstract :

The present invention discloses an IoT-based model for optimized irrigation system management that integrates soil moisture sensors (101), environmental sensors (102), a wireless communication module (103), and a central processing unit (104) with irrigation controller (105), water pump (106), and valve system (107). Data are processed and transmitted to a cloud server (108), where predictive analytics optimize irrigation schedules. A mobile interface (109) allows farmers to remotely monitor and control irrigation. The system ensures efficient water utilization, higher crop productivity, cost-effectiveness, and sustainability, particularly in resource-constrained agricultural environments.

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