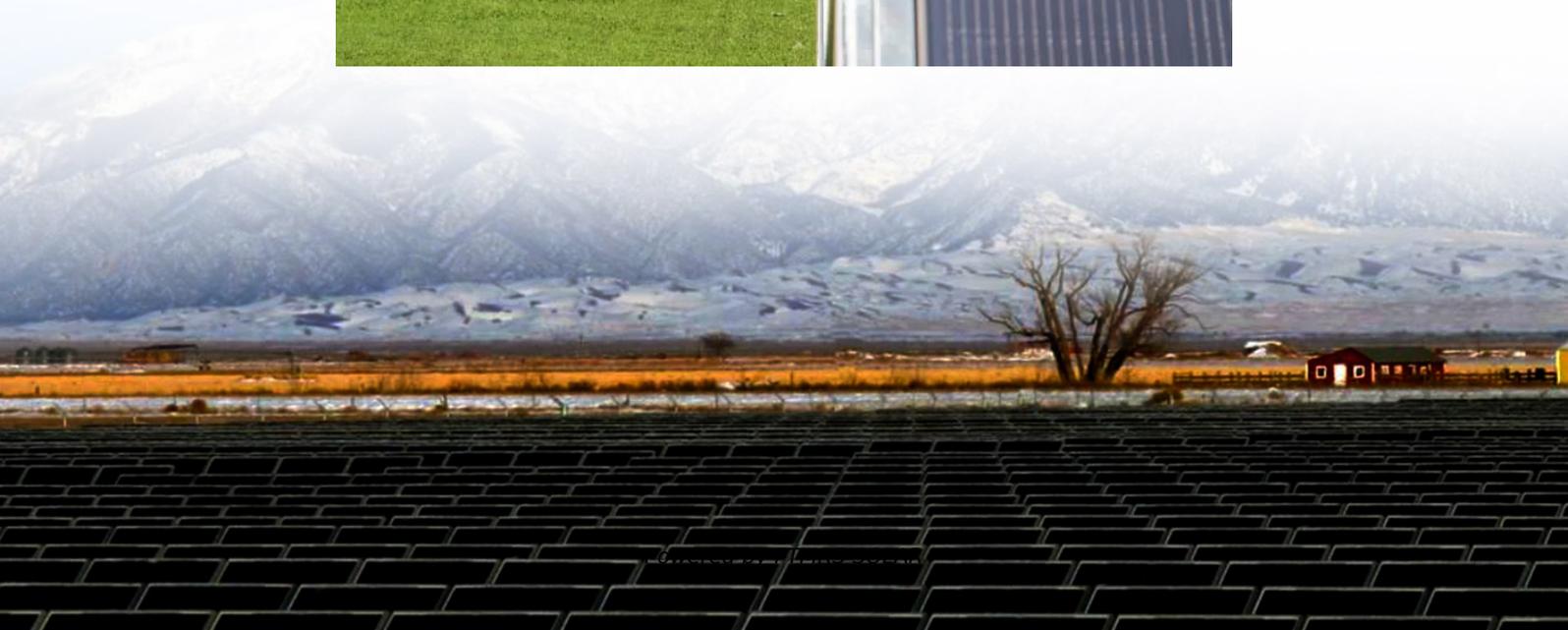


Solar rooftop intelligent irrigation system





Overview

What is a sustainable smart irrigation system?

The project aims to develop a sustainable smart irrigation system (SIS) for the indoor plant irrigation by integrating photovoltaic (PV), internet of things (IoT), and rainwater harvesting techniques. The addressed problem involves the inconsistency and tediousness of manual watering, emphasizing the need for a sustainable design for a SIS.

Can a solar-powered smart rooftop irrigation system be used for peppermint cultivation?

Therefore, the study aims to advance sustainable urban agriculture by designing and evaluating a solar-powered smart rooftop irrigation system for peppermint cultivation. The system incorporates two drip irrigation setups—conventional and smart irrigation—powered by photovoltaic (PV) panels.

Can IoT-based smart irrigation system optimize water usage?

This paper presents a comprehensive review of a novel Internet of Things (IoT)-based smart irrigation system with rainfall prediction based on pollutant concentration designed to optimize water usage through real-time environmental monitoring and promote sustainable agriculture through the integration of photovoltaic (PV) power.

How does a solar-powered smart irrigation system work?

The flowchart illustrates the operation of a solar-powered smart irrigation system designed to maximize water and energy efficiency. The process begins with a soil moisture sensor monitoring the moisture level in the soil. If the moisture falls below a predefined threshold, the system evaluates the availability of solar energy.



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Design and evaluation of a solar powered smart irrigation system ...

Apr 6, 2025 · Therefore, the study aims to advance sustainable urban agriculture by designing and evaluating a solar-powered smart rooftop irrigation system for peppermint cultivation.

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Design and evaluation of a solar powered smart ...

Apr 6, 2025 · Keywords Food security, Solar energy, Intelligent sensors, Irrigation system, Smart agriculture, Rooftop The current population growth trends result in a rise in the need for ...

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