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Orientation of Photovoltaic Modules to Minimize Intercepted Radiation in Photovoltaic Aglectric Systems

Dual-axis, sensor-guided vertical PV optimizes farm electricity while protecting crop light levels across seasons.

Researchers at Purdue University have developed a new vertically aligned photovoltaic module system to ensure that shadowing from natural light does not negatively impact plant growth on farmland. There is need to control solar radiation at the ground level, as it can be detrimental to plant health. In addition, crop protection is essential for creating the food supply necessary to meet the demands of a growing global population. Each crop has its own unique photosynthesis process, so it is vital to optimize light exposure for as many plant types as possible. Purdue researchers have created a dual off-axis rotation system that features sensors to optimize the amount of electricity and solar light that crops receive on any given day and time. This reliable, cost-efficient, and easy to set up module provides enhanced crop management.

Advantages:

-Reliable

-Simple setup

Potential Applications:

-Agriculture

-Farming

-Horticulture

TRL: 4

Intellectual Property:

Technology ID

2020-AGRA-68784

Category

Agriculture, Nutrition, & AgTech/Precision Agriculture & Smart Farming

Energy & Power Systems/Power Generation

Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

Further information

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View online

Provisional-Patent, 2019-08-21, United States

Utility-Gov. Funding, 2020-08-19, United States

CIP-Gov. Funding, 2021-09-13, United States

Keywords: Agriculture, Crop Improvement, Crop Management, Crop Yield, Farm Equipment, Farming, Food and Nutrition, Light Scattering, Plant Growth, Plants, Radiation Detection, Sensing, sensor

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