Photovoltaic panels in rice fields

Can solar panels be used in rice farming?

A recent study led by researchers from the University of Tokyo explores a promising solution: integrating solar panels with traditional rice farming in a practice known as agrivoltaics.

Can agrivoltaics improve rice production?

A pioneering study emerging from the University of Tokyo offers a visionary approach to this dilemma by merging solar energy generation with traditional rice cultivation. This integration,known as agrivoltaics,transcends conventional separate uses of land,facilitating simultaneous agricultural productivity and clean energy generation.

Can solar panels tilt a rice paddy?

A rice paddy planted with a dual-axis,sun-tracking system demonstrates PV panels tiltedto minimize shading and prioritize rice growth (top) or positioned to prioritize electricity production (bottom). Credit: Y. Okada et al.,doi 10.1117/1.JPE.15.032704

Can solar power a rice paddy?

As reported in the Journal of Photonics for Energy,the research team installed a dual-axis sun-tracking photovoltaic (PV) system over a rice paddy in Miyada-mura,Nagano Prefecture. Positioned three meters above the ground,the solar panels generated electricitywhile allowing rice cultivation to continue underneath.

The article from SPIE, titled "Solar panels and rice fields thrive together in Japanese agrivoltaics pilot," published on August 4, 2025, details a pioneering study led by researchers from ...

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Agrivoltaic systems (AVSs), also known as solar sharing systems, integrate agriculture with photovoltaic (PV) energy generation on the same land 1, 2, 3. First proposed in the 1980s 4, the ...

Maintaining high crop productivity in rice fields hosting solar panels remains a major concern for agrivoltaic projects, as demonstrated by a recent research project conducted by the ...

Solar panels above rice paddies generate power while preserving crop yields Sun-tracking PV arrays hover three meters above Japanese rice fields.

A rice paddy planted with a dual-axis, sun-tracking system demonstrates PV panels tilted to minimize shading and prioritize rice growth (top) or positioned to prioritize electricity production ...

A Japanese field study installed solar panels above crops and found rice yields remained stable compared to soybean and sweet potatoes, demonstrating the possibility of combining ...

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This dual-axis tracking system is engineered to modulate the angle of PV panels based on temporal agricultural priorities. During the crucial growing season, the system optimizes panel ...

Simultaneously, the PV panels in this pilot generated nearly 44,000 kilowatt-hours of electricity annually, an efficiency comparable to similar systems in Europe. Another six-year field ...

A promising solution for this land-use conflict is urgently needed to meet the growing energy and food demands. The idea of "agrivoltaics" or "an agrivoltaic system" (hereafter, AVS) that ...

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