# Trial planting of rice under photovoltaic panels



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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.

Does agrivoltaic rice grow better?
Over two growing seasons,the agrivoltaic system achieved rice yields of 75 percent and 85 percent compared to nearby traditional paddies. While slightly lower in the first year,yield improved significantly in the second yearafter fine-tuning the amount of sunlight reaching the crops.

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 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

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 ...

Therefore, maintaining crop yield under shading beneath photovoltaic panels is important.

Do photovoltaic systems affect rice crop yield? Emerging interest in these systems led us to investigate their influence on rice crops. Various factors affecting rice crop yield, including fertilizer application, ...

In recent years, researchers from the University of Tokyo in Japan conducted a six-year field experiment using an agrivoltaics system in Chikusei, a city in Eastern Japan. The study focused ...

These experiments showed that, during two growing seasons, rice yields under the panels were 75% and 85%

lower compared to benchmark paddies without modules located nearby.

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 ...

This study aims to evaluate the feasibility and benefits of integrating photovoltaic (APV) systems with rice cultivation, focusing on growth characteristics, chlorophyll content and ...

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The performance of an agriphotovoltaic system was studied from the viewpoint of both the crop yield of Japanese rice in a paddy field plant and the photovoltaic (PV) electricity production cost. ...

This agrivoltaics pilot, conducted in Miyada-mura, Nagano Prefecture, tested the viability of growing rice beneath solar panels mounted on a dual-axis sun-tracking system. The researchers ...

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