Dryland planting under photovoltaic panels

Do dryland PV plants affect local fragile vegetation?
The transformation of landscapes in dryland has threatened local fragile vegetation. Existing studies have investigated the issue by field observations and satellite data,yet the spatial differences in vegetation changes due to dryland PV plants deployment and underlying driving mechanisms remain poorly understood.

Why are large-scale photovoltaic plants growing rapidly in drylands?
Large-scale photovoltaic (PV) plants are growing rapidly in drylands because of the rich solar radiation and vast unutilized land. The transformation of landscapes in dryland has threatened local fragile vegetation.

Do PV plants promote vegetation restoration in dryland ecosystems?
In areas with sparse vegetation,low humidity,and long sunlight duration,PV plant deployment is more conducive to promoting vegetation restoration. These findings deepen our understanding of the ecological impacts of PV plants in drylands and emphasize the techno-ecological synergistic benefits of PV plants in dryland ecosystems.

Do PV plants provide better moisture conditions for dryland plant growth?
This finding is consistent with the main inferences of previous studies that PV plants can provide better moisture conditions for dryland plant growththrough shading and humidifying effects (Liu et al.,2019; Yue et al.,2021).

Does vegetation change during solar PV deployment in dryland areas?
In dryland areas with large-scale deployment of solar PV infrastructure,vegetation was reported to experience drastic changes. However,the long-term dynamic changes and driving mechanisms have not been thoroughly studied yet.

Do PV plants affect vegetation changes in China's drylands?
In this study, Landsat Normalized Difference Vegetation Index data were used to assess the vegetation changes disturbed by PV plants in China's drylands. We further identified environmental factors affecting vegetation changes based on random forest regression model.

We set up an experiment to test the potential for biocrust recovery under the influence of PV panels with and without intervention, in which 1 m 2 quadrats were cleared of ...

Given that plant carbon content is about 50% of plant weight (Ma et al., 2018), carbon sequestration capacity in a solar power plant increases in the surface soil under and in ...

Solar photovoltaic panels significantly promote vegetation recovery by modifying the soil surface

microhabitats in an arid sandy ecosystem. G-L. Wu, State Key Laboratory of Soil Erosion and Dryland Farming on the ...

Except for the China PV plant spatial data (Zhang et al., 2022), we also used the utility-scale PV solar energy facility footprints mapped by Kruitwagen et al. (2021) because this data set ...

under solar panels as well as in full sun plots (controls) outside of the solar panels. We found that oral abundance increased and bloom timing was delayed in the partial shade plots, which has

The objective of this mini review is to present and summarize the recent studies on the effect of PV shading on crop cultivation (open field system and greenhouses integrated ...

Producing plants under PV panels has been shown to increase land productivity by 35 %-73 %. In addition, an appropriate PV system design and installation, in conjunction ...

The effects of PV panels on soil moisture and temperature via a whole-year field experiment at a PV power plant in a desert area in western China showed that the soil temperature and ...

These impacts are especially visible in dryland ecosystems, where photosynthetic production is water-limited (sunlight is available in excess). Drylands account for 40% of land ...

Solar energy systems are a suitable option to replace fossil fuels [5, 6].The costs of Photovoltaic (PV) panel systems have continuously decreased, leading to a rapid rise in the ...

Except for the China PV plant spatial data (Zhang et al., 2022), we also used the utility-scale PV solar energy facility footprints mapped by Kruitwagen et al. because this data set documents the deployment dates of ...