

Paving photovoltaic panels on the loess high slopes in northern Shaanxi

Are soil erosion control practices effective in the Chinese Loess Plateau?

Soil erosion control practices have been extensively conducted in the Chinese Loess Plateau, which is one of the most severe soil erosion regions in the world. Nevertheless, a comprehensive overview of the effectiveness of these erosion control practices in this region is lacking.

Which soil surface is rougher under a PV panel?

Compared with the relative smooth soil surface of the control slope (Fig. 6a), the soil surface under the PV panel was rougher. For example, under the 80 mm hr⁻¹ rainfall, a big part of the ground surface under the PV panel did not have soil surface seal (see the red square in Fig. 6b).

Can photovoltaic panels be placed on a slope of a road?

Layout of photovoltaic panels on the south-facing slope of the road. Similarly, the optimal tilt angles of PV arrays on the slopes of roads in typical directions could be simulated and derived using PVsyst7.2, and they are shown in Table 2. However, the desirable PV array placement may not always be in the same orientation as the target slope.

How to prevent soil erosion in the Loess Plateau region?

Soil erosion is serious, and the ecological environment is fragile in the Loess Plateau region. Engineering, biological measures, and farming measures are all necessary to inhibit soil erosion in the Loess Plateau region, reduce the amount of sediment entering the Yellow River and improve the ecological environment.

Can PV PGP be assessed on Highway slopes?

Therefore, this study proposes an assessment method for the PV PGP on highway slopes using the design or calculated highway and slope geometric parameters and the solar radiation received by PV panels under the desirable placement scheme.

Does a photovoltaic panel reduce runoff and sediment in a slope?

The impact of a photovoltaic (PV) panel on runoff and sediment in a slope was tested. The key impact of the PV panel is preventing soil detachment by raindrop impacts. The PV panel slope produced 27 %-63 % less soil erosion than the control slope. The PV panel delayed runoff start time under rainfall with heavy rainfall intensities.

As an important indicator of terrestrial ecosystems, vegetation plays an important role in the study of global or regional ecological environmental changes. Northern Shaanxi is located in the ecologically fragile area of the Loess Plateau, which ...

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Based on the establishment of high risk factors to loess collapsibility and necessary location information, being able to predict the collapsibility across the Loess Plateau ...

the loess slopes. In the field of northern Shaanxi highway construction and planning, 3 ° represents the boundary value between the plain and micro-hills and 15 °; between micro-hills ...

Anti-sliding piles play a key role in slope stabilization. This study explored the distributions of earth pressure and soil resistance acting on full buried single-row anti-sliding piles installed in loess ...

Vegetation carrying capacity of soil water is the key of the ecological environmental construction and sustainable development in the Loess Plateau. Based on local monitoring data of rainfall, ...

The results show that the vegetation species diversity is below the medium level in north Shaanxi, which accords with the slope vegetation composition characteristics of Loess ...

How to solve the contradiction between coal mining and soil and water conservation is the key scientific problem to realize the ecological environment protection and high-quality ...

Therefore, based on a sandy loess high slope in Fugu County, Yulin City, Shaanxi Province, this paper analyzes the single-stage slope scour resistance and overall stability of the slope based ...

This study proposes a potential assessment method for expressway slope photovoltaics. First, the suitable locations of expressway slopes for installing PV systems are identified on the basis of ...

Two 4 m × 1 m slopes (i.e., a test slope with a PV panel coving the middle of the slope and a control slope with no covering) in the plot were set up, and the two slopes were ...

The highway project in the loess area of northern Shaanxi is to balance the earthwork ... The most suitable slope rate range is found for a high slope in northern Shaanxi by Midas-GTS NX. With ...

The number of cities where built-up land was developed on high slopes (over 5°) increased from 150 to 238. ... The Loess Plateau in northern Shaanxi is chosen as the study ...

Based on the analysis of the current situation of soil and water conservation on the Loess Plateau, the importance of check dam construction is analyzed, and the three major ...

According to the field survey, the loess high slopes in northern Shaanxi can be mainly divided into two categories: one is slow slope and narrow platform, and the other is wide platform and ...



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