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Application of Agrivoltaic System Applied in Vegetable Farming

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Editorial

Land scarcity will worsen as a result of causes such changing how agricultural land is used for energy production or other human requirements, as well as extra ones that support this development, including soil deterioration. Conflicts between land-use goals, such as between the agricultural and energy sectors, are being caused by these changes. Additionally, the growing interest in the land-use footprint of large-scale ground-mounted PV is a result of recent advancements in photovoltaic technology and their immense potential for future energy generation. Agrivoltaics, which involves using farmland for both the production of food and PV energy, is one method of reducing the impact of GM-PV on the environment. Crops growing underneath the system may become more resilient as a result of APV. It can increase water availability and water usage efficiency while serving as a defence mechanism for plants against unfavourable weather circumstances like extreme sunshine or hail. In nations with severe land shortages or in dry climate zones, an advantageous application is thought to be particularly promising [1].

First off, the land may be used concurrently by two sectors, which relieves pressure on the limited amount of land. In this manner, APV locates territory for the energy transition of nations toward renewable energies without aggravating issues over land usage. Second, places that are unsuitable for agriculture because of climate stress and water constraint may eventually become more appropriate. However, the advantages of APV greatly rely on the region in which it is used and the agricultural activity that takes place there. Little is known about how plants respond to the altered climatic circumstances that the APV system brings with it, thus further study is required in this area. The implementation of APV within the current frameworks is difficult in many countries due to standards and policy schemes [2].

However, other nations have already implemented specific support programmes. More than 2200 APV systems with a capacity of at least 2.8 GW have been installed internationally as a result of policies favouring APV that have been implemented by the governments of Japan, China, France, Massachusetts, and Korea. One of the earliest actual APV implementations is located in Germany, where Guggenmos, an electrical engineering firm, is based in Bavaria. Been growing various crops under a PV system installed since 2008. At a 1.5 m height. The first APV research centre with a was set up by the Weihenstephan-Triesdorf University of Applied Sciences in 2013. 28 kW power plant in Bavaria, examining Chinese agricultural performance both pointed cabbage and cabbage [3].

On fields in the Demeter farming community of Heggelbach, the system was constructed as part of the project APV-RESOLA Agrophotovoltaics - A Contribution to Resource-Efficient Land Use) in September 2016. The APV system is designed to produce the best overall system output in terms of societal acceptance, farmer acceptability, and agricultural and electricity production. has a 5 m vertical clearance and an up clearance for breadth. The APV system is designed to produce the best overall system output in terms of societal acceptance, farmer acceptability, and agricultural and electricity production. In comparison to most other APV designs, the Heggelbach APV provides for a far larger range of machine utilisation with a vertical clearance of 5 m and a width clearance of up to 19 m. The results can serve as a guide for creating new APV systems [4].

A summary of the theoretical foundations for constructing an APV system is provided in Section 2. As a result, it presents the idea of LER and offers information on crop categorization for APV, simulation for light distribution, and row distance. Preliminary simulation results and some electrical yield projections are presented in Section 3. The final APV design and the key empirical data from the first two years of operation are described in Section 4, with an emphasis on PV performance and land use efficiency. [5].

Conflict of interest

None

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