



EVALUATION OF WINDOW GLASSES TRANSMISSION AND SUNLIGHT GUIDING SYSTEM IN A SOLAR-BASED VERTICAL GREENHOUSE

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ABSTRACT

Vertical farming is believed to be a solution to the potential global food shortage in the future. However, it also receives many doubts about using excessive energy to support its artificial lighting system. In this paper, a solar-based vertical greenhouse is investigated based on a baseline greenhouse configuration. Ray tracing method is utilized to simulate the solar energy delivered to crop surfaces through window glasses transmission and artificially from a sunlight guiding system. Simulated results demonstrated that elevating the floor height and introducing a sunlight guiding system can improve the sunlight amount without using artificial lighting.
