

A BETTER SOLAR THERMAL COLLECTOR: CAN WE LEARN FROM THE TREES?

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Abstract

A mathematical model for solar energy absorption in a tree canopy is proposed. The canopy is modeled to be a number of discrete layers wherein fractional leaf areas and their absorptances, both in the front and the back of the layers, can vary. Results obtained from the mathematical model indicate the advantage of a thin canopy when absorptance of the leaf surface is low. Engineering applications, such as solar thermal collector, can perhaps be drawn from this.

Published in the 1st Regional Conference on Energy towards a Clean Environment, the Joint Graduate School of Energy and Environment, Chiangmai, 2000.