

Numerical Investigation of Natural Convection of Pine, Olive and Orange Leaves

Authors : Ali Reza Tahavvor, Saeed Hosseini, Nazli Jowkar, Behnam Amiri

Abstract : Heat transfer of leaves is a crucial factor in optimal operation of metabolic functions in plants. In order to quantify this phenomenon in different leaves and investigate the influence of leaf shape on heat transfer, natural convection for pine, orange and olive leaves was simulated as representatives of different groups of leaf shapes. CFD techniques were used in this simulation with the purpose to calculate heat transfer of leaves in similar environmental conditions. The problem was simulated for steady state and three-dimensional conditions. From obtained results, it was concluded that heat fluxes of all three different leaves are almost identical, however, total rate of heat transfer have highest and lowest values for orange leaves and pine leaves, respectively.

Keywords : computational fluid dynamic, heat flux, heat transfer, natural convection

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