Preliminary Analysis of Soil Heat Flux in the Rice Field in the Lang Sen Wetland Reserve, Long An Province, Vietnam

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Abstract

The heat transfer represents the absorption and storage of heat in soil for rice cultivation, because soil temperature places a great impact on the time and absorbency of irrigation water, nutrient control and the growth of plants' root system. Soil heat flux is directly influential in the thermal conduction; and dependent on the moisture and structure of soil. Research on the heat transfer process from the ground to the air in rice fields in Lang Sen area, Long An province is investigated using a set of real-time measuring data from a continuous measurement station on agricultural land with 2 sensors placed at a depth of 5cm below the soil surface, in the North (1) and South (2) of the station. The parameters are measured every 30 minutes throughout the harvest season from June to December 2019. The average results of the soil heat flux that the northern sensor (1) ranged from -0.108 to 0.169 W/m^2, which is higher than that of the southern sensor (2), which ranged from -0.179 to 0.083 W/m^2. Here it is a short-term data, it shows the difference in results over months. In addition, the soil heat flux may be affected by other factors including the humidity, air temperature and soil temperature. With this research, this report supplies important information which contributes to the understanding of the heat transfer process in soil and to the optimization of the productivity management of the cultivation of rice.

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