

## **Irrigation water requirement of rice in Long Xuyen Quadrangle area, Vietnam in the context of climate change**

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### **ABSTRACT**

Climate variability is deeply affecting all aspects of human life including agricultural sector. In the present study the CROPWAT model was used to estimate reference evapotranspiration (ET<sub>o</sub>), crop evapotranspiration (ET<sub>c</sub>), effective rainfall (ER) and crop water requirement (CWR) of summer-autumn rice crop and its yield during baseline period (2002-2017) and also under representative concentration pathways (RCPs) 4.5 scenario for 2020s, 2055s and 2090s-time scales for Long Xuyen Quadrangle (LXQ) area of Vietnam. It was found that the ER significantly increased by 6.2, 16.9 and 15.4 per cent, respectively in 2020, 2055 and 2090; ET<sub>o</sub> and ET<sub>c</sub> increased by 2.1 and 2.3 per cent, respectively in 2020s; 4.4 and 5.8 in 2055; and 5.8 and 7.7 per cent in 2090 compared to baseline. The CWR also increased approximately 4.6, 4.4 and 3.5 per cent, respectively in 2020, 2055 and 2090 and consequent decrease in rice yield by 6.5, 7.9 and 10.4 per cent, respectively. Results showed that if the crop planting date is delayed by 20 days, the rice yield would increase approximately 4.9, 7.9 and 9.9 per cent, respectively in three-time scales of RCP 4.5 scenario, compared to base line period.

**Keywords :** Irrigation, crop calendar, climate change, rice yield, water requirement