



## **Assessing the groundwater recharge under various irrigation schemes in Central Taiwan**

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The flooded paddy fields can be considered as a major source of groundwater recharge in Central Taiwan. The risk of rice production has increased notably due to climate change in this area. To respond to agricultural water shortage caused by climate change without affecting rice yield in the future, the application of water-saving irrigation is the substantial resolution. The System of Rice Intensification (SRI) was developed as a set of insights and practices used in growing irrigated rice. Based on the water-saving irrigation practice of SRI, impacts of the new methodology on the reducing of groundwater recharge were assessed in central Taiwan. The three-dimensional finite element groundwater model (FEMWATER) with the variable boundary condition analog functions, was applied in simulating groundwater recharge under different irrigation schemes. According to local climatic and environmental characteristics associated with SRI methodology, the change of infiltration rate was evaluated and compared with the traditional irrigation schemes, including continuous irrigation and rotational irrigation scheme. The simulation results showed that the average infiltration rate in the rice growing season decreased when applying the SRI methodology, and the total groundwater recharge amount of SRI with a 5-day irrigation interval reduced 12% and 9% compared with continuous irrigation (6cm constant ponding water depth) and rotational scheme (5-day irrigation interval with 6 cm initial ponding water depth), respectively. The results could be used as basis for planning long-term adaptive water resource management strategies to climate change in Central Taiwan.

Keywords: SRI, Irrigation schemes, Groundwater recharge, Infiltration