

## 再生稲の水分消費は、移植稲と比較して生育初期で大きく生育後期で小さい

Water requirement of ratoon rice is larger in the early growth stage and smaller in the late growth stage compared to transplanted rice

水稻再生二期作の用水計画の策定に必要な生育に応じた水分消費割合(基準蒸発量に対する蒸発散量の割合)はこれまで報告されていない。本研究では、途上国でも実施可能な簡易な水田減水深計測とその欠損データを補間する統計モデリングの手法を組み合わせ、再生二期作における基準蒸発量および蒸発散量を算定し、水分消費割合を決定する(図1)。移植稲の株当たり茎数は積算気温の上昇に応じて徐々に増加するが、残株から発芽する再生稲は生育初期から旺盛な分げつを示し、株当たり茎数は移植稲の2倍程度多い(図2)。この分げつ特性の違いにより、移植稲と再生稲の生育に応じた水分消費割合も異なる(図3)。水稻再生二期作ではそれら水分消費特性の違いに留意して用水計画を策定する必要がある。

Actual crop evapotranspiration (ET) and crop coefficients (Kc values) are necessary for ratoon rice crop irrigation planning, but these data have been hardly reported. This study was conducted to evaluate the ET and Kc of ratoon cropping as determined by water depth observation and statistical modeling (Fig. 1). The Kc regression curves for transplanted and ratoon crops were different because of the difference in tillering traits (Figs. 2 and 3). The results suggest that irrigation scheduling of ratoon cropping should take into account higher crop water requirements in the initial growth stage and less water consumption in the late growth stage than transplanted rice cropping.

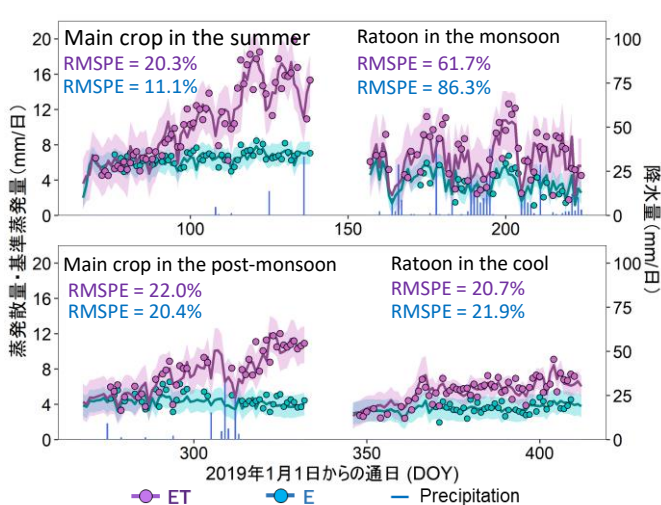


図1 異なる季節における水稻再生二期作の蒸発量(ET)と基準蒸発量(E)の観測値と推定値

Fig. 1. Observed and estimated E and ET in ratoon double rice cropping in different seasons

The periods of the first and second double cropping are February 2019 to August 2019 and September 2019 to April 2020, respectively. The model estimates are described with lines and bands corresponding to the means and 95% credible intervals. RMSPE, root mean squared percentage error.

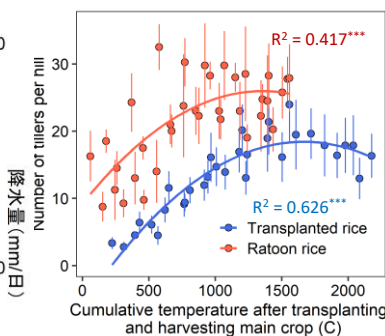


図2 移植稲と再生稲の茎数と移植後・本作刈取り後からの積算気温の関係

Fig. 2. Comparison of the cumulative temperature and number of tillers per hill described with non-linear bands and dots with bars

The error bars, the standard errors ( $n = 4 \sim 8$ );  $R^2$ , determination coefficient; \*\*\*, 0.001% significance level

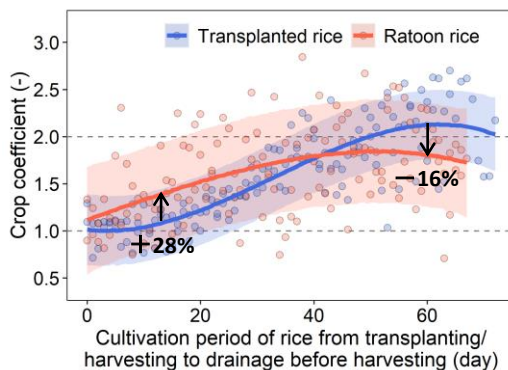


図3 移植稲と再生稲の生育に応じた水分消費割合

Fig. 3. Kc regression curves for transplanted and ratoon rice described with lines and bands corresponding to the means and 95% credible intervals

Values with percent in the figure is the increase-decrease rate in the Kc of ratoon rice with transplanted rice.

Reference: Shiraki et al. (2021) *Agronomy* 11(8):1573. <https://doi.org/10.3390/agronomy11081573>  
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