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Effect of Rice Transplanting Date and Optimal Transplanting Dates for Mid-Plain Area in South Korea

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[Abstract]

The transplanting date of rice affects grain yield and quality, and it is changed by the environment during cultivation. Thus, it is important to provide the optimal transplanting dates for rice growers under global warming environment. In this study, transplanting date experiments with thirty-day-old seedlings of three cultivars (early, mid, and mid-late maturity) were conducted at the National Institute of Crop Science in Suwon from 2018 to 2021 to determine the optimal transplanting dates for and quantify the effect of planting dates on yield and quality. Transplanting date was strongly associated with cultivar across every year. Clear relationships between transplanting date and head rice yield in early and mid-late maturing rice varieties were observed, and the highest head rice yields were observed during transplantings in mid and late June for early maturing cultivar and mid June for mid-late maturing cultivar. It is obvious that the optimal rice transplanting dates have been shifted and are better later than the optimal transplanting dates in 2002-2004. Days to heading was also strongly associated with the transplanting date and cultivar with 89% of the variation explained. Days to heading was reduced in the later transplanting dates. Grain yield was strongly associated with biomass production during ripening ($R^2=0.85$), however translocated biomass from leaf and stem showed little association with grain yield. The results from this study reconfirmed the importance of shifting optimal transplanting dates to maximize head rice yield for the Mid-plain area in South Korea.

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