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Application of Yield-Monitoring Combine to Test Cultivations for Paddy Rice to Compare their Grain Yields

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Abstract

Procedures have been presented to utilize a yield-monitoring combine for test cultivations of paddy rice. As an example, grain yields were compared at two blocks of sparse (30cm×30cm) and controlled (23cm×30cm) transplanting treatments allocated in a paddy field of 0.5ha. Data obtained from the yield-monitoring combine was assumed to represent the populations themselves, and methods were discussed to compare the grain yields between the treatments.

1) To maintain the size of the populations and the normality of their distribution, an appropriate size of the plots to generate the yield data was 5m×6m or 10m×3m for the experimental field employed.

2) Higher grain yields were observed at lower elevations of the field. For the comparison of the grain yields between the treatments within the same field, it was necessary to incorporate the effect of the micro-elevation into a regression model, or to create populations within a limited range of the micro-elevation. The optimum range of the micro-elevation was ±15mm for the same reason as discussed in 1) above.

3) Difference in the grain yields between the sparse and the controlled treatments was not concluded to be significant under the comparison of the populations specified in 1) and 2) above.

Key words
Grain yield, Yield map, Comparison, Sample number, Population, Normality, Micro-elevation, Sparse-planting

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