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## Comparison of the Quality Characteristics of the Rice yield Trial Lines in the Central Plain Region for Four Years

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### [Abstract]

In order to developing high-quality rice varieties and processing varieties, systematic and stable evaluation of physicochemical properties is required for breeding lines. In this study, we compared the quality characteristics evaluation results of rice breeding lines for cooked rice, special rice, and whole crop silage rice adapted to central plain region (Suwon) in order to use as basic data for future rice variety development.

Brown rice length/width ratio, head rice ratio, protein content, amylose content, alkali digestion value(ADV) and Toyo value were analyzed to evaluate the quality characteristics of yield trial lines cultivated in Suwon for four years (2017-2020).

Brown rice length/width ratio, head rice ratio, protein content, ADV and Toyo values showed significant differences by year, but there was no significant difference in amylose content ( $p<0.05$ ), which showed little environmental variation. The head rice ratio and Toyo value showed an increasing trend, while the protein content showed a decreasing trend. However, the protein content was the highest in 2020, which is thought to be owing to little sunlight hours due to heavy rainfall in 2020. The protein content of whole crop silage rice was 8.1%, which was significantly higher than that of other lines ( $p<0.05$ ). Toyo value of medium-maturing and early-maturing lines were 67.6 and 73.7%, respectively, and the Toyo value of medium-maturing lines was higher than that of the early-maturing lines ( $p<0.05$ ).

In correlation analysis among the quality characteristics of the rice lines for cooked rice, significant positive correlations were detected between Toyo value and head rice ratio, amylose content, ADV, and a negative correlation was observed between Toyo value and protein content ( $p<0.05$ ).

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