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Nitrogen Response on Growth and Yield in Several High Quality Rice Varieties

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[Introduction]
This study was to evaluate the growth and yield response of selected rice varieties commonly cultivated in Yeongnam inland area, and to compare their performance to Korean varieties under different application levels of nitrogen.

[Materials and Methods]
In order to find out better cultivation practice and select the suitable rice variety in Youngnam plain area to produce high quality rice, an experiment involving several mid-late-maturing varieties (Ilpum, Deabo, Younghojinmi, Samgwang, Hopum, Saenuri and Kosihikari) was carried out at six site (Daegu, Gumi, Uiseong, Yecheon, Sangju, Andong) in 2016. In Korea, standard N application level was amended from 11 to 9 kg/10a for high quality rice production in 2005. So, an additional experiment was conducted in 2016 to 2018 to investigate the effect of three nitrogen levels (5, 7, 9 kg/10a) on the yield and quality of rice especially with respect to eating quality.

[Results and Discussion]
Rice yields were increased by the higher rate of nitrogen application, mainly due to a heavier 1,000-grain weight of brown rice. Head rice ratio was increased significantly with an reduced nitrogen, while the protein content of the milled rice was decreased significantly for Hopum variety. Increase in the nitrogen application rate, a considerable increase of protein content was found in Hopum and Saenuri. Amylose content of milled rice was showed without a significant difference between nitrogen fertilizer level. Rice yield of milled rice grown by lower nitrogen fertilizer level, was lower than that grown by higher nitrogen fertilizer rate except Deabo and Younghojinmi. In a conclusion gathering all above the results to produce high quality rice, the applicative nitrogen fertilizer rate was 7～9 kg/10a for Ilpum, Samgwang and Saenuri, 9 kg/10a for Hopum and 5～9 kg/10a for Deabo and Younghojinmi, in considering with head rice yield, palatability, protein content and productivity.

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