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Effect of Climate on the Yield of Different Maturing Rice in Yeongnam Inland Area Over the Past 9 Years

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[Introduction]

The influence of weather conditions as temperature, rainfall and duration of sunshine are very important for the growth of rice. Therefore, the climate change affects rice yield and quality. The aim of this study was to analyze the relationship between rice yield and climate elements in Yeongnam inland area.

[Materials and Methods]

This experiment was conducted to clarify the effect of the air temperature and sunshine duration during rice growth period on yield of rice cultivated in Daegu (southern plain area) and Andong (inland mountainous area) region of Gyeongbuk province, Korea from 2013 to 2021. Two middle maturing rice varieties (Samdeok, Hwayoung) and three mild-late maturing rice varieties (Ilpum, Samgwang, Saeilmi) for Daegu, two early-maturing varieties (Ohde, Wungwang) and four mild-late maturing rice varieties (Ilpum, Samgwang, Saeilmi, Saechucheong) were cultivated by standard cultivation method for rice. Seedlings were transplanted to the experimental plots on May 20.(Andong) and May 30.(Daegu) at a spacing of 30cm×14cm.

[Results and Discussion]

For the past 9 years, the rice yield in the Daegu region has decreased for both mid and mid-late maturing rice varieties. Mid-late rice yields were stable in the Andong region. The number of panicles per hill significantly affected rice yield in mid-late maturing varieties. In addition, the grain weight significantly affected rice production in middle maturing varieties grown in the Daegu region. The relationship between grain weight and rice yield had a positive significant correlation in both regions. To understand the effect of climate factors on rice yield, the milled rice yield produced over the past 9 years (2013~2021) at both locations, Daegu and Andong, were evaluated. Rice yield decreased as the air temperature increased. In particular, the higher the minimum temperature during the ripening period, the significantly lower the rice yield.

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