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Relationship between rice grain filling of chucheongbyeo and climatic variables of maturing Period in paddy field

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Abstract

The relationships between rice grain filling and air temperature of maturing period in paddy field were analyzed to evaluate the effects of climatic change on rice productivity in Korea. Data of air temperature of 31, 41 and 51 days after heading(DAH) for 11 years from 2002 to 2016 were collected and analyzed to determine the effects on rice yield and yield component related traits of Chucheogbyeo, popular cultivar in Gyeonggi province in Korea. As the results, ripening ratio was closely correlated with the mean of daily maximum temperature (DMAT r=0.71*), the mean of daily temperature difference (DTD, r=0.67*) of 41 DAH and DTD (0.65*) of 51 DAH. Weight of 1,000 paddy rice grains was closely correlated with accumulated sunshine hours (ASH) of 31 (r=0.84**), 41 (r=0.75**), 51 (r=0.72*) DAH. Brown rice grain weight recovery ratio was closely correlated with DTD (r=0.76**) and ASH (r=0.84**) of 31 DAH, DMAT (r=0.75**, r=0.79**), DTD (r=0.79**, r=0.77**) and ASH (r=0.81**, r=0.79**) of 41 and 51 DAH. Paddy rice yield was closely correlated with MDT (r=-0.63*) of 31 DAH, mean of daily minimum temperature (DMIT, r=-0.83**, r=-0.70*), DTD (r=0.71*, r=0.62*) of 31 and 41 DAH. Brown rice yield was correlated closely with DMIT (r=-0.86**, r=-0.73*) and DTD (r=0.80**, r=0.72*) of 31, 41 DAH, and DTD (r=0.69*) of 51 DAH. Milled rice yield was correlated closely with DMIT (r=-86**, r=-0.73*), DTD (r=0.79**, r=0.71*) of 31, 41 DAH, and DTD (r=0.68*) of 51 DAH

Keywords: rice, relation, temperature, correlation, yield, climate change

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