PB-80

Variation of Days to Heading and Association Study for Different Location of Some Rice Genetic Resources

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[Abstract]
Increased temperature caused by global warming has become a significant problem for the growth and production of crops. A high temperature has a direct or an indirect effect on crops, leading to a significant yield loss. The damage of a high temperature stress to rice depends on its developmental stage. In present study, we performed evaluate the heading date in different location, Yeoju and Miryang, during growth of Korean rice core set. The heading date for the 223 rice accession were evaluated in Yeoju City (37°23′, 127°57′) and Miryang City (35°50′, 128°72′) located on middle and southern part of Korea, respectively. The average temperature of a day was higher in Miryang during entire growth stage. Here, total 222 KRICE-Core set was analyzed by GWAS for the high temperature effect. GWAS results revealed the Chr07_26954556, a lead SNPs were significantly associated with delaying heading date of KRICE-Core set. Significance threshold was set with $6.0 > -\log10(P)$, and Cross-Validation (CV) error suggested an optimal K value of 5 for the population based on the lowest cross-validation error K = 5.

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