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Analysis of agricultural characteristics and qualities of wheat under high temperature

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Abstract

High temperature is one of major environmental stress. Heat in flowering season of wheat is able to effect negatively to fertilization and also heat effect to maturity. Therefore, Heat stress effects severely to qualities of wheat and yield productivity. In this study, we evaluated to agronomic characteristics and qualities by high temperature in 13 Korean wheat varieties. Weight of 1,000 grains decreased when wheat got the heat stress. In particular, heat stress during the heading dates were more damaged than after the end of heading dates except two varieties Keumkang and Jokyoung. Plant height of each cultivar under high temperature and normal field averaged 80.5 cm and 83.0cm, respectively. The length of spike and awn in each cultivar were similar to both condition. Flour yield and gluten contents of most heat damaged wheat decreased. Under the temperature, protein contents of six varieties like as Keumkang, Baekjoong, Hojoong, Yeonbaek, Joah and Shinmichal 1 decreased but the others increased. The sedimentation values (SDSF) of four varieties decreased under the high temperature. But SDSF of 7 varieties like as Baekjung, Suan, Hojoong, Jojoong, Uri, Shinmichal and Shinmichal 1 was increased. The lightness (L) of wheat flour derived from high temperature treated wheat was darker than non-treated wheat. As a result of this research, we confirmed that agricultural traits and qualities decreased in heat damaged wheat.

Key words: High temperature, agronomic traits, wheat quality, wheat

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