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Effect of Soil Water Stress on Yield and Quality of Korean Wheat

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[Abstract]

Among annual precipitation in Korea (1306.3 mm), 54% of it falls intensively in summer, and only about 12.4% falls in April and May, when the water requirement of wheat is the highest. Korean wheat also could be damaged by soil water excess stress as frozen soil thaws after winter (late Feb~Mar). This study was conducted to evaluate effect of soil water stress on yield and quality of Korean wheat cultivar 'Saegeumgang'. Soil water treatments consisted of 4 treatments; water excess treatment in tilling stage (3.23~3.30), drought treatment in ripening stage (Apr~Jun), irrigation treatment in ripening stage (5.10) and standard condition. There was no significant difference between the treatment conditions for culm length, and the number of spike number was the highest in the order of irrigation in the ripening period (951) > standard cultivation (876) > excess water treatment in the tilling stage (752) > drought treatment in the ripening stage (767/m²). Test weight and Thousand grain weight were 548g/L and 22.1g respectively, which were lower than other treatments, and there was no significant difference between the other treatments. Abortive grain was 5.4kg/10a which was lower than other treatment, and there was no significant difference between the other treatment than other treatments. In drought treatment, protein content was 11.9% which is the highest among all treatments, and SDS-sedimentation value was 27.2ml under drought treatment which was very low compared to other treatments. Therefore, wheat yield and spike number were decreased in excess water condition at tilling stage and drought condition at ripening stage. Furthermore, wheat quality became deteriorate in drought condition at ripening stage.

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