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Comparison of physiological responses soybean [*Glycine max* (L.) Merill] of different irrigation Periods

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Abstract

The water in the crop cultivation shows difference according to the variety of crop, cultivations period and climatic condition. The growth and development, quantity and fruit enlargements are affected by soil water conditions. In previous study, leaf area and photosynthesis are decreased by lower soil moisture. Other research reported that excess moisture condition at vegetative and reproductive growth period in cultivation of soybean caused highest reduction in crop growth rate (CGR) and dry weights of plant parts. In particular, the damage was bigger during vegetative growth stage than reproductive growth period. Soybean (*Glycine max* (L.) Merill) is useful and popular crop throughout the world. It is very popular crop in Korea, China, Japan and other Asian countries. Soybeans used in various way including soybean sprouts, paste, soymilk, oil and tofu. Two soybean cultivars grown in four different irrigation conditions were determined for physiological responses. In this study, we examined leaf area (LA), leaf dry weight (LDW), specific leaf area (SLA), root dry weight (RDW) and shoot height (SH) in different water conditions. 50mL/9day irrigation periods showed the lowest contents in LA, LDW, RDW, SH. Water deficit caused increase of leaf Water saturation deficits (WSD), Cheongjakong 3 and Taekwangkong showed increase of leaf water saturation deficits (WSD) in drought conditions and leaf water potential and stomatal conductance were decreased. Photochemical efficiency was decreased in 50mL/1day irrigation condition while, there was decrease of growth and development in 50mL/9day with drought.

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Keywords: soybean, physiological response, irrigation periods

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