

PA-001

Characterization of Soybean Growths, Yields and Crop Susceptibility under Drought Condition

Hyen Chung Chun^{1*}, Sanghun Lee¹, YoungDae Choi¹, Dong Hyok Gong¹, Ki-Yuol Jung¹

¹Crop Production Technology Research Division, National Institute of Crop Science, RDA, Miryang, 50424, Korea

[Introduction]

Soybean is most widely cultivated upland crops in Korea. Due to global climate change, Korea experiences severe drought during soybean cultivation. In order to succeed cultivation of soybean under severe rainfall conditions, it is critical to understand effects of soil moisture contents to soybean. The objectives of this study were investigating growth properties of soybean under deficit soil moisture contents and quantification of water stress response.

[Materials and Methods]

The experiments of drought effect on soybean were performed in a greenhouse located at Miryang, Gyeongnam from June to September, 2019. Soybeans were grown in a Wagner pot with soil mixture of bed soils and upland soils. Drought treatment was applied at six growth stages: V1, V3, V5, R1, R3, R5. Growth and yield characteristics of soybean were measured from all pots. Drought treatment was applied at each growth stage for 7days. Total number of pots were 35 which included 5 replicates and 5 pots with no drought treatment (control). Crop susceptibility (CS) was calculated to quantify drought effect at each growth stage. After planting, soil moisture contents were recorded every 30 minute during the cultivation.

[Results and Discussion]

Drought effect was the greatest in growth and yield reduction of soybean at R3. Pots with drought treatment at V1, V3 and V5 had no damage or reduction in height or number of pods in growth characteristics and yield. On the other hand, growth properties reduced from pots with drought treatment at R1 and this trend continued to pots of R3 and R5. Yield characteristics also followed this trend, CS value was the smallest at V1 and V3 stage, which means there was the smallest yield reduction by drought compared to the control ones. Pots with drought treatment at V5 started to increase CS values and peaked at R3. These results represent that drought on soybean after V5 growth stage would lead to poor growth and yield of soybean.

[Acknowledgement]

This research was performed and funded by an Agenda project of Rural Development Administration (project number: PJ013482012020).

*Corresponding author: Tel. 055-353-1262, E-mail. hyen2010@korea.kr