

Growth and yield of soybean depending on duration of waterlogging

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[Introduction]

The climate change such as high temperature, cold weather damage, flooding, drought stresses and other disasters were reported that cause to reduce productivity of soybean. One of the climate changes, flooding is severe environment factor that effect on upland crops in paddy field during the early growth of soybean. Therefore, physiological studies were needed for elucidating the reducing degrees of the growth and yield of soybean by flooding.

[Materials and Methods]

In this study, we used 2 soybean cultivars (Daepung & Hwanggumkong) which were planted at 5 June 2014. And then, they were treated with flooding at early growth stage (V3 stage) for 5 days, 10 days and 15 days, respectively. The growth responses of soybean plants after treatment with flooding were investigated with 1/5,000 plastic pot.

[Results and Discussions]

Waterlogging for 5 days did not effect on the flowering and grain filling in Daepung cultivar. Waterlogging for 10 days causing flowering time delay and reducing photosynthesis because nutrients may be not moved from source to sink, and nitrogen deficiency in leaves may be caused by flooding. Waterlogging for 15 days at R5~R6 stage, growth of Daepung and Hwanggumkong cultivar is delayed around 5 and 8 days, respectively. The longer the waterlogging caused more severe and rapidly grain size and weights in Hwanggumkong cultivar compared to the Daepung cultivar. Waterlogging for 15 days caused approximately 42% grain damage in Hwanggumkong cultivar. Waterlogging for 5, 10 and 15 days the seed weight of Daepung cultivar were decreased around 40%, 52% and 60% respectively, whereas seed weight of Hwanggumkong cultivar were decreased around 64%, 79%, and 84% respectively.

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