

PA-080

## The Yield Response of Soybean [*glycine max*(L.) Merrill] under Elevated Temperature

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### [Introduction]

Recently, abnormal weather, such as extreme high temperature and drought has increased due to climate change. So, there has been a growing concern about damage to field crop, including soybean. Therefore, this study was conducted to examine the effect of increased temperature on soybean growth and yield using Temperature Gradient Chamber (TGC)

### [Materials and Methods]

The response of soybean growth and seed yield under elevated temperature was conducted using TGC at National Institute of Crop Science (NICS) in 2019. The two major types of soybean cultivar, medium-seed cultivar such as Daepung-2 and large-seed cultivar such as Daechan, were used and four temperature treatment were established. Ambient temperature +1~+4 were established to examine the growth response and seed yield of each cultivar.

### [Results and Discussion]

In all cultivar, the vegetative stage (VE-R1) did not differ in the development rate depending on temperature rise, but the development rate of the reproductive stage was delayed due to the temperature rise. Also seed yield showed a higher correlation with seed weight ( $r=0.713^{***}$ ) and the increased temperature affected soybean seed yield by reducing the single seed weight. Pod number, seed number and seed weight showed a significant difference between cultivar and temperature and the interaction effect between cultivar and temperature treatment was also recognized. Daepung-2 had the lowest seed yield at aT+4°C and Daechan showed lowest yield at aT+3°C. Also, the reduction of seed yield in Daechan (41.4%) was higher than the Daepung-2 (36.1%). The results of this study can be used as basic data in developing cultivation technology to reduce damage caused by elevated temperature. Also, it is expected to contribute to stable production of soybean by evaluating the growth response of each soybean cultivar by elevated temperature.

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