

## The Response of Korean Ginseng(*Panax ginseng* C. A. Meyer) to Abiotic Stress(wet injury)

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## INTRODUCTION

This study was conducted to develop an SNP set that can be useful for marker-assisted breeding (MAB) in Korean ginseng (*Panax ginseng* C. A. Meyer). We have plan to carry out morphological, genetic characteristics and relationship for Geumsan native species, breeding lines. Furthermore, We could be used diverse genetic resources for Ginseng breeding.

## **Method and Result**

This experiment measured the chlorophyll fluorescence image that occurs during the wet injury treatment of Korean ginseng. Through this, resistance and sensitivity individuals were selected to develop wet injury markers. Soil flooding treatment was performed after the stem became hard at 30 days of ginseng seedling planting. Growth characteristics surveys of the above and underground part were conducted every 5 days after treatment. As a result, 17.2% of the above ground part withering 20 days after treatment and 47.8% withering 30 days after treatment. The underground part spoiled 13.9% after 15 days of treatment, 42.5% after 20 days and 74.4% after 30 days of treatment. The survival rate of the above ground part was investigated by dividing the degree of resistance according to the wet injury treatment period by resistance line, moderate, susceptible line.



Fig. 1. Abiotic stress treatment(wet injury) for Establishment of evaluation Indicator to treat the water until soil surface for 30 days



Fig. 2. Abiotic stress treatment(wet injury) for damage estimation of root and top growth traits.



Fig. 3. Abiotic stress treatment(wet injury) for damage estimation of root and top growth at 10 days.

As a result, it survived 100% on the 10th of treatment, but showed a survival rate of 82.7% from the 20th and 47.3% after 30 days of treatment. As a result of investigating chlorophyll fluorescence characteristics by degree of resistance, Fo (minimum fluorescence value) was 900.4 in the susceptible line and 400 or less in the resistance line. Fv/Fm (maximum quantum yield) was found to be 0.2 in the susceptible line, control and resistance line were 0.76 and 0.71. As a result of investigating chlorophyll fluorescence properties according to treatment days, control remained below 400 for 30 days, but the ginseng treated stress increased to 517 on 20 days and 610 on 30 days, and the Fv/FM value decreased from 0.69 to 0.38 on 30 days, resulting in photosynthesis potential was decreased.



Fig. 4. Abiotic stress treatment(wet injury) for damage estimation of root and top growth at 20 days.



Fig. 5. Abiotic stress treatment(wet injury) for damage estimation of root and top growth at 30 days



## CONCLUSION

In order to select ginseng to get wet stress using chlorophyll fluorescence response analysis devices, Fo values (minimum fluorescence values) will be selected at 400 or less, sensitivity objects at 500 or more, Fv/Fm values (maximum quantum yield) at 0.7 or less, and sensitivity entities at 0.55 or less. The Wet injury on 2 years old ginseng was caused by Ginseng roots disease (flacherie) through root cementation and wound infection.



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