**Possibility of Drought Stress Indexing by Chlorophyll Fluorescence Parameter in Leaves of Rice**

Chae Min Han¹*, Sang Kuk Kim², Jong Hee Shin¹, Jung Bae Kwon¹, Tae Young Kwon¹

¹Division of Crop Research, Gyeongsangbuk-do Provincial Agricultural Research & Extension Services, Daegu 41404, Republic of Korea
²Bioresources Research Institute, Andong, 36614, Korea

[Introduction]
Drought stress is one of the most important environmental factors that limit plant photosynthesis. The photosystem II (PSII) is highly sensitive to environmental limiting factors and PSII reaction center and its chemical reactions being adversely affected by drought stress. Chlorophyll fluorescence quick variation can be used as a valuable index for evaluation of plants tolerance to environmental stress. The objective of this study was evaluation of chlorophyll fluorescence in various rice varieties under field-induced drought conditions and studying relation between grain yield and Fv/Fm in rice leaves experiencing different drought stress conditions.

[Materials and Methods]
Eleven rice varieties were used in this study. Field experiments were carried out following a randomized complete block design with three replications. A well-irrigated block received standard irrigation practices served as the control treatment, and a water-limited block simulated drought stress using a rain-out shelter by continued drought stress at 15 days after transplanting. Data collected from these experiments included Fm/Fo, Fv/Fm, yield, yield components, plant height, panicle number, and tiller per plants, etc.

[Results and Discussion]
The objectives of this study focused on measuring chlorophyll fluorescence related to drought stress comparing rice yield. There were significant increases in Fm/Fo and Fv/Fm for chlorophyll fluorescence responses from nine varieties received standard irrigation practices served as the control treatment from July 30 to August 17 after irrigation. On the other hand, while Fm/Fo and Fv/Fm for chlorophyll fluorescence were enhanced within 20 days after irrigation, the responses were slightly reduced after August after irrigation, which could be due to drought stress using a rain-out shelter. It was clearly indicated the parametric evidences for chlorophyll fluorescence responses such as Fm/Fo and Fv/Fm insinuated the possibility of photophysiological indices under drought stress.

*주저자: Tel, 053–320–0276, E-mail, tastypeach86@korea.kr