

## Chlorophyll Fluorescence and Growth Response of Three South Korea Native Fern Species under In-door Light Intensity

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This study investigated the growth of native ferns under indoor light intensities to identify the introduction possibility as in-door ornamental plants. Three evergreen perennial fern species used in this experiment were *Coniogramme japonica* (Thunb.) Diels, *Woodwardia japonica* (L. f.) Sm., and *Cyclosorus acuminatus* (Houtt.) Nakai ex H. Itô. The light intensities were adjusted to 10, 50, 100 and 200 PPFd ( $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ ) based on the measurement of the various indoor light quantities. The experiment was conducted for a total of 8 weeks, and the light period (12/12h), temperature ( $25\pm 1^\circ\text{C}$ ), and humidity ( $55\pm 3\%$ ) were maintained during the experiment. The control plant group was grown in glass greenhouse for the same period. As the result of the study, in door *C. japonica* showed better growth under light intensities of 100, 200 PPFd. However, withering of the plants were observed under all light intensities except the control, which causes an ornamental value decrease. This seems to be related to the increase of Df<sub>o</sub>/RC value in chlorophyll fluorescence parameters. In the *W. japonica* growth data, the plant height was not significantly different from the control but, the leaf number decreased more than a two-fold. Also, the formed leaves turned brown and showed a poor growth and SPAD value at 200 PPFd had decreased significantly. Growth data of *C. acuminatus* was not significantly different with the control at all light intensities however, withering was observed at 100 and 200 PPFd. In chlorophyll fluorescence parameters, significant decrease in Pi\_Abs and increase in Df<sub>o</sub>/RC value at 200 PPFd impose that stress caused by the intense light might be the reason of the withering of the plants.

**Key words:** Chlorophyll fluorescence, Ornamental plant, PPFd, Pteridophyte, SPAD

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