

## A study on the physiological analysis of cultivated *Undarias*

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### 1. Introductions

The perspective of the ecological breeding that breeds a variety adapted a region, to manifest morphological, ecological, physiological, biochemical and genetical characteristics pertaining to local cultivars or ecotypes is important in establishing well-defined breeding objectives, i.e., making obvious breeding strategy and tactics, and advancing rational breeding management and operation in breeding program. They give also basic information to selection the best cultivar for a cultivation region or cultivation objective and to reveal the best cultivation condition including a cultivation region for the cultivar in cultivation program.

### 2. Materials and Methods

This study was undertaken to evaluate the physiological characteristics of hybrids between the Kamaishi × Kijang cultivar, Kamaishi × Myeongcheon cultivar and Kijang × Myeongcheon cultivar for two year, and of the Kamaishi, Kijang and Myeongcheon cultivars for three years in the *Undarias*.

To evaluate the Physiological characteristic, chlorophyll *a* (Chl. *a*) fluorescence was measured using a portable fluorometer (Plant Efficiency Analyser(PEA), Hansatech Instruments Ltd, England).

For the calculation of concentrations of Chl. *a* and Chl. *c*, the pigments were extracted from thalli by soaking in dimethyl sulfide(DMSO) without maceration. A 100 mg thalli-tissue was soaked in 2-3 ml DMSO within a beaker, which was heated at 65°C for 5-6 hours. The cooled DMSO to room temperature was added to the quadruple distilled water, and the absorbance was measured at 665 and 631 nm(Seely *et al.* 1972) by a

Spectrophotometer (UVS-30NP, ANALAB, Co, Ltd., Korea).

### 3. Results and Discussions

Comparison of chlorophyll fluorescence, chlorophyll *a* and *c* by the six cultivars of *U. pinnatifida* at the Myeongcheon and Gyedo aquafarms. In the Myeongcheon aquafarm, the ratios of the maximum variable fluorescence (Fv) to the maximum yield of fluorescence (Fm) of the six cultivars were almost the same in March 2003, but the ratios were little by little a difference among the six cultivars according to months. The ratios of the Kijang and Myeongcheon × Kijang cultivars were the highest in February. In the Gyedo aquafarm, the ratios of the cultivars were greatly unaltered, however, the ratio of the Kijang one was the lowest in March 2003. In the Myeongcheon aquafarm, the content of the chl. *a* of the Kamaishi cultivar rose suddenly and was the highest among the cultivars in March 2003, the contents of the Kamaishi × Kijang line rose continuously till May 2003, and the contents of the Kamaishi, Myeongcheon and Kamaishi × Myeongcheon ones became low from March. In the Gyedo aquafarm, the contents of chl. *a* of the Kamaishi was the highest among the cultivars in March. The contents of the Kijang and Myeongcheon × Kijang ones rose in April. In the Myeongcheon aquafarm, the content of chl. *c* of the Kamaishi cultivar was the highest among the cultivars, the content of the Kijang one was greatly unaltered from January to May 2003. In the Gyedo aquafarm, the content of the Kamaishi one was the highest among the cultivars in March, and that of the Myeongcheon × Kijang one was the highest in April.

### 4. References

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