

Kritsana Hmunyoot 2010: Screening for High Temperature Stress in Rice Cultivars (*Oryza sativa* L.) Master of Science (Agriculture), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Mr. Witith Chai-ari, Dr. rer. agr. 61 pages.

Global warming affects yield reduction of the off-season rice by more than 70 percent of the total rice yield, especially for the rice which flowers during March and April, the highest temperature period in Thailand. The objective of this research were to evaluate and to select for rice varieties that were tolerant to high-temperature. Eighty-four lines of rice, including thirty-two photoperiod sensitive and fifty-two photoperiod non-sensitive varieties, were tested and subjected to ambient temperature and high temperature ( $>40^{\circ}\text{C}$ ). The traits for the experiment were such as filled spikelet/plant, filled weight/plant, %seed set, shoot dry weight, panicle dry weight, pollen viability, total spikelet/plant and total weight spikelet/plant. Traits physiology for high temperature in rice of *in situ*  $\Phi_{\text{PSII}}$  and *in situ* Fv/Fm found that line FR13A in photoperiod sensitive and surin1, kaewkaset, LOAS GEDJEHIRGC9243 in photoperiod non-sensitive expected tolerance to high temperature. From the study, it indicates that the rice cultivars tolerant to high temperature can be used as the genetic materials for rice improvement for tolerance to high temperature in the future.

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