

Krisada Salairuk 2010: Photoperiodic Induction of Flowering of Chinese Sacred Lotus (*Nelumbo nucifera* Gaertn.) and Response of Growth and Grain Yield in Thai x Chinese Hybrids. Master of Science (Botany) Major Field: Botany, Department of Botany.
Thesis Advisor: Associate Professor Niran Juntawong, Dr.nat.tech. 96 pages.

Some Chinese sacred lotus (*Nelumbo nucifera* Gaertn.) cultivars were introduced to develop Thai lotus. However, these cultivars could not flower under Thailand's conditions. Responses to photoperiod of six Chinese sacred lotus cultivars, i.e., Taikong 1, Taikong 2, Taikong 3, Taikong 4, Taikong 5 and Hubei was studied. To prolong the light duration, natural photoperiod was added up to 13, 15 and 17 hours/day by using 40W fluorescent lamps. Field experiment was performed in a split plot in completely randomized design with four replications, one plant/pot was used in each replication. Thirty days after growing from rhizomes, plants were daily exposed to the desired photoperiods for 320 days. The photoperiodic induction of 13, 15 and 17 hours/day could successfully induce flowering but unsuccessful result in the control treatment. Moreover, the photoperiodic induction of 17 hours/day increased the higher number of standing leaves, flower size and number of flowers compared to those of 13 and 15 hours/day

Combining analysis of agronomic traits of 4 Thai sacred lotus crossed with 5 Chinese sacred lotus in a factorial cross was studied according to North Carolina Design II. Twenty crosses were tested in natural photoperiod in Chonburi province. The Sri Aeum x Taikong 3 hybrid showed high specific combining ability, mid-parent heterosis, grain dried weight/plant and good agronomic traits. These phenotypes were affected by Sri Aeum (♀) and Taikong 3 (♂) parents which also had the highest general combining ability for grain dried weight/plant in the Thai and Chinese groups, respectively, and good agronomic traits. Both parental lines could be used for producing its hybrids for lotus grain production in Thailand. The correlation between seeds /pod and grain fresh weight/plant was highly significant ($p < 0.01$). Thus seeds /pod could be used as a selection index for grain yield improvement in lotus.

Student's signature

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