Prissana Rattanametta 2014: Rice Selection of Homnin Mutant Line under High Temperature Condition. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Assistant Professor Chanate Malumpong, Ph.D. 151 pages.

High temperature stress is a major problem for growing rice that effect to pollen viability, pollen germination, anther dehiscence and seed set. In recently, rice production in Thailand will be had a problem from high temperatures effecting on global warming. The objective of this research was to evaluate the influence of high temperature at 40-45 □C during flowering stages on pollen viability, pollen germination, morphology of spikelet and seed set. The rice plants were grown in the high temperature for 6 hours during the reproductive stages. The results showed that the percentage of seed set of 6 Thai rice, Hom Nin can produce high seed set at high temperature condition was 64.71 percent. Moreover, these lines showed high pollen viability and pollen germination. Sinlek has the low seed set was 22.60 percent and showed pollen viability and pollen germination were decreased dramatically. Mutant lines of Hom Nin 48 lines from 1,500 lines can produce high seed set at high temperature condition, the top ten including mutant lines number M8894 M8766 M8473 M8293 M8768 M8287 M8832 M8872 M8990 and M8216 were 68.34, 65.89, 64.1, 63.17, 63.02, 60.87, 60.41, 60.11, 59.84 and 58.54 percent of seed set, respectively. The seed from the natural field found that M7825 has high seed set was 65.31 percent and M7892 has the low seed set was 19.68 percent. The seed from the green house found that M8359 can produce high seed set was 58.31 percent and M7892 has the low seed set was 19.38 percent. Lines M7825 can produce high seed set at high temperature condition was 66.71 percent and M7766 has the low seed set was 15.60 percent.

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