

Nat Panichawong 2014: Selection of Hom Nil Rice Mutant under High Temperature Condition. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Assistant Professor Chanate Malumpong, Ph.D.
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Global warming has affect to increase air temperature on earth that can be reduced rice yield especially in dry season. Thus, the objectives were study climate conditions in greenhouse which used for select the heat tolerance in the 2,000 Homnin mutant lines. Moreover, the rice plant temperature was observed under high temperature condition also. The results of average temperature in green house at day time in 2012-2013 were 40.88 and 41.15° C, respectively. On the other hand, average temperature in paddy field were 32.79 and 33.45° C, respectively. Therefore, the air temperature condition in greenhouse could be used to select the Hom Nin Mutant lines for heat tolerant. In the 1st cycle of selection, the top ten lines for seed set rate were M2156 M2660 M2828 M2128 M2008 M2015 M2266 M2823 M2001 and M2060. These gave seed set rate at 96.00, 95.12, 94.94, 93.62, 90.75, 91.07, 90.74, 90.23, 90.30 and 89.72 %, respectively. After that, 30 mutant lines were selected to grow in 2nd cycle of selection. The line M3152 and M3181 showed the highest of seed set at 72.04 and 71.96 %, respectively. Finally in the 3rd cycle of selection these 2 lines were compared with control and showed seed set rate at 58.92 and 70.23%, respectively. However, the panicle length, panicle weight, 100 grains weight, and plant height were decreased, while pollen viability in both lines were not changed in high temperature condition. Moreover, the rice plant temperature was observed by using thermal camera comparing between normal and high temperature. The result showed that the temperature of panicle in both temperature conditions was higher than stem and leave. Therefore, when the air temperature is increasing, the panicle will get severe effect to produce grain yield .

Student's signature

Thesis Advisor's signature