Sirinaree Bukboon 2008: Determination of Genetic Variation in Drought and Heat Tolerance by Cellular Membrane Thermostability in *Vigna* spp. Master of Science (Agriculture), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Mr.Witith Chai-aree, Dr.rer.agr. 63 pages.

The genotypic variation of drought and heat tolerance in mungbean was evaluated by using cell membrane stability (CMT), triphynyl tetrazolium chloride (TTC) reduction and relative water content (RWC) in leaves during drought stresses. The mungbean could be ranked from drought and heat-tolerant to sensitive in the order: NM1, V1595-2, V1410, KAB4, Mash33-40 and Mash36. The correlation coefficient between drought and heat tolerance using CMT technique was positive at first experiment (r=0.22), second experiment (r=0.60) and third experiment (r=0.82) and TTC reduction technique at first experiment (r=0.27), second experiment (r=0.75) and third experiment (r=0.88). The effect of drought stress on yield and yield component of tolerlant and susceptible of mungbean lines, showed in the percentage ratio between non irrigated and irrigated of plant yield of NM1 = 5.36, V1595-2 = 3.02 and V1410 = 1.99 in tolerant group but Mash36 have produced no seed when compared with other lines in the same condition for yield of KAB4 = 0.78 and Mash33-40 = 1.20 in susceptible group. The results of the experiment investigated that tolerant was green gram and susceptible was black gram. The difference in drought and heat tolerance of tested mungbean lines could be separated by using CMT, TTC reduction and RWC techniques. The results also indicate that TTC reduction is the most suitable sceening method for drought and heat tolerance in *Vigna* spp.

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