Myint Soe 2009: Inheritance of Field Weathering Resistance in Soybean [*Glycine max* (L.) Merrill]. Master of Science (Tropical Agriculture), Major Field: Tropical Agriculture, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Prapa Sripichitt, D.Agr. 112 pages.

A major obstacle to soybean production in the tropics is the difficulty in producing high quality seed because of adverse environmental conditions. For example, high temperature and relative humidity during the final stages of seed maturation are not conducive to production of high quality seed. Soybean seeds deteriorate faster than those of most other crops especially under tropical condition. The deterioration of seed vigor as well as viability due to high temperature and relative humidity during the post-maturation and preharvest period is referred to as field weathering. The purpose of this study was to investigate the inheritance of field weathering resistance in some soybean varieties.

Commercial variety Chiangmai 60 which was susceptible to field weathering and two field weathering resistant varieties GC 10848 and Kalitur were grown and hybridized in the greenhouse at the Department of Agronomy, Kasetsart University. The F_1 hybrid seeds and their parental varieties were planted in the greenhouse to produce F2 seeds. Parental varieties, F_1 hybrids and F_2 progenies were grown in the experimental field during dry season of 2008 at the National Corn and Sorghum Research Center, Pakchong District, Nakhon Rachasima Province. At physiological maturity, soybean pods were harvested, threshed and subjected to accelerated aging (AA) test, electrical conductivity (EC) test, seed coat percentage and seed weight measurement. Field weathering resistance of the parental plants, F1 hybrids and F2 progenies were evaluated using germination percentages after AA test, EC values of seed leachate, seed coat percentages and seed weight. The inheritance of field weathering resistance in soybean was determined by dominance percentages of F_1 hybrids and the frequency distribution of F₂ progenies for the germination percentages after AA test, EC values of seed leachate, seed coat percentages and seed weight of the two soybean crosses. The finding revealed that field weathering resistance was controlled by polygene with partial dominance.

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