Thesis Title Chili (*Capsicum annuum* L.) Improvement Using Male Sterility

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Abstract

Ten varieties of local chili were collected from different locations in Thailand. Observation and evaluation were made in comparison with five male sterile varieties introduced from aboard. Five varieties were selected among these ten varieties in order to being use as a future male parents. These selected five male parents were selfed for two generations, before crossing with the two male sterile lines, giving ten F_1 hybrid lines which were investigated in comparison with the male parents at private company and Chiang Mai University. The results showed that the three F_1 hybrid lines; KY 1-1 x prik Bang-Chang, KY 1-1 x prik Nhumkeaw and KY 1-1 x prik Nhumkeaw Maejo yielded 76.96 %, 39.13 % and 8.09% higher in particular than parental line which is a landrace variety. Moreover, the fruit quality were also better than those of the male parents. They also have a rather good shape, smooth skin and big fruits. The result for determining the degree of pungency using spectrophotometer as comparison with the man test were different. The highest pungency of man test was found in prik Fang whereas the spectrophotometer methods indicated that prik Bang-Chang had the highest pungency.

The measurement of heterosis percentage found that KY1-1x prik Nhumkeawmaejo, CF21789 x prik Nhumkeaw and KY1-1 x prik Nhumkeaw had high percentage of heterosis. Pungency of F_1 hybrid tested by spectrophotometer methods indicated that different male parents produces a different degree of pungency. The different degree of pungency was segregated among their male and female parents. It showed that the pungency was controlled by poly-gene.Dominant action of these genes was reported. The variation of degree of pungency was also controlled by environment.