

Thesis

Evaluation of Yield Stability and Downy  
Mildew Resistance in Field Corn Populations

Author

Miss Napawan Lekawipat

M.S.

Agriculture (Agronomy)

Examining Committee :

Lecturer Phrek Gypmantasiri                      Chairman

Dr. Charas Kitbamroong                              Member

Lecturer Dr. Chatree Sittigul                      Member

Assist.Prof. Suthat Julsrigival                      Member

**Abstract**

Evaluation of yield stability and downy mildew resistance in field corn populations was conducted in five different environments such as Nakorn Sawan Field Crops Research Center in early and late rainy season, Multiple Cropping Research Center in early and late rainy season and Watchan Royal Project in early rainy season. The five open pollinated corn varieties were Pop.24, TF Comp.DMR, (Pop.24 x TF Comp.DMR) $C_0F_2$ , (Pop.24 x TF Comp.DMR) $C_1F_2$  and population Nakorn Sawan 1. The results indicated that population Nakorn Sawan 1 gave the highest mean

grain yield (6.18 ton per hectare) and (Pop.24 x TF Comp.DMR) $C_0F_2$  provided the lowest mean grain yield (3.05 ton per hectare) while (Pop.24 x TF Comp.DMR) $C_1F_2$  showed mean yield 5.23 ton per hectare which was 71 percent higher than population (Pop.24 x TF Comp.DMR) $C_0F_2$ . The stability analysis showed that all population responded similarly to changing environments, having regression coefficient (b) = 1 and the deviation mean square from regression ( $S^2_{di}$ ) = 0.

The downy mildew resistance was only tested at Nakorn Sawan Field Crops Research Center in late rainy season planting 1993. The results indicated that population Nakorn Sawan 1 had the highest downy mildew resistance and Pop.24 showed the lowest downy mildew resistance. The average downy mildew infection of (Pop.24 x TF Comp.DMR) $C_1F_2$  was 16.97 percent and 52 percent of downy mildew resistance higher than (Pop.24 x TF Comp.DMR) $C_0F_2$ . It was suggested that (Pop.24 x TF Comp.DMR) $C_1F_2$  had provided wider genetic base for further improvement. However the result from one cycle of modified  $S_1$  recurrent selection did not show sufficient evidence to indicate that (Pop.24 x TF Comp.DMR) $C_nF_2$  will be inferior in yield and downy mildew resistance than Nakorn Sawan 1 population.