Thesis Title	Response of Sunflower (Helianthus annuus L.) Cultivars to Planting Dates and Population Under Rainfed Condition
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Abstract

Field experiments to study the response of sunflower varieties to planting date and plant density were conducted separately for two consecutive seasons in 1987 and 1988 at Mae Hia Agriculture Station, Faculty of Agriculture, Chiang Mai University. The experiments consisted of two studies. Study I was conducted in 1987 to evaluate the response of sunflower varieties which were phenotypically and genetically different to two dates of planting.

Results of this study indicated that both biological and morphological traits as well as grain yield of sunflower varieties were

predominantly affected by date of planting. Average grain yield, head diameter, 100-seed weight, days to flowering and protein content obtained from two dates of planting were significantly different whereas percent of empty seed, days to maturity and seed oil content were slightly influenced. Similary, significant difference of grain yield and all of measured agronomic characters which were attributed to the effect of planting date were also observed among the sunflower varieties.

For adaptability evaluation of sunflower varieties regarding to some physiological aspects, it was found that early planting date of September 2 had a smaller effect on symptom of boron dificiency and incidence of leaf spot and wilt diseases than late planting of September 12.

Study II was conducted in 1988 to identify the response of agronomic traits of sunflower varieties under three different plant densities, 6,095 8,533 and 10,666 plant per rai respectively. Results of this study suggested that plant density had significant effect on grain yield and yield components such as head diameter and 100-seed weight, whereas no significant difference was found in percent empty seed, plant height, protein content and oil content characters. In addition, significant difference in grain yield and all measured agronomic characters, except head diameter which were resulted from the effects of plant density, were also noticed from the tested sunflower varieties.

Group analysis study between broad and narrow genetic base varieties markedly indicated that hybrid group gave significantly higher grain yield, 100-seed weight, and plant height than open-polli nated variety group. Other important agronomic traits such as head diameter and so on, significant difference were not observed between these two groups of variety.

When interelationship of agronomic traits were analysed by simple correlation, it was found that seed yield had a significantly positive correlation with head diameter, 100-seed weight, but showed negative correlation to percent empty seed. Percent seed oil content also had a close positive correlation with 100-seed weight. Path co-efficient analysis also revealed that head diameter, 100-seed weight and plant height had great direct positive effects on seed yield, unlike other agronomic traits which showed a small positive or negative direct effect.