

Nipaporn Boain 2009: Growth Characteristics, Yield and Yield Components of Open-pollinated Varieties in Oil – type Sunflower (*Helianthus annuus* L.). Master of Science (Agriculture), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Miss Buppa Kongsamai, Ph.D. 80 pages.

Growth characteristics, yield and its components of twenty-two open-pollinated varieties and two checks, which were ‘Pacific55’ (commercial hybrid) and ‘Huntra’ (Thai open-pollinated variety), were studied at two locations (Kamphaeng Saen and Pak Chong) during October -- March in 2006 and 2008. The experiments were conducted in RCBD with four replications. Combined analysis of variances of all environments revealed significant effects of varieties on all traits relating to growth and yield characteristics. Significant effects of the varieties x locations or varieties x years interaction were also observed on yield and its components, especially on seed yield per head and head diameter. Variety ‘K593’ and ‘Black Sayar’ had higher seed yield per head and head diameter than those of checks (68.98 g and 19.14 cm, respectively). An average of seed-oil content of all tested varieties (24.5 -- 37 %) was lower than that of checks (39.3 %), excluding variety ‘Orizont’. Seed yield per head was significantly positive correlations with plant height, leaf number per plant, head diameter, seed number per head, number of filled seed per head, 100-seed weight and oil yield per head of 0.63, 0.53, 0.77, 0.79, 0.74, 0.59 and 0.58, respectively. But seed yield per head and head diameter were negatively correlated with seed oil content ( $r = -0.32$  and  $-0.41$ , respectively). According to path coefficient analysis, the highest and positively direct effects of number of filled seed per head and 100-seed weight on seed yield per head were detected. The indirect effects of seed number per head and 100-seed weight were relatively high and positive through seed yield per head. For oil yield per head, the highest direct effect of seed yield per head and seed oil content on oil yield per head were observed. However, significant indirect effects oil yield per head was also exhibited by number of filled seed per head. Therefore, it is evident that selection through leaf number per plant, seed number per head, 100-seed weight, and number of filled seed per head and seed oil content can improve seed and oil yield of sunflower. But selection for high yield tends to have slightly adverse effects on seed oil content.

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