

EFFECT OF HONEYBEE POLLINATION ON SEED SETTING, YIELD AND OIL CONTENT OF SUNFLOWER, HELIANTHUS ANNUUS L.

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Effect of honeybee pollination on the seed setting, yield and oil content of sunflower (Helianthus annuus L.) was studied in a replicated field experiment during Autumn, 1986. Sunflower hybrid Suncross-843 and open pollinated variety Record were used for the application of three treatments having five replications, (1) Pollination with honeybee and no other insects (with bee): cages 115 cm long, 90 cm broad and 180 cm high covered with mosquito net were used for isolation. Ten plants were accommodated in each cage. Population of 100 bees was maintained in each cage during flowering period (twelve days). (2) Without any insect (No bee): five cages in each variety were kept without honey bees and other insects. (3) Open pollination (OP) honey bees (2.5 colonies per ha) and other insects visited the flowers.

Seed setting in sunflower heads was best in the open pollination treatment, (768 per head in Suncross-843 and 666 in Record). Medium seed setting per head (495 seeds for Suncross-843 and 317 seeds for Record) was observed in W/bee treatment. The least seed setting took place in the cages without any insects, i.e., 302 seeds per head in Suncross-843 and 59 seeds/head in Record (Fig. 1). In all the treatments, Suncross-843 had comparatively more number of seeds per plant than open pollinated variety, Record. Number of empty seeds were the highest in the no bee treatment. However, number of empty seeds (80 seeds) in Suncross-843 were much lower than the empty seeds (365 seeds) observed in open pollinated variety Record. Number of empty seeds in the other treatments, i.e., with bees and open pollination were very low and not significantly different from each other (Fig. 2).

Seed yield was significantly higher in open pollinated treatments, than the other two treatments: with bees and no bee. Suncross-843 gave 473.5 gm per plot (10 plants) seed yield as compared to 413.8 gm per plot for variety Record with open pollination. In treatment with bees only, the yield was 196.8 and 147.1 gm per plot for Suncross-843 and Record, respectively (Fig. 3). It was least in treatment no bee, i.e., 139.6 gm per plot for Suncross-843 and 4.1 gm per plot for Record.

Oil content was also significantly affected by different pollination treatments (Fig. 4). Oil content was least in case of no insects treatment, i.e., 37.6 percent as an average of the two varieties. It was higher in treatments with (39.8 percent) and open pollination (38.3 percent), however, these two were not significantly different from each other. In general, oil content of Suncross-843 was significantly higher than the variety Record.

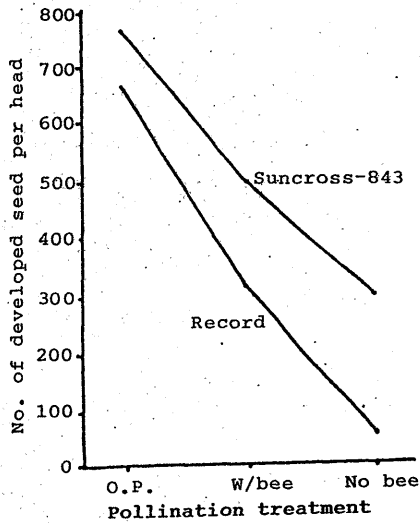


Fig. 1. Effect of pollination treatments on the number of developed seeds per head.

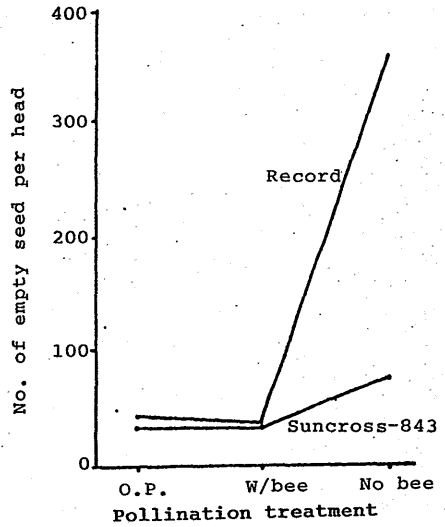


Fig. 2. Effect of pollination treatments on the number of empty seeds per head.

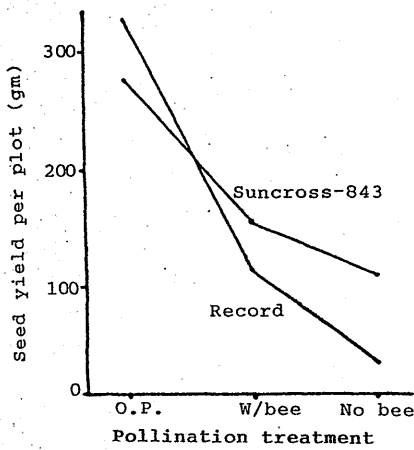


Fig. 3. Effect of pollination treatments on the seed yield.

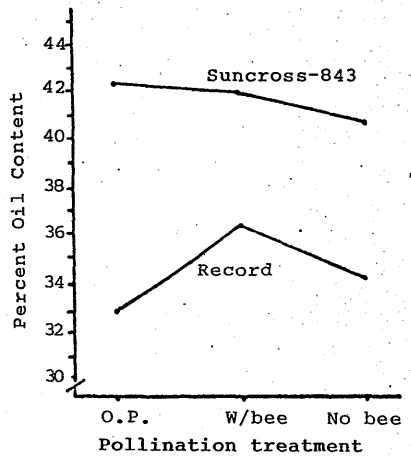


Fig. 4. Effect of pollination treatments on the oil content.