

Compatibility Relationships Within and Between Ten Date Palm Cultivars (*Phoenix dactylifera* L).

I- Fruit Set and Yield

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ABSTRACT

This study was conducted to examine the effects of ten pollen sources within or between ten date palm cultivars namely: "Succary", "Barhi", "Nebut Seif", "Seleg", "Khudari", "Menafey", "Saki", "Maktoumy", "Sefry" and "Serey" on the percentages of fruit set, unfertilized flowers, fruit drop, total yield (Kg/bunch), percent of fruits with grade (A), fruit pulp and seed weight as a percent to average fruit weight. Variations in the percentages of fruit set, unfertilized flowers, fruit drop and fruits with grade (A) were found among the ten cultivars according to pollen sources. Data of fruit set percentages showed a degree of cross incompatibility with "Saki" and "Serey" as a pollen sources with "Khudari" as a seed parent. Self incompatibility was also evident in "Khudari" cultivar, however, data showed some evidence of self compatibility that may exist in "Menafy" and "Barhi" cultivars. The variations in fruit set percentages among the ten cultivars might either be due to differences in pollen viability or differences in compatibility barriers. Also, the data showed that pollination of "Succary" flowers with "Maktoumy" and "Nebut Seif" pollens produced the highest total yield per bunch in 1999 and 2000 seasons, respectively. Also, "Barhi" cultivar produced higher total yield (kg/bunch) with "Saki" and "Maktoumy" pollens in the first and second seasons, respectively. As for the percentage of seeds weight, data showed that the "Succary" pollen produced significantly higher percentage of seed weight in most cultivars in the two seasons, while the opposite is true for "Seleg" cultivar in both seasons. Results also showed that "Barhi" as a seed parent produced the lowest percentage of fruits with grade (A) with "Nebut Seif" and "Serey" as a pollen parents in the first season and with "Seleg" and "Saki" in the second season. Moreover, pollination with different pollen sources did not give a clear trend for percent pulp weight in the ten date palm cultivars.

INTRODUCTION

The palm family (Arecaceae) possesses a great diversity of pollination modes. There is a common agreement among date growers that hand pollination of the female flowers produces fruits of superior quality compared with those produced by natural wind pollination (Shukr *et al.*, 1988 and Olesen and Balslev, 1990). The term "metaxenia" was first proposed by Swingle (1928) to label a phenomenon observed in the fruit of the cultivated date palm. He defined metaxenia as a direct effect of pollen from a male clone on the morphology and other characters of seed and fruit tissues surrounding the embryo and endosperm. This may be due to hormones secreted into the surrounding mother tissues from the fertilized embryo and associated endosperm. Thus, the implication is that metaxenia is also genetically, but indirectly (Osman *et al.*, 1974). The date palm (*Phoenix dactylifera* L) is a dioecious sp.; the male (staminate) and female (pistillate) flowers produced on separate palms.

It is well known that the type of pollen grains, used in pollination of date palm cvs. has a great effect on fruit set, fruit drop and total yield. (Hussein, 1970; El-Hammady *et al.*, 1977; El-Sabrou, 1979; Khalifa *et al.*, 1979; El-Ghayaty, 1983; Higazi *et al.*, 1983;