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SELF- AND CROSS-POLLINATION IN AVOCADO

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The avocado (*Persea americana*) is considered to be an outcrossing species due to its protogynous dichogamy and the existence of two complementary flowering groups?A and B. However, although the unique flowering behavior of the avocado enhances the opportunity for cross-pollina-tion, there is usually some overlap between female and male blooms within the same cultivar, which enables close-pollination as well. Recently, new avocado cultivars are being distributed in Israel, originating either from local breeding program ('Arad', 'Galil', 'Lavi') or by introduction from abroad ('ACE', 'BL122', 'Fino'). Several questions arise: Can these cultivars set good crop when planting in solid blocks? Will their exposure to cross-pollination by a potent pollenizer result in high yield? Is cross-pollination crucial for adequate pollination and fruit set? We will present studies aiming to answer some of these questions which are essential for future planting of commercial plots of these cultivars.

A 'Galil'(group A) plot subjected to cross-pollination by 'Ettinger' (group B) and 'Teague' (group A), was studied. Isozyme analysis enabled us to identify each individual fruit as selfed or outcrossed. A correlation between outcrossing rate and the distance from the pollenizer, was found. Outcrossing rates in the 'Galil' rows were 0.72 to 0.98. 'Ettinger' excelled as a pollenizer : most of the hybrids were its progeny (70 to 96%). No correlation was found between outcrossing rate and yield, probably due to the non-uniformity of the rootstocks in the plot. In the 'Ettinger ' row adjacent to 'Galil' and 'Teague', outcrossing rates by 'Teauge' and 'Galil' were 0.36 and 0.08, respectively. These results show that different pollen parents of the same flowering group may differ markedly by their effect on the rate of hybrid produced.

A severe hot spell occurred in Israel in June 2002, resulting in high abscission of 'Galil' fruits (average weight 30 g). Parentage analysis of abscised fruits versus mature fruits at harvest, showed higher outcrossing rate in mature fruits. This means that 'Galil' selfed fruit abscised at higher rate than the outcrossed ones. The survival advantage of outcrossed fruit is probably related to the fact that selfed progeny have less-vigorous embryos than outcrossed progeny due to inbreeding depression.