

Sex in Avocados and Pollination

Dr. A. B. Stout



DR. A. B. STOUT, who made important discoveries in the pollination of avocados in a survey made in the Redland district of Dade County in 1925, has been loaned to Dade County by the New York Botanical Garden for the purpose of conducting further studies along this line. He made an address on the subject of avocado pollination at Miami University recently, and has written an article for the Homestead Leader - Enterprise that gives much new and valuable information.

That the proper pollination of the flowers of avocados is an important factor in the production of adequate crops of fruit, is evident both from a study of the flower behavior and from orchard experience.

Avocados fall into two main groups in respect to flower behavior.

In the "A" group of varieties, the flowers of a new set open for the **FIRST OR FEMALE OPENING** in the **FORENOON**. These flowers close during midday and remain closed until the **NEXT AFTERNOON** when they open for the **SECOND OR MALE OPENING**. With the succession of sets day after day, the entire tree functions as a female in the forenoon and as a male in the afternoon.

For the "B" varieties, the flowers of a set open for the first or female opening in the **AFTERNOON** and for the second or male opening in the following **FORENOON**, or, if the weather is cool, in the forenoon of the second day. With this cycle the entire tree functions as a male in the forenoon and as a female in the afternoon.

Thus one may speak of "A" and "B" varieties as "reciprocating" in their flower behavior or as being adapted for mutual cross-pollination. Under present conditions in orchards many avocado trees bear few or even no fruit year after year. Certain varieties are especially unfruitful; others are irregular and erratic in bearing. It seems certain that

much of the poor bearing is due to lack of proper pollination and that maximum and reasonable uniform yields, at least by most varieties, can only be expected when there is abundant and proper cross-pollination between "A" and "B" varieties.

The proper interplanting will greatly increase the chances for fruit production, provided that the insects which make the pollinations are working effectively. Fortunately honey bees are very fond of the nectar of avocados, and bees may be provided in abundance and distributed throughout the groves. Wild wasps and flies frequently feed on the nectar, and some of them may be important agents in effecting pollination.

Orchard experience seems to indicate that very few varieties can be depended upon to bear well in solid-block plantings where there is decreased chance for cross-pollination. Possibly such varieties may in time appear to be developed by breeding. The Trapp variety seems to bear well in apparent isolation from other varieties. It is a "B" variety with flowers working in a short cycle, which, it would seem, may permit self-fertilization; but it should be noted that Pollock, which has the same type of flower cycle, is decidedly a shy bearer and seems to require cross-pollination.

Until it is demonstrated that certain varieties are sufficiently productive to yield adequate crops in solid-block planting, the interplanting of "A" and "B" varieties is to be recommended with provision also for abundant insect pollination.

Avocado growers in Florida will recall that in 1925 a survey was made of the flower behavior of the varieties then being grown in Dade County, and that the matter of interplanting "A" with "B" varieties was then brought to their attention. At the present time further studies are being made of the pollination problems in the avocado groves about Homestead.

The expenses of this work will be paid by the commissioners of Dade County. The department of botany of Miami University is cooperating, first through the personal interest of Prof. A. H. Gilbert in organizing the present work and, second, in providing a graduate student, Mr. T. W. Young, who is making technical studies of the processes of fertilization.

The state agricultural experiment station service is providing facilities for study at the Subtropical Experiment Station, and also several of its staff are giving considerable attention to various problems of culture and orchard management and to the study of the whole ripening process in the fruit of many varieties.

Thus the various problems of avocado culture in Florida are receiving considerable attention at this time.