Fruit Set in Melon Breeding

hand pollination found to be less effective than pollination by honeybees in experiments at Davis

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That field-grown Powdery Mildew Resistant Cantaloupe No. 45 drops fewer pollinated flowers when insect-pollinated than when hand-pollinated was confirmed in a recent comparative study of fruit set on thinned vines.

This is of interest to the cantaloupe breeder who usually finds that over one half of his laboriously hand-pollinated flowers fail to form fruit. While the breeder may not be able to use bees directly in his program, the superior technique of the bee is worthy of study.

Throughout these experiments, all pollinations, hand or open, were made on thinned vines—vines from which all previously set fruit had been removed—and the flowers in each treatment were randomized throughout the area of vines being used.

To protect perfect flowers from insects prior to pollination, they were covered with one half of a size 00 gelatin capsule the day before full bloom. On the day of pollination, the capsules were removed, and for open pollination—principally by honeybees—the flowers were simply tagged. For hand pollination, the flowers were emasculated, tagged, pollinated, and then covered with a paper bag or with one half of a size two gelatin capsule.

On July 15, buds of about 40 perfect flowers, which were to open the next day, were capsuled, and all fruit was thinned from the vines. On July 16, between 10 a.m. and noon, approximately half of these perfect flowers were emasculated by splitting the corolla in two or three places and removing the stamens with forceps. Each flower was then pollinated—using previously capsuled staminate flowers—and was covered with a bag and tagged. The remaining perfect flowers were decapsuled, tagged, and left for open pollination. Seven days after pollination, all untagged fruits were again thinned from the vines.

The above test, which is described for July 15 and 16, was set up and repeated on eight successive days. The averages from the nine replications were 39% set for hand pollination and 67% set for open pollination.

Fruit set from hand pollinations in three additional experiments were 60%, 30%, and 48%, as compared with open-pollinated fruit set of 91%, 50%, and 78%. The set from open pollination was much more uniform from day to day than from hand pollination.

The mature fruit from open-pollinated flowers averaged 0.17 pound per fruit heavier than fruit from the hand-pollinated flowers—a significant difference. Seed counts showed an average of 180 more seeds per fruit from open-pollinated flowers than from hand pollination.

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