WALNUT PISTILLATE FLOWER ABSCISSION - 1979


Preliminary results in 1978 suggested that something occurred at a particular time when flowers were at a certain stage of development which caused their abscission. Objectives in 1979 were to determine the extent and time of occurrence of abscission if in fact it did occur. The appearance and development of pistillate flowers was monitored on selected Serr limbs twice weekly in orchards near Vina, Gridley, Wheatland, Merced, Gustine, and Visalia. At Davis, varieties flowering both before and after Serr were followed. Temperature, wind, and rainfall were recorded for most locations.

Abscission of flowers did occur in 1979 and ranged from about 5 to over 90% depending on the orchard. There was also some variability from limb to limb within orchards. Flower drop was not peculiar to the Serr variety - it occurred in varying degrees with the 5 other varieties examined (Early Ehrhardt, Chico, Ashley, Tehama, Hartley). Abscission was not due to lack of pollination or fertilization.

Flowers became affected when about 3 - 4mm in diameter just as the stigmas were reflexing. Enlargement stopped but the pistils remained attached for some period, perhaps as much as 10 days, as the abscission process developed. Pistils which developed beyond this stage were retained unless the ovule was not fertilized.

Cellular degeneration in tissues surrounding the ovule and at the tips of the stigma were the earliest abnormal events detected. However, browning of stigmas does not necessarily indicate impending abscission.

No clear correlation of flower drop with weather conditions has been established. Neither does there appear to be an association between drop and vigor of vegetative growth.

A second problem relating to production became evident. In some orchards many shoots/spurs did not form pistillate flowers. There does not appear to be any relationship between fruitfulness of shoots and flower abscission.