Pedicel Girdling in Golden Delicious Apples[1]

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During the growing season of 1968-69 in the Upper Valley of the Rio Negro in Argentina, there appeared unusual lesions on the pedicels of Golden Delicious apples. These lesions, observed in several commercial orchards, occurred as small spots and as partial or complete narrow rings (1-2 mm wide) located generally in the middle portions of the pedicels. The injuries often allowed individual fruits to hang pendulously at right angles to their cluster bases. The fruits attached to the affected pedicels were sometimes much smaller than normal, owing presumably to a restriction in the movement of water and nutrients to these fruits.

No evidence associating the lesions with insect or disease activity was uncovered. Soil-moisture deficiency appeared to be the only factor with which the injuries could be associated. In orchards where the girdling was most common, irrigations were at 20 to 40 day intervals, even during the season of high daily transpiration. Where irrigation was practiced at 10 to 15 day intervals, the disorder was not found.

Fig. 1. Pedicel lesions on Golden Delicious about 100 days after bloom. The lesions pictured completely girdled the pedicels.

The stem girdling was first seen in mid-January, about 100 days after bloom. It was estimated, from the differences in size of affected and non-affected fruits, that the injury could not have interfered with translocation earlier than one month prior to its discovery; i.e. the injury must have occurred in December.

In mid-March, about 165 days past bloom and somewhat past the time of commercial harvest of Golden Delicious, new lesions, estimated to be less than four weeks old, were found. Fruits of the affected pedicels were nearly full sized.

The two easily separable sizes of the affected fruits on the trees examined led to the conclusion that a soil-moisture deficiency had existed at two separate times during the growing season. Pedicel girdling was observed only infrequently on Delicious and Granny Smith, the most popular cultivars of the Valley.

The only other known case of a pedicel disorder attributed to drought or moisture deficiency is reported by Crespy and Paitier (1), who described a necrosis in the cultivar Reinette Clohard found near Guichen, France. They reported that prematurely dropped fruits were without stems, which remained firmly attached

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to the spurs. A necrosis, found at the point of attachment of stem to fruit, could be associated with no growth factor except drought during the summer.

A pedicel disorder, attributed to sprays of 2, 3, 5–triiodobenzoic acid (TIBA) has been reported on Golden Delicious (5). The disorder, obviously very similar to the type found in Rio Negro Valley, appeared about 6 weeks after applications of 25 to 50 ppm made 4 weeks past bloom. The lesions often completely girdled the pedicels, and fruit enlargement was inhibited.

Another disorder attributed to the spray treatments with TIBA was fruit pitting, described as indistinguishable from bitter pit. The appearance of the pitting observed by Stahly and Williams (5) may confirm that the pedicel girdling they described was a result of a moisture deficiency or stress. Several authors (2, 3, 4) suggest moisture stress in tree and fruit as a cause of fruit pitting.

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'Thornfree' Blackberry in Illinois

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'Thornfree,' a semi-upright thornless blackberry, was introduced in 1966 by D. H. Scott and D. P. Ink, Crops Research Division, U. S. Department of Agriculure, Beltsville, Maryland. The cultivar has been outstanding in Illinois tests for several years, beginning with a planting as a selection in 1964.

Performance data from plantings established in 1965 at the Pomology Research Center, Urbana, and at the Dixon Springs Agricultural Center (DSAC), Simpson, are summarized in Table 1. The yields are averages of 5 plants spaced 4 feet apart in rows 6 feet apart at Dixon Springs and 6 feet apart in rows 10 feet apart at Urbana, all trained to a 2-wire vertical trellis. A sawdust mulch was used at Dixon Springs. The canes over-wintered on the ground each year at Urbana and in 1966 at Dixon Springs. In 1967 and 1968 the canes remained tied to the trellis throughout the winter at Dixon Springs.

At both locations, the plants were relatively slow in becoming established, and no fruit records were obtained in 1966, although some fruit was produced. Once the plants became established they were vigorous and semi-upright, needing support on a trellis or stake. Many of the primocanes were 8 to 10 feet or more in length, and 1 to 1½ inches in diameter at the base.

The fruit matured during late summer, about a month later than 'Dar-

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