

## Some Effects of Sun-Blotch on Fuerte Avocado Fruit

A. R. C. Haas

*Citrus Experiment Station, University of California, Riverside, Calif.*

In the course of another investigation<sup>1</sup> fruits of the Fuerte variety were collected at regular intervals and the pulp was finely cut for the purpose of determining the water content. These Fuerte avocado trees, grown at the Citrus Experiment Station, are large and are somewhat affected by sun-blotch, at least certain branches and fruit show external symptoms of sun-blotch such as light brownish-red depressed areas along the twigs and near the stem end of the fruit. The symptoms of sun-blotch have already been described.<sup>2</sup>

Forty-three healthy fruits of the Fuerte variety were picked for determinations of the water content. The cutting of these gave a splendid opportunity to observe the internal appearance of fruit chosen as healthy or control fruit. Other fruits picked from the same trees showed unmistakable external evidence of sun-blotch no matter how small in extent.

### SEVERITY VARIES AND IS NOTICED INTERNALLY

At each date of picking, a comparison was made of the internal appearance of fruit with and without external symptoms of sun-blotch. As pickings increased in number it became evident that fruit with obvious external sun-blotch symptoms were also affected internally in the pulp. No attempt was made to compare fruits from unaffected trees with fruits of these trees because the season had nearly passed and because sun-blotch disease is claimed to come and go, that is, be apparent at one time and not at others. At least the severity of sun-blotch is said to vary greatly from time to time and assurance that a tree is free of the disease appears to be unavailable at present.

On March 2, 1938, some affected and some healthy appearing fruits from sun-blotch affected Fuerte avocado trees were cut open in order to photograph the internal appearance of the pulp. Figure 1 shows the internal appearance of so-called control fruits. The bundles are slightly darkened because of the time required for taking the photograph. It is possible that healthy fruit from trees assuredly free of sun-blotch might be more free of even the slight discoloration seen in figure 1.

Figure 2 shows the discoloration that took place very rapidly after cutting the fruits obviously affected with sun-blotch. These fruits were cut immediately after being picked from the tree. It is not known what effect a lowering of the temperature in storage or storage at air temperature until softening takes place would have on the internal appearance of such fruit. The bundles appear water-soaked and darken as though enzyme action is involved.

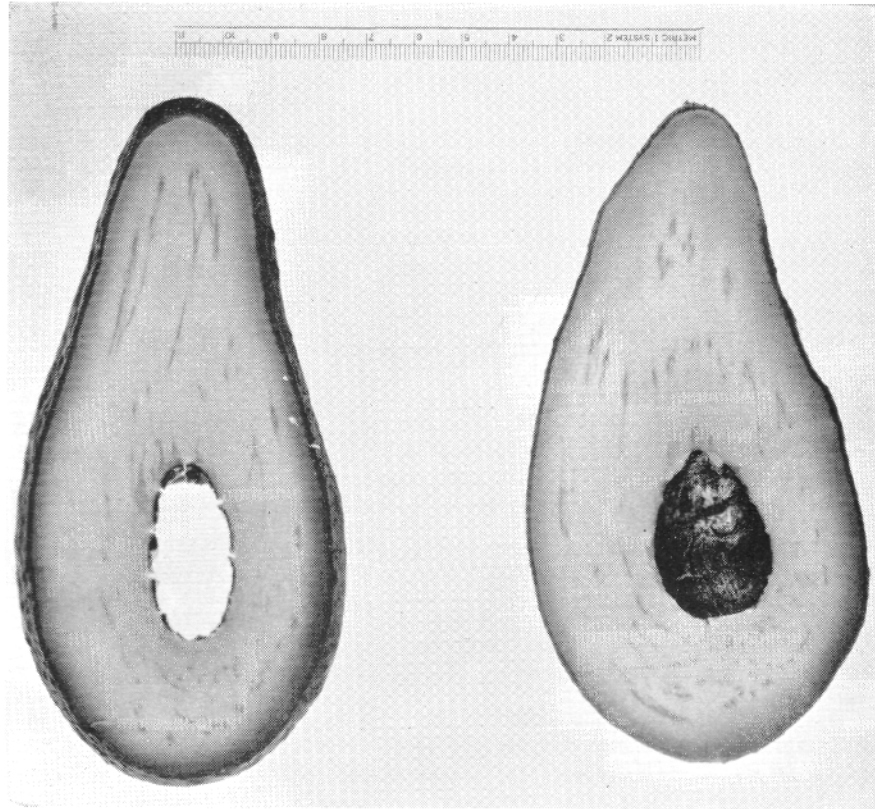


Fig. 1. Control avocado fruits of the Fuerte variety cut into thick sections lengthwise from stem to tip end.

At the upper end of the left-hand column in figure 3 is a piece of skin from the stem end of the fruit and shows the light colored, depressed, narrow region, an external symptom of sun-blotch, while at the upper end of the right-hand column is skin from the stem end of a control fruit. Halved transverse slices from the tip ends of the pulp of sun-blotch affected fruits are shown in the left column while those from the tip ends of the pulp of control fruits are shown in the column to the right.

There are times when the pulp of freshly cut avocado fruits of the Fuerte variety discolors badly and shows darkening about the bundles with little or no reason from the standpoint of the care in handling and in the temperature used in the storing of the fruit. It is known<sup>2</sup> that the fruit on sun-blotched trees may be normal or variously marked with depressed, lighter streaks extending various distances from the stem end and parallel with the long axis of the fruit. Perhaps when the sun-blotch disease is better understood and its relation to enzyme action is studied, the darkening of the pulp when cut and exposed to air may be the more readily explained.

1. Haas, A. E. C. Water content of avocado fruit and leaves. California Avocado Assoc. Yearbook.

2. Horne, W. T. Avocado diseases in California. Univ. of California Agr. Exp. Sta. Bul. 585:1-72. 1934.

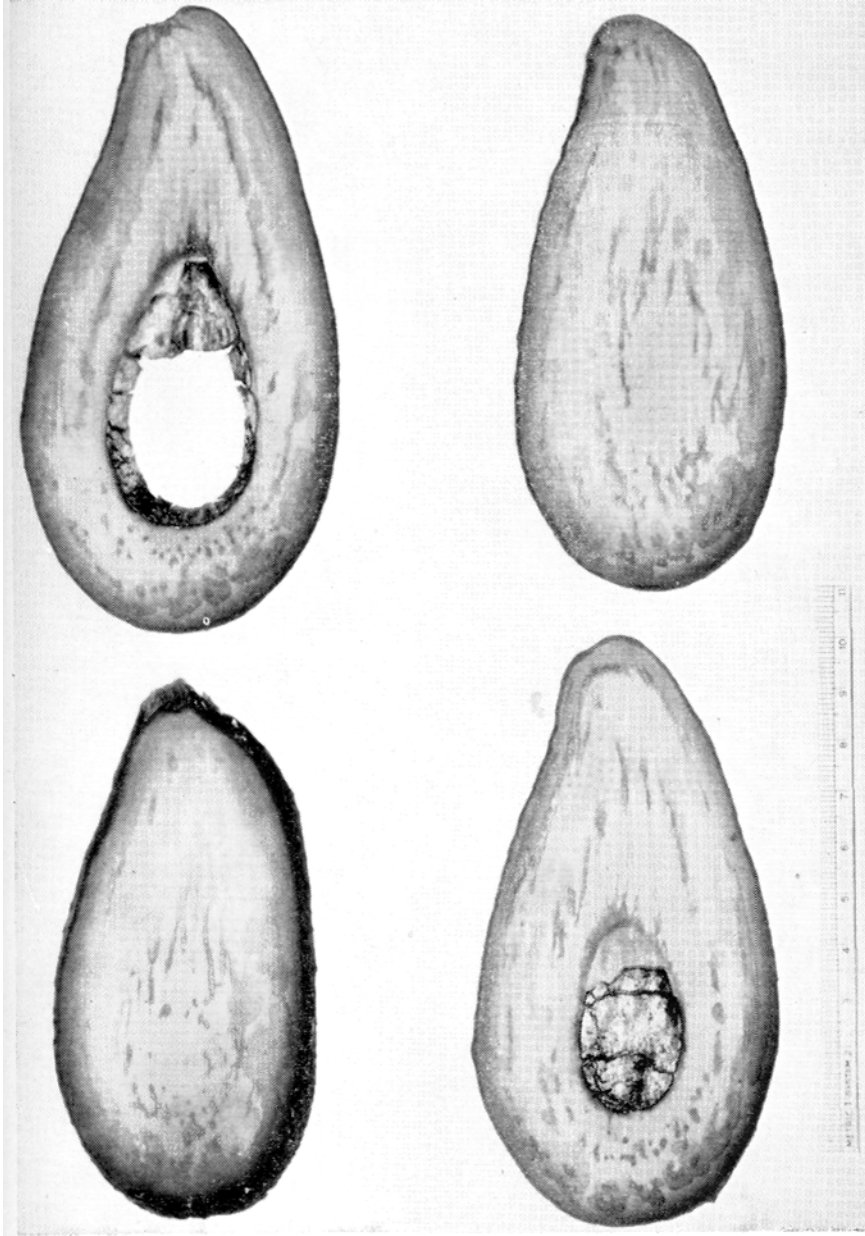


Fig. 2. Similar sections, as in figure 1, except from fruits with obvious external symptoms of sun-blotch. The bundles have a water-soaked appearance and the pulp darkens considerably when exposed to air.

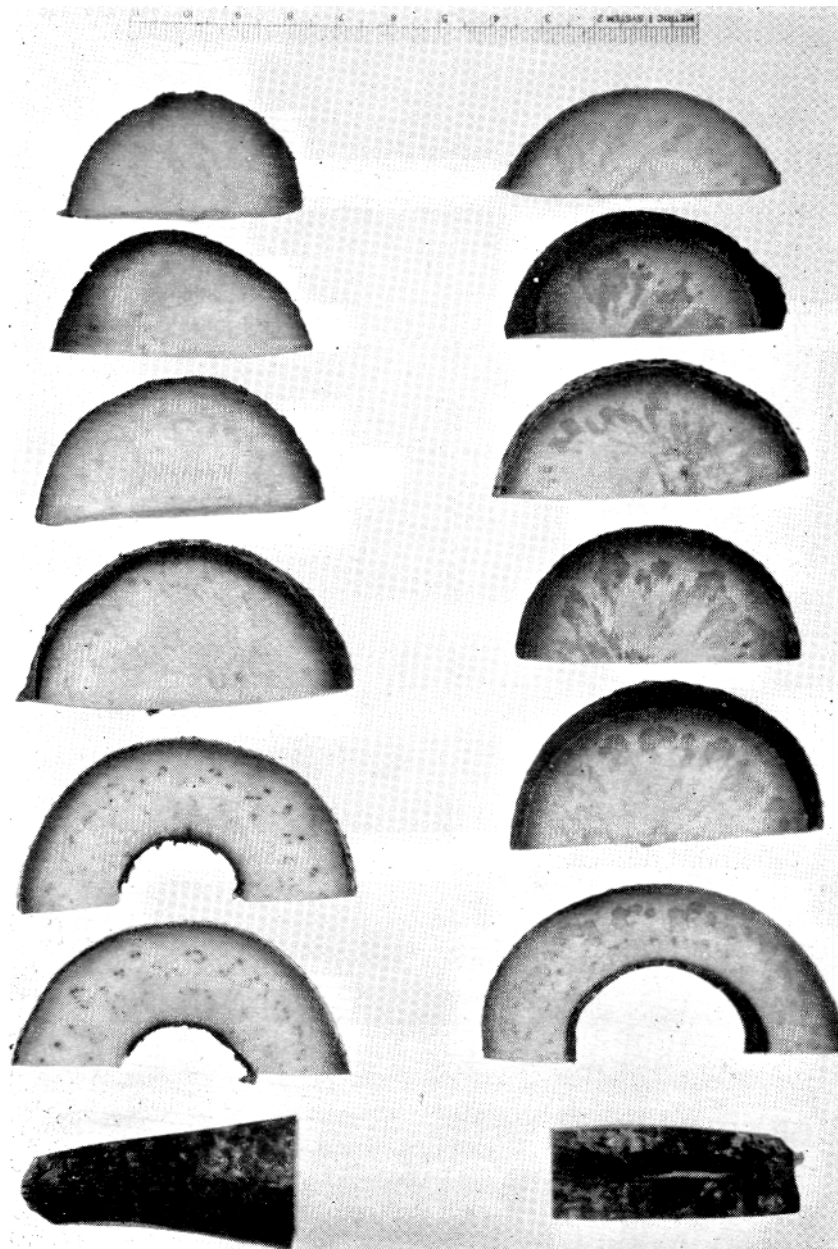


Fig. 3. Left column, halved, thick, transverse sections of the tip end of fruits affected with obvious external symptoms of sun-blotch; right column, same as in left column except from control fruits. Skin (uppermost in each column) from stem end of the fruit: left, with light colored, depressed areas in affected fruit skin; right, skin of control fruits.