

RELATIVE SUSCEPTIBILITY OF GUATEMALAN AND MEXICAN AVOCADO VARIETIES TO DOTHIORELLA CANKER

F. F. Halma and G. A. Zentmyer

Professor of Subtropical Horticulture, University of California (Los Angeles); G. A. Zentmyer is Associate Plant Pathologist, University of California (Riverside).

It is well known that the fungus *Dothiorella* (*Dothiorella gregaria*; perfect stage *Botryosphaeria ribis*) not only affects fruit of certain avocado varieties, but also causes cankers on trunks and branches. In 1934, Horne¹ mentioned this fungus as one of the canker-producing organisms on avocado trees. In the past branch infections have been considered unimportant because they occur infrequently and usually cause little or no damage to the tree.

However, recent observations show that trunk infections can become serious if the tree is on Guatemalan rootstock or has a Guatemalan scion. This apparent relationship between Guatemalan varieties and the incidence of the disease was discovered in June, 1953, in an experimental rootstock plot in Santa Barbara County, planted in 1948. The plot consists of 162 trees of the MacArthur variety (Guatemalan), 91 of which are on 14 Guatemalan and 71 on five Mexican rootstock varieties. When first noted in June 1953, 11 trees were infected with *Dothiorella* canker in varying degree. About six weeks later the number had increased to 33, and by December, 1953, there were 34 cases, all on Guatemalan bark.

Of the 91 trees on Guatemalan rootstocks, 20 trees (22 percent) had infections either on the stock alone or on both stock and scion, as indicated in Table 1. Ten per cent of the trees were infected only on the MacArthur scion. In contrast none of the 71 trees on Mexican rootstocks showed *Dothiorella* canker on the rootstock trunk; but 8 trees (12 per cent) had infections on the scion trunk.

Table 1.

<i>Rootstock</i>	<i>No. of Trees</i>	<i>Percent with Rootstock</i>	<i>Infection on Scion only</i>
Mexican	71	0	12
Guatemalan	91	22	10

In most of the cases the infection apparently originated at the bud union and then spread upward and downward if the rootstock was Guatemalan, and upward only if the rootstock was Mexican. In many cases separate areas of various sizes became infected, particularly in the crotches of branches. The Guatemalan rootstock trunk of five trees was completely girdled; one of these collapsed in December 1953. In the other four trees the girdling effect has already manifested itself in excessive flower bud

formation and absence of new shoot growth.

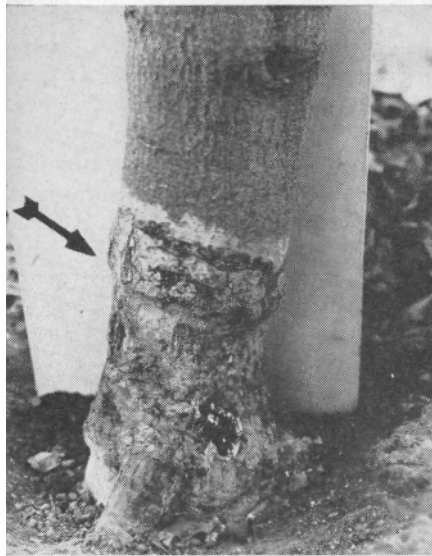


Fig. 1. *Dothiorella* infection on Guatemalan rootstock and MacArthur scion. Arrow indicates bud union.

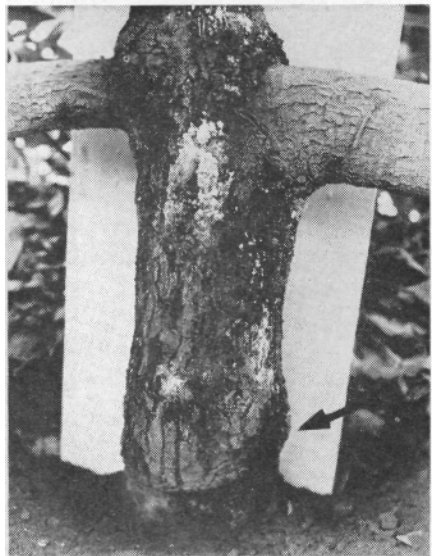


Fig. 2. *Dothiorella* infection confined to MacArthur scion; Mexican rootstock not affected. Note excessive sugar exudation (white substance). Arrow indicates bud union.

With affected trees on Mexican stock, the situation does not seem as serious at present as with those on Guatemalan stock. On the Mexican stock none of the scion trunks are completely girdled, and even if they should become girdled the tree could be rebuilt by grafting the stock trunk.

Additional evidence that Guatemalan varieties are more susceptible or perhaps the bark is more easily penetrated by the organism was obtained in the commercial orchard adjacent to the rootstock plot. This planting, made in 1948 and 1949, consists of MacArthur, Xabal, and Rincon (all classed as Guatemalan varieties), and Fuerte, which is considered as a hybrid between Guatemalan and Mexican. Approximately 12% of the MacArthur and Nabal trunks or branches show the disease, and in no case has it spread to the Mexican rootstock trunk. None of the Fuerte and Rincon scions have shown the disease to date. It is the belief of some observers that Rincon, a relatively new commercial variety, is, like the Fuerte, a type intermediate between Mexican and Guatemalan. *Dothiorella* canker has also been noted recently along the San Diego County coast on Guatemalan scions.

The fungus *Dothiorella gregaria* has been readily isolated from cankers on the above trees. Inoculations have been made with this fungus on 35 trees, representing clonal propagations of four Guatemalan and four Mexican varieties, at Santa Barbara, and on several trees in a similar planting at Riverside. Observations made one month after inoculation indicate that the fungus can affect both Guatemalan and Mexican types once it is introduced into the bark, but the experiments are not sufficiently advanced to warrant conclusions as to relative susceptibility.

LITERATURE CITED

1. Horne, W. T. *Avocado diseases in California*. Calif. Agr. Exp. Sta. Bull. 585, 72 pp., 1934.