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Replacing Declined and Sun-Blotched Avocado Trees

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It is common knowledge that replacing declining avocados, that is trees affected with root rot, has been unsuccessful. The trees either die or become stunted. According to Zentmyer and Klotz[1] this is mainly due to the build-up of the cinnamon fungus (**Phytophthora cinnamomi**) in soils around the declining trees. This assumption finds support in the observation that replacing sun-blotched or undesirable trees with healthy trees has generally been successful. In some cases they may not grow as well as in land not previously occupied by avocados, but they do not fail as they do where avocado trees have been killed by root rot.

Fig. 1. Fuerte trees on the same stock. Four years old. Left: Planted in place of sunblotched tree. Right: Planted in previously uncropped soil.

1. Zentmyer, G. A., and L. J. Klotz. The Cinnamon Fungus and Avocado Decline. Yearbook California Avocado Society, 1947; 40-42.

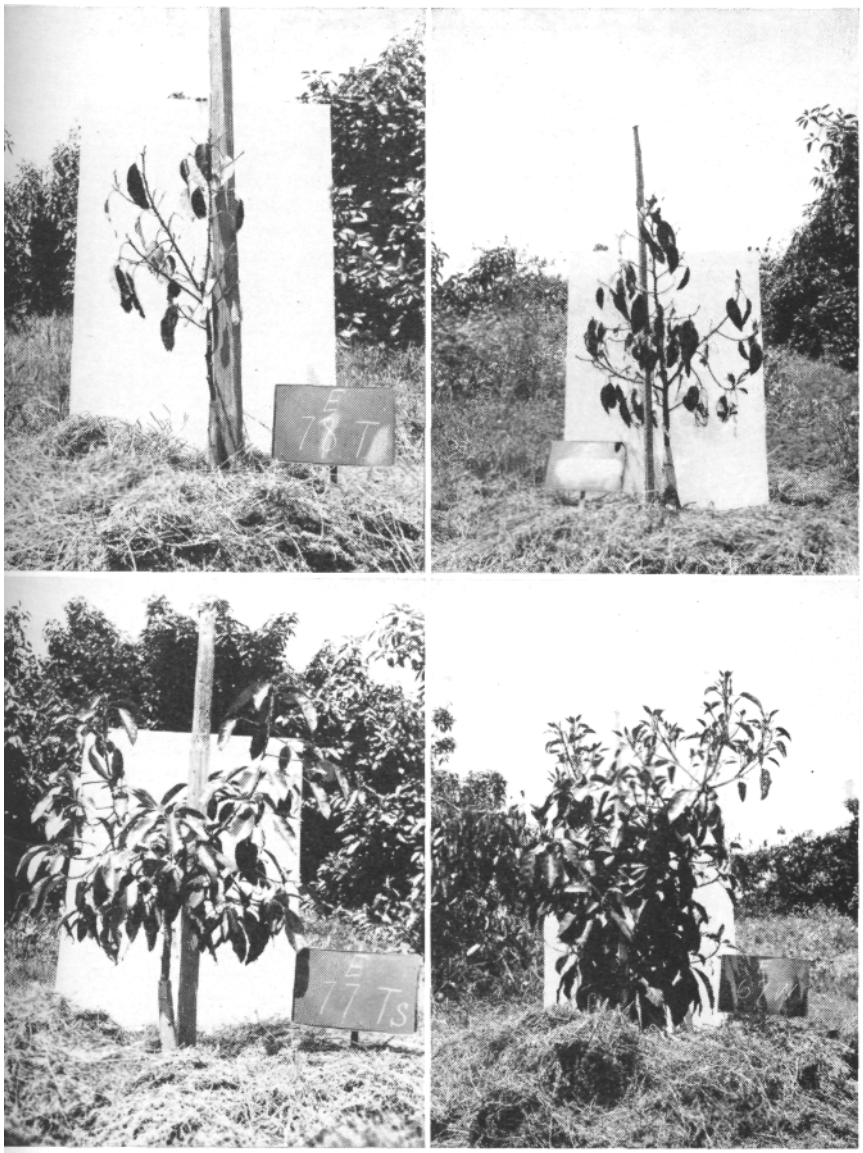

Fig. 2. Three year old Fuerte replants in a root rot area. Upper show decline; lower nearby on the same stocks are still in good condition.

Attempts to find rootstock varieties resistant to the conditions causing decline have so far been unsuccessful. In addition to field observations two replacement test plots were established in 1944 and 1945. These trials included the following rootstocks: 6 Mexican, 5 Guatemalan, and 1 West Indian. Mexican—Topa Topa, Mexicola, Ganter, Blake, Northrop, Puebla; Guatemalan varieties—Dickinson, Itzamna, Nabal, Hass, Taft; West Indian variety—Waldin. Altogether about 140 trees were planted. Most of them were budded to Fuerte, and the rest were unbudded seedlings.

Previous replacements made by the owner in one of the areas failed to grow. Many of the experimental trees planted in 1944 died within a few months and were replaced with new trees. Some were replaced three times with the same or other rootstock varieties. The surviving trees became stunted. In the other orchard only 3 out of about 80 trees

planted in 1945 are making fairly good growth (August, 1948). These 3 trees are on Northrop, Topa Topa, and Waldin stocks. However, trees close by and on the same stocks failed (Fig. 2). Since parts of the orchard had previously contained scattered lemon trees, it is likely that the surviving experimental trees happened to be planted in these spots rather than where avocado trees had declined. Field observations indicate that avocados do well in land previously cropped to citrus.

Replacing Sun-Blotched Trees

As stated before, replacing sun-blotched trees in areas not affected by root rot has been generally successful. In 1944 opportunity was afforded to replace diseased trees in an orchard adjacent to an area in which a rootstock test plot was established at the same time. Both orchards are under the same ownership.

The sun-blotched trees were a part of an old orchard established in 1907. The trees had been gradually topworked to other varieties. Many of those worked over to Fuerte developed sun-blotch. In 1944 twelve of the diseased trees were removed and replaced with Fuerte on Mexicola rootstock. These trees were part of a lot which was planted on the same day in the adjacent rootstock plot. In replacing the sun-blotched trees only enough of the old roots were removed to accommodate the ball of the new tree.

Figure 1 shows a replant and a tree on the same stock in the adjacent rootstock plot 4 years later. The replants are somewhat larger probably because they are growing under better soil moisture conditions. The trees in the rootstock plot are still basin irrigated, and several times in the past they have suffered from lack of water. However, the point of interest is that the results of this test are in agreement with field observations, namely that sun-blotched trees in areas free from root rot can be successfully replaced.

Summary

Fuertes on 6 Mexican, 5 Guatemalan, and 1 West Indian rootstock varieties either died or became stunted when planted in declining orchards. On the other hand, healthy new trees grew well in the spots previously occupied by trees affected with sun-blotch.