

A Genetic Basis for Avocado Decline in The Rancho California Area of California

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Abstract. About 5 to 10% of avocado trees planted in the late 1970's in the Temecula/Rancho California area of California are suffering a decline of unknown origin. The apparent random distribution of the trees within groves and their strong rootstock-scion discontinuities suggest that the rootstock genotype plays a role in the decline. This hypothesis is reinforced by the fact that rootstock material of the late 1970's was obtained from a variety of sources.

Therefore, we used allozyme analysis to ask whether avocado performance varied with rootstock racial origin. We sampled and analyzed rootstock bark from adjacent pairs of healthy and declining trees in a Rancho California 'Hass' grove. We obtained the racial identity of 90% of the rootstocks: 50% were seedlings of the Mexican race; 25%, Mexican x West Indian hybrids; the rest, West Indian seedlings. We did not find any systematic genetic differences between healthy and declining trees. If genotype plays a role in the performance of these rootstocks, it depends on genetic variation within, rather than among, races.