Deep Bark Canker

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Tensiometers were installed in an 18-year-old Hartley walnut orchard in May, 1975, to record soil moisture. A set of tensiometers at 18", 36" and 60" depth was placed at the drip line of a healthy tree and another set at the drip line of a tree showing considerable bark canker damage.

Tensiometer readings were recorded twice weekly from May through September. Results of the readings showed that the soil moisture around the bark canker tree was depleted by late July at the five foot (60") depth, and never was replenished by subsequent irrigation. Soil moisture at the 36" depth steadily declined and was only spasmodically replenished by irrigation. By the last of August soil moisture at the 36" depth was depleted down to 600 millibars.

In contrast, soil moisture around the healthy tree was not depleted at the 5 foot level until mid-August. The soil moisture at the 3 foot level (36") was maintained throughout the growing season, the lowest point being 400 millibars. At 18" depth soil moisture varied considerably, indicating much root activity at this level.

The orchard was irrigated seven times from May through September. The orchard is under non-tillage and annual weeds were shredded every 2-3 weeks during the summer months.

The preliminary study would indicate that water penetration and distribution is not uniform in the orchard. Also, soil moisture stress may play an important part in the incidence of deep bark canker in the Hartley walnut variety.