DEEP BARK CANKER

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Hartley orchards under observation in Glenn and Stanislaus Counties both had increases in the percent of trees with active deep bark canker and slight increases in the number of trees with inactive cankers. The number of bleeding cankers as counted on specific trees each year changed very little. There is no indication as yet that remission is occurring in either of these orchards. The Payne orchard in San Joaquin County experienced a dramatic decrease in the amount of active disease, with the percent of trees with cankers inactive rising from 4.8 in 1978 to 16.0 in 1979. Of the thirty trees used for counting bleeding cankers, only eight had active lesions and the total number of counted active cankers dropped from 119 in 1978 to 19 in 1979. The orchard appears to be undergoing remission. The data taken for the replicated irrigation trial in Tulare County are not yet completely analyzed, however there was a marked increase in the number of trees with inactive cankers and a decrease in the percentage with active cankers in the winter irrigated treatment. Incidence of active disease increased from 1978 to 1979 in the non-winter irrigated treatment.

Graft transmission is under study at Lindcove Field Station. Black walnut rootstocks grown in 2-gallon containers were grafted with Hartley budwood 1) from a healthy tree and inoculated by a dip into suspensions of Erwinia rubrifaciens ranging from $10^{-4}$ to $10^{7}$ cells per ml and 2) from a Hartley tree with deep bark canker. Survival of grafts was par, but the remaining grafted trees are being maintained in the lathe house. To date no external symptoms of deep bark canker have developed.

THE EFFECT OF RING NEMATODES, ROOT-LESION NEMATODES AND SOIL MOISTURE LEVEL ON DEEP PHLOEM CANKER

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Eighty-four 'Hartley' walnuts on Juglans hindsii rootstocks were planted in steam-sterilized soil in 12-liter cans in a lathhouse on April 10, 1979. Twenty eight of these trees were inoculated with 30,000 Macroposthonia xenoplax, 28 with the same number of Pratylenchus vulnus, and 28 left uninoculated. Using an automatic watering system the soil in half (14) of the replicates of these treatments is being maintained quite moist, and the other half are being kept at a lower moisture level. On October 9 half (7) of the trees in each moisture x nematode combination were inoculated with Erwinia rubrifaciens by syringe-injection into cuts above the graft. There is now (December 14) considerable necrosis around all injections regardless of treatment. Now there are no significant differences in shoot growth attributable to treatments. Roots have not been examined, but there probably are nematode effects on roots by this time. Trees at the higher moisture level lost leaves earlier than trees at the lower moisture level. Next spring we will examine all trees for canker and extent of necrosis around injections.