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

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In spring, 1979, eighty-four 'Hartley' walnuts on Juglans hindsii rootstocks were planted in steam-sterilized soil in 12-liter cans in a lathhouse. Twenty-eight of these trees were inoculated with 30,000 Macroposthonia xenoplax, 28 with 30,000 Pratylenchus vulnus, and 28 were not inoculated with nematodes. Using an automatic watering system, the soil in half (14) of the replicates was kept very moist; the other half were kept at a lower moisture level. In fall, 1979, half the trees in each moisture x nematode combination were inoculated with Erwinia rubrifaciens by syringe injection into cuts above the graft. The experiment was terminated in spring, 1981. Both nematode species had increased, but neither had reduced growth of the trees in this period. The half of the trees in the drier regime grew less than those in the wetter regime. M. xenoplax reached a higher population level in the wetter regime than in the drier one. Population levels of P. vulnus did not differ significantly between the two watering regimes. Deep phloem canker did not develop in any of the trees. E. rubrifaciens was recovered from bark of 2 of 42 trees 1½ years after inoculation.

Growth of none of the trees was vigorous, perhaps because they were too large for the cans at planting and were root pruned. This may have been the principal factor limiting growth in this experiment.