Effects of Saturated Soils in Spring on Walnut Trees

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Damage to many walnut trees near the Sacramento river and its tributaries was attributed to flooding and seepage during April, 1974. Plots were established at two locations each in Yolo and Colusa Counties. Trees, mostly on J. hindsii rootstocks, were rated several times until autumn. Damage to scions ranged from none to complete defoliation. During summer some trees became worse, some were unchanged, and some improved slightly. When some severely damaged trees were pulled out in October their root systems were found to be almost completely or entirely dead. Where a few trees rated as moderately damaged were removed it was estimated that 50% or more of each root system was dead. Trees which remain in each plot will be rated during 1975.

Sensitivity of Walnut Rootstocks to Waterlogging

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Measurement of differential sensitivity to waterlogging of walnut seedlings was continued in 1974. Of the seed sources tested at 23°C, on the average, J. regia (Eureka) seedlings were most sensitive, J. hindsii were intermediate, and Paradox were most tolerant. However, there was much seedling variability and a few individuals of each type survived. Plants wilted during treatment either die or remain for months with some living parts but with root systems almost completely destroyed. Regeneration of new roots was rarely observed.

The single J. regia survivor from 1973 grew to a height of 103 cm in the nursery during 1974.

Seed from a number of sources have been obtained for continued testing during 1975. A proposal for an expanded project has been submitted to the Walnut Marketing Board for funding. In addition to sensitivity to waterlogging this will include consideration of nematodes, soil pathogens, salinity, and nutrient uptake.