Section II
Rootstock Evaluation and Selection

Waterlogging

Effects of Saturated Soils in Spring on Walnut Trees


Evaluation of trees damaged in spring 1974 from flooding and/or seepage was terminated after a single rating in 1976. Only the two Yolo County plots remained. Many trees which were rated as slightly damaged in 1974 had still not recovered whereas others were considered normal in either 1975 or 1976. Conclusions reached in 1975 are unchanged and recovery of slightly damaged trees to normal appearance can be slow in many cases. Evaluation of tree status in the year of damage is best done in September-October of that year. Little or no recovery of trees can be expected which remain defoliated or even moderately foliated at that time.

Differential Sensitivity to Waterlogging

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Greenhouse screening for differential sensitivity to waterlogging was continued. Statistically significant differences were established using commonly available seed sources with tolerance increasing in the following order: J. regia, J. hindsii, and Paradox. An additional 50 plants have been selected which have superior tolerance to waterlogging. Results from treatment of trees in their second leaf were consistent with this relationship. Seedlings of a J. regia selection from India appear more tolerant than those of commercial cultivars.

Continued attempts to measure differences in sensitivity during the latter stages of dormancy and during the start of leafing out did not yield definitive results.

Upon establishment of anaerobic conditions, cellular metabolism is shifted toward production and accumulation of ethanol. Although production of ethanol is indicative of the start of events leading to cellular death it does not seem readily correlated with differences in sensitivity among walnut seedlings.

Some trees with blackline in Contra Costa County had rootstock sucker leaves which were morphologically similar to J. regia. These rootstocks were identified as Paradox after extraction and examination of their polyphenolic compounds.