

IRRIGATION AND SOIL MANAGEMENT

Multi-Use Permanent Over-Tree Sprinkling System - T. Aldrich

Although the project to evaluate the multi-use of over-tree sprinklers is in almonds, many of the findings appear to be applicable to walnuts. The over-tree application of Devrinol^(R) and Simazine has successfully controlled winter annual weeds. A dormant application of Diazinon^(R) and Volck oil^(R) significantly reduced brown almond mite populations. Fungicide applications (Ziram) during and after bloom provided extremely effective prevention of coryneum blight. Evidence was also developed that Bacillus thuringiensis applications near harvest substantially reduced the navel orangeworm damage.

The system was also used for frost control and the application of fertilizers.

Overhead Sprinkler - G. C. Martin, D. E. Ramos

During 1972, preliminary observations of the overhead sprinkler set-up in Butte County were made. As we suspected, this project should receive an infusion of funds and attention so that we can develop an understanding of this technique. A proposal has been written in cooperation with Dave Ramos that will be submitted to the Federal government. We hope to achieve sufficient support so that we can obtain the necessary location, equipment, design, and overall facilities to properly evaluate overhead sprinkling.

Soil Aeration - W. Schreader, F. Aljibury, D. Henderson, J. Letey, A. Marsh

The minimum oxygen diffusion rate (ODR) threshold value for walnuts (below which inadequate soil aeration will occur) is estimated to be approximately 20, according to Dr. John Letey, Professor of Soils Physics, Riverside. At values below this a rapid reduction in root growth occurs, with the formation of root necrosis and death. Wilting is an early symptom in plants which show this condition, and internal moisture stress of walnuts would be expected to occur.

Values of 20 or more are normally expected in a soil at 10 centibars soil moisture stress or field capacity; i.e., adequate soil aeration occurs. In some preliminary measurements in 1971 it was shown on some of the heavier clay loam soils in the Linden area that this threshold value was not being achieved until soil moisture stress was approaching 30 centibars. This was believed due to the very small pore sizes associated with the soils.

In 1972 further field tests substantiated this poor slow internal drainage to be occurring commonly. In addition, time-soil moisture studies showed that periods of up to 14 to 21 days between irrigation and the achievement of adequate aeration (ODR = 20) were occurring.