Irrigation

Drip Irrigation - W. Schreader, F. Aljibury

An observation trial was established in an old orchard on 30 trees between 35 and 40 years old. The soil was mapped as Wyman clay loam, the most common soil type planted to walnuts in the county. A major problem occurred which may prevent the use of drip irrigation on soils of this nature planted to a crop dependent upon mechanical harvesting from the soil surface such as walnuts. As the season progressed and the soil became progressively drier in the areas not wetted by emitters, the soil cracked severely. The cracks became so large as fall approached that many nuts could fall into them and become lost during harvest. This problem was of such concern to the grower that he sprinkled the soil in the trial area during his last irrigation so he could work it down for harvest and eliminate the cracks.

No differences in tree growth were observable in the trial compared to the check trees. The soil did have a basic intake rate less than the water application rate of one gallon per hour per emitter. This saturation problem was easily overcome by sequential operation of the system.

Observation of soil moisture conditions were made to depths of one, two, and three feet with tensiometers replicated at three locations. In general the areas wetted by the emitters were kept in a range somewhat above field capacity throughout the season. The soil in the sprinkler irrigated areas was saturated for periods of several days at each irrigation.

Holes were dug in the trial and check areas to observe root growth. No effort was made to develop statistically reliable measurements. It was estimated that by mid August, just prior to the last irrigation, there were three or four times as many active feeder roots in the emitter-wetted zone compared to the regularly sprinkled area. No sign of recent root rot or dead roots was observable in the drip area, but recent evidence of dead roots and root rot was commonly observed in the sprinkled area.