

## OVERTREE SPRINKLING - Tree Response and Water Economy

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Objectives:

To evaluate 1) tree responses, such as growth and yield, to overtree sprinkling used for irrigation and summer cooling; and 2) soil water and water usage under overtree and undertree sprinkling regimes.

Results and Conclusions:

Throughout the 1974 season fruit growth measurements, fruit size, yield, and leaf samples for chemical analyses were taken; leaf and fruit temperatures were measured in the overhead cooling treatment; and soil moisture down to 9 feet was monitored.

Thermocouple readings of leaf and fruit temperatures showed that with intermittent overhead sprinklings during the heat of the day, leaf and fruit temperatures can be lowered a maximum of about 8 to 10°F. There was some leaf scorch with higher sodium concentration in the leaves.

Other measurements have not been completely analyzed as yet so an overall picture of response cannot be made at the present time. However, calculations so far indicate a lack of significant differences in fruit size and yield among the treatments.

The same measurements will be continued in the 1975 season. Some will be taken in more detail and additional ones will be made, including evaluation of the return bloom.

A drip irrigation trial, with a control, was established next to the main sprinkling experiment to test if an uptake of K by prune trees would occur from K applied in the drip irrigation water. Leaf samples were taken periodically to evaluate the uptake of K. Normally the concentration of K in the leaves drops during the season. This occurred in the control. However, in the drip treatment with K added, the leaf K concentration increased with time. This indicates that K supplied in the drip irrigation water was absorbed by the tree and thus should improve the K status of the tree.

It was also observed that in both drip treatments fruit size was considerably larger than in the main sprinkling section, and that leaves in the drip section remained on the trees much longer.

Work Planned:

Studies on the effects of drip irrigation on increasing fruit size and on improving uptake of K (in a K-deficient orchard) would be very worthwhile.