

MECHANISM OF LEAF SCORCH AND DIEBACK

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Objectives:

To better understand the leaf scorch and dieback complex by determining a) whether the complex is composed of different symptoms, and b) how temperature, water stress, crop load, low leaf potassium, etc., each contribute to the symptoms.

Results and Conclusions:

While most of the scorch associated with prune dieback appears in mid-summer, symptoms of potassium deficiency appear early in the summer. This suggests that possibly factors other than low potassium also are involved in scorch.

Portable equipment and operating techniques were developed to artificially subject leaves and fruits in the field to high air temperatures. Limited heating trials indicated that leaves under certain conditions can be scorched when subjected to a temperature of 50 C (122 F) for 1 hour. Pale, potassium-deficient leaves became scorched while green leaves did not. The experimentally-produced scorch looked just like some of the naturally-occurring leaf scorch symptoms of late summer.

Limited transpiration measurements indicated that yellow leaves--those prone to eventual scorch--have a lower rate of transpiration than green leaves.

Work Planned:

Now that a satisfactory heating technique has been developed, we should be able to conduct heating trials and other experiments under many different tree conditions to see how transpiration, air and leaf temperatures, low potassium, high crop, etc., are inter-related in producing leaf scorch and dieback.