Testing the Timing of Zinc Applications in the Fall and Winter

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Two experiments were conducted to determine the best timing for zinc applications in the fall and winter. Both experiments used potted one-year-old peach trees growing in sand. Applications were made with formulations of zinc sulfate and zinc oxide labeled with 68Zn.

Experiment 1. Foliar applications of 68Zn sulfate were made on two dates (10/24/07 & 11/16/07) and at two concentrations (2000 & 5000 ppm Zn – about 4 & 10 lbs Zn sulfate/100 gals, respectively) to five trees per treatment. Natural leaf senescence was complete by mid-December. Whole trees were then harvested in April, 2008 and analyzed for 68Zn to determine zinc uptake and distribution.

Results clearly showed that the earlier timing supplied more zinc to the trees than the later timing (Fig. 1). There was no difference between the two concentrations, probably because the higher rate caused some phytotoxicity and early leaf senescence. The earlier timing/lower concentration treatment also had more zinc in the roots than the other three treatments (data not shown).

Figure 1. Uptake by peach trees of 68Zn from foliar applications of zinc sulfate on two dates (Oct 24 & Nov 16) and two concentrations (2,000 & 5,000 ppm Zn).

Experiment 2. Applications of 68Zn sulfate or 68Zn oxide were made to all shoots of one-year-old peach trees on either 11/19/07 or 1/18/08. All leaves that had not senesced naturally were removed before the first date. Treatments were made with a paintbrush to insure an exact amount applied. Concentration for both materials was 5000 ppm Zn. Whole trees were then harvested in April, 2008 and analyzed for 68Zn to determine zinc uptake.

Results indicate that zinc sulfate applied in November was the best treatment for supplying zinc to peach trees (Fig. 2). As with Experiment 1, it appears that the earlier date allows more time for zinc to be taken up into the tree.

Figure 2. Uptake by peach trees of 68Zn from application to shoots of zinc sulfate or zinc oxide applied on Nov 19 or Jan 18.

Conclusions. The following conclusions about maximizing zinc uptake into peach trees can be drawn from these two experiments:

1. Soluble zinc sulfate works better than insoluble zinc oxide.
2. Allowing a longer period for the zinc to be taken up by green leaves and wood increases uptake.
3. Therefore, the optimum method for supplying zinc to peach trees after harvest is to spray zinc sulfate early in the fall (Sept – Mid Oct) rather than waiting until natural senescence is starting to occur. It is recommended to use a rate that does not cause major defoliation.