

# PROBLEM MANAGEMENT

by Balakrishna Rao, Ph.D.

## Controlling woolly aphids

**Problem:** Can you suggest a method of controlling woolly aphids in fir trees, other than using diazinon or malathion? My success rate has been only fair with these pesticides. Would a systemic give better results? (Canada)

**Solution:** The woolly aphids in fir trees to which you are referring are probably balsam woolly adelgids, *Adelges piceae*. This is not a true aphid, but is a member of a family closely related to aphids, *Adehgidae*. It is a serious, destructive sucking insect of true firs (*Abies* sp.) in the United States and Canada. It does not attack Douglas fir, *Pseudotsuga menziesii*, a tree that is not a true fir, and it does minimal damage to Noble fir, *Abies piceae*.

An understanding of the insect biology and damage it causes might be helpful in the management of this pest. The balsam woolly aphid may have two or three generations per year. This adelgid may be found on all parts of the bark from the trunk to the twigs. Reports indicate that the entire population of this insect consists of females. The adults are wingless and purplish to black when the wax is removed. They remain attached to the tree with their long penetrating mouthparts.

The eggs hatch into tiny crawlers that move around. They finally settle down and insert their long sucking mouthparts while wax ribbons are selected from glands along the side and lower back of the crawler after feeding for some time. Later the entire body will be covered with white woolly material.

Affected plants show "gouting of the terminal portions of twigs" due to insect feeding. If the infestation is severe it can kill the plants.

The balsam woolly adelgid is protected during its entire existence under the swellings on the twigs. Therefore, it is difficult to manage using chemicals. It might also explain why you are having problems managing with diazinon or malathion. Since direct control is difficult, remove and burn affected trees during the winter to prevent the outbreak from spreading, if possible.

According to Dr. Douglas Caldwell, our staff entomologist, multiple applications of Sevin might be helpful in managing this pest in a landscape situation. If it turns out the pest is some other species of woolly adelgid or aphid such as the balsam twig aphid, *Mindarus sabietinus*, Sevin or Orthene may work also. Consult your Ministry of Environment for pest identification and local recommendations.

## When to stop root pruning

**Problem:** How much root pruning can a mature tree in the treelawn tolerate before failure or decline? (Tennessee)

**Solution:** Your question is interesting and is one I am often asked. Unfortunately, I am not familiar with any formula or research concerning root pruning of mature trees in the treelawn. Of course, the farther away from the trunk the pruning is done, the less stress on the tree.

Several different factors such as tree species, tree vigor and vitality, soil type, extent of root injury and cultural practices before and after root pruning can influence tree tolerance or decline. Trees may show varying degrees of recovery as a result of soil disturbance, root pruning and compaction, which changes the soil environment around the plants.

Plants weakened by the above factors can be susceptible to insect, disease or other abiotic disorders. In addition, the reduced root structure may subject the trees to wind throw.

In spite of these drawbacks, sometimes root pruning of established trees is unavoidable or becomes necessary because of road or sidewalk installation. In this type of situation, I have observed cases where the trees to be root pruned were fertilized with controlled-release fertilizer containing "low burn" nitrogen well in advance of the operation. The objective was to simulate the development of absorbing roots and improve plant health. These trees appeared healthy without any crown symptoms two years after root pruning and the installation of the road. Therefore, if the job is done with due consideration to the plant's overall health, there might be less stress and perhaps faster recovery can be expected.

## Info needed on pH adjusting

**Problem:** Do you have a formula for adjusting water pH above 8 to neutral prior to mixing with pesticides? (South Carolina)

**Solution:** In reviewing our literature, I was unable to find any pertinent information concerning any specific formula for adjusting water pH above 8 to neutral prior to mixing with pesticides. Although there is limited published data concerning alkaline hydrolysis of organophosphate and half-life of these pesticides, I am not familiar with any publication describing a standard mixing formula to lower the pH unit to a desired level.

It would be very handy and useful in our industry to have this information. I hope some of the manufacturing companies of buffering agents and/or other researchers might supply the answer to your question by contacting me. In the meantime, your best approach would be to contact some buffering agent manufacturers.

A number of commercially available products on the market that might be useful for lowering the pH, including: Buffer-X (Kalo-Lab), Nutrient Buffer Spray (Ortho), Spray-Aide (Miller), Sorba-Spray (Leffingwell), Unite (Hopkins), phosphoric acid (Morrall Chemical Co.) and MAP (monoammonium phosphate) (Dysart Co.).

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Questions should be mailed to Problem Management, LANDSCAPE MANAGEMENT, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.