

LETTERS TO THE EDITOR

Dear Dr. Miller:

For over 50 years, it has been gratifying for me to gain a great deal of information from the publications of the National Arborist Association and ISA's Journal of Arboriculture. In very few cases have I found an article that is incorrect in its basic assumptions. However, the article presented by E. Thomas Smiley ("Countersinking for Tree Bolts," Volume 24, No. 5, September 1998) is basically incorrect.

The main reason [for drilling holes for] i-bolts or screw rods and then countersinking is to establish a surface for the tightening of the nut that is in proper plane with the forces required to draw the screw or i-bolt evenly upon the plane or surface that is 90 degrees to the position of the i-bolt or screw rod. Any course in simple engineering would point out that a screw works most efficiently when it is applied to a surface that is even with its force. Screwing down washers or nuts on a surface that is on an angle is entirely inefficient and inappropriate. As we are well aware, all tree trunks and tree limbs are circular in nature and rarely can one find a surface that is in a position that is equal to the plane with the force applied. Thus, countersinking is necessary in almost all situations so as to realize the proper and efficient angle of force desired when screwing down a nut upon a washer. It is my hope that you would correct these areas in a later publication of the Journal of Arboriculture.

Many of us who have installed i-bolts or screw eyes for the strengthening of weakened crotches or for stabilizing high structural growth in mature trees have never noticed or found decay a problem around these installations when they are installed properly in healthy tissues and viewed 30 years later. Discoloration has been found by many of us who have monitored old installations after removing a tree or

cutting out an old screw rod. After discussing this with a few of my friends who have observed these installations for over 50 years, none of us have noticed any detriment to the callus growth or to the installation as a whole from decay when installations are carried out properly.

Henry F. Davis
Landscape Consultant
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Dear Dr. Miller:

Thank you for providing me the opportunity to respond to Mr. Davis' letter regarding my recent paper in the Journal.

Mr. Davis is considering different aspects to bolt installation than were discussed in the paper. Our goal was to determine if countersinking into xylem increased discoloration, a precursor to decay. Countersinking with a chisel did indeed increase discoloration compared to the other methods of bolt installation. For that reason, the recommendation to not countersink into the xylem was made.

Addressing Mr. Davis' point that washers must be at a 90-degree angle to the bolt for them to be effective, I would certainly have to question this. The main reason washers are installed beneath the nut is to prevent the nut from pulling through the hole in the tree. Whether the washer is at 90 degrees or 70 degrees, if the washer and hole are of proper size, the nut will not pull through the tree.

An extreme example of a situation that begs for not countersinking is presented in the figures [see next page]. Here a cable is attached to an over-extended limb to the central leader. The eyebolt is properly installed in line with the cable.

My contention is that the system presented in Figure 1 is far less damaging to the tree and functionally just as strong, if not stronger, than depicted in Figure 2. The system shown in Figure 1 may in the future be stronger than the one in Figure 2 due to the possibility of reaction wood, "wall 4," growing beneath the lower portions of the washer. No wall-4 wood will ever grow below the washer shown in Figure 2.

Installing bolts for cabling or bracing trees inherently causes some damage to the tree. These practices should be undertaken only when the benefit

from this exceeds the potential damage done during installation. One way to minimize damage during installation is to avoid making wounds any larger than necessary. This means that countersinking into the xylem should be avoided whenever possible and that if it must be done, countersink holes should be drilled rather than cut with a knife or chisel.

E. Thomas Smiley, Ph.D.
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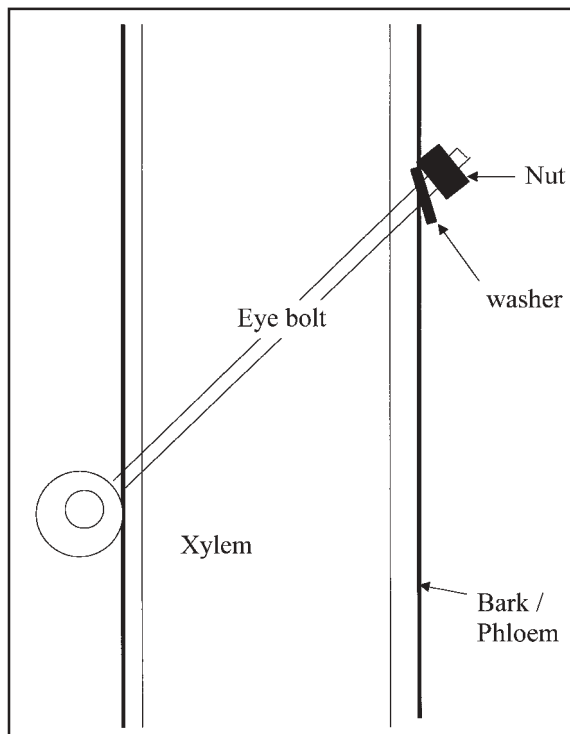


Figure 1. The washer is partially resting on the bark but not able to pull through the leader.

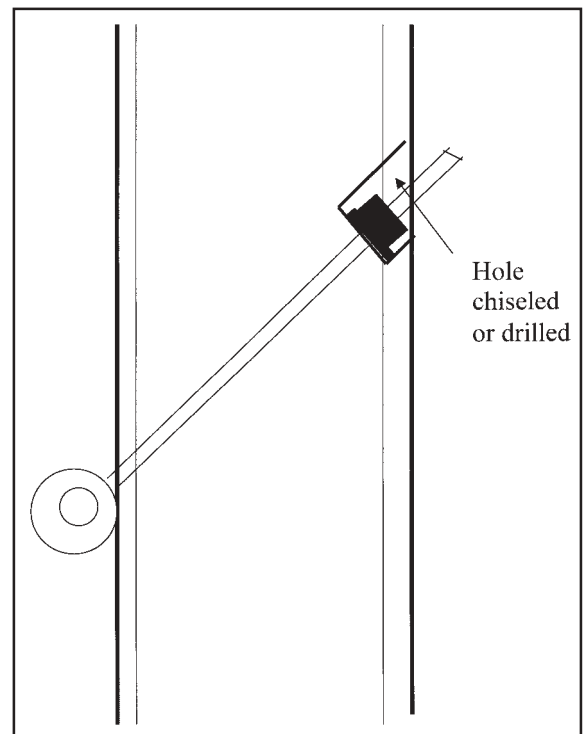


Figure 2. Diagram of the large countersink hole that would be required to seat the washer at a 90-degree angle to the bolt.

Dear Dr. Miller:

My copy of the Journal awaited me upon my return this evening. It was "déjà vu" that swept over me as I read "Surface Energy Balance Affects Gas Exchange of Three Shrub Species" (Volume 24, No. 5, September 1998). I had just come from a large parking lot that seemed to perfectly illustrate the thesis advanced by Montague, Kjelgren, and Rupp. As a perennial student of woody plants, I observed the decline (yellowing and withering) of leaves on most of the *Tilia cordatas* planted in that parking lot. I also noted that a few were not so impacted and looked quite normal for this usually tough tree. The trees that had escaped [the decline] were in well-watered grassy parts of the islands. I assumed that the impacted trees had not been watered as much as the others. The above-mentioned Journal submission led me to reexamine the patterns of healthy and unhealthy trees and to conclude that the major factor involved was the higher T_s [surface temperature] of the mulched areas, as demonstrated by the authors.

Just one small "plug" for mulch; nevertheless, I feel sure the authors did not intend to imply that the aggregate effects of organic mulch might not be necessary to the survival of plants that are dependent upon soil conditions that are enhanced by organic mulch. A case in point are my 10 blueberry shrubs planted in 8 in. of sawdust that is replenished each year with bark mulch. I do overhead-water them when the temperature reaches 90°F, per the Southern Oregon Experiment Station protocol.

The treatise on allelopathy will be of equal benefit to the gardeners, growers, etc., with whom I interface.

Thank you for facilitating an indispensable tool for the arboricultural community. I look forward to the day when the Journal can be accessed via Internet and/or CD-ROM.

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