

Making Tough Decisions; Views of a Realist

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No, I am not talking about the really tough ones, like what to get your mother-in-law for her birthday. But, rather deciding whether or not to cut down a tree prior to construction. Most of the time, it has been my experience that the tree(s) are left in place. Fingers are crossed amid much angst and concern that the tree will survive. In the meantime, the tree(s) make construction cost more since they often interfere with nearly every activity; from grading, moving equipment in or out, pouring cement, unloading lumber, placement of scaffolding, and so on (Figure 1).



Figure 1. This fence is not sufficiently large to provide much protection for roots of this young tree. The stem is about eight inches in diameter near the soil line and lower branches were recently cut off so they did not overhang the fence. For this tree to have a good chance of survival the protection area should have been at least doubled.

Many homeowner and landscape books describe the useless placement of wire or wooden fences 10 to 20 feet square around each tree to be “saved” as “protection”. Bogus, Bogus, Bogus. The key to tree survival is the root system. Roots are typically far more extensive and expansive than generally realized --- even by many professionals. Even a tree of modest size, for example, with an eight inch diameter stem, will have roots that extend well beyond the outer most branches. Roots will extend far more in areas where roots of other trees are absent versus where another tree is present. An eight inch oak tree, even with a 20 foot square protective fence around it, is most likely to die a slow, lingering death following construction. Death is often gradual, requiring three, five or even 10 years in some cases. Decline and death of the tree is because the 20 foot fence “protected” a small portion of the root system. The remaining roots will die due to soil compaction / root suffocation. Roots of all

plants must have oxygen to function and there are no magic elixirs or substitutions.

How far do roots grow? Early on in my research into how trees affect growth of grass and vice versa, I went looking for answers. I chose a sugar maple on the Iowa State campus that was separated from all other trees by several hundred feet. The tree had a stem diameter of about 8 inches and had a branch spread of about 30 feet, outer branch to outer branch. Soil was a productive Iowa clay loam and outside the immediate area around the base of the tree was a dense stand of Kentucky bluegrass. Soil samples were taken three feet out from the trunk and every two feet thereafter to a distance of 25 feet (10 feet beyond the outermost branches). Roots of sugar maple are reddish-tan and bluegrass roots are white so identification was easy. Many maple tree roots were present in the soil samples 25 feet from the stem. Additional soil samples were taken out to a distance of 45 feet. Maple tree roots were still present in the samples 30 feet beyond the outer branch tips

Practical Reality

It is important to remember that the youngest fine roots are the greatest contributors of nutrients for the foliage of a tree. Loss of any roots on an existing tree imparts stress. When I am asked about how much space to leave around an existing tree during construction I often counter with, “How much do you really want to save the tree?” Every root lost imparts stress and at some point relative to the health and size and soil conditions around the tree, the tipping point is reached. And, once that point is reached, there is no turning back.

Unless a major effort is made and a substantial portion of the root system of an existing tree is protected, it is better to remove trees in areas of construction in the beginning. This makes construction and movement of men and machines easier and removes anguish about the trees (Figures 2 and 3). Consider a point, 5, 8 or 10 years down the road. If the tree(s) are left and are not truly given a reasonable chance of surviving long term, there is a high probability they will be in severe decline and die a slow, lingering death. Trees in decline are no longer attractive and may be dangerous. In some cases, it costs considerably more to remove the now dead tree than it would have initially.

On the other hand, if the trees were removed, and young trees of suitable species were planted following completion of construction, at some threshold point 5 to 10 years later, healthy trees are established and contributing positively to the landscape.

In short, either leave the tree a sufficient undisturbed area that is walled off from all construction activity or remove the tree and replant later. It sure beats watching trees die a slow lingering death!



Figure 2. The site was a church-school combination. All vegetation was removed and grading done, except, for one large, beautiful bur oak that was initially left undisturbed. Access to the site and loading and storage of materials was from the lower left area of the photo, including entrance and exit of cement trucks.



Figure 3a. An assortment of materials was stored near the base of the tree and substantial compaction of the soil occurred.



Figure 3b. One year after construction was complete; the tree was dead and had to be removed. Tall, spindly red maple trees were planted in its place. No red maple in any location has ever achieved the size, stature and visual qualities of the bur oak that was lost, and all because of ignorance.

[Portions are from *Establishment and Maintenance of Landscape Plants II* by the author.]