GOLF COURSE LANDSCAPE PLANTS — *SOME OBSERVATIONS AND SOME ADVICE*

By Jeff Epping

Trees and shrubs are an integral and valuable part of any landscape, including golf courses. They add to the overall beauty of a course which goes well beyond just dollars and cents. Can anyone put a dollar value on the pines at Augusta National? The feeling of walking down those tree-lined fairways during a round must be awe inspiring! All the money in the world couldn't buy you that feeling, nor could it replace those trees if they were lost to disease or some other disaster. I'm sure that almost every golf course has, or some day will have, a tree or trees just as valuable to it, as the pines are to Augusta National. Therefore, it is important that proper planning, planting and maintenance go into a landscape planting to ensure future success. There is nothing more discouraging than putting many hours of hard work into a planting, only to see it slowly perish due to poor forethought and maintenance.

Working at Blackhawk Country Club has given me a unique opportunity to see some of the problems a golf course superintendent faces with regard to landscape design and maintenance. Many of the same problems are common to other landscapes as well. One thing that I quickly realized (much to my dismay) was that woody plants on a golf course rank a distant second to turf. Golfers will only enjoy their surroundings if they are satisfied with the conditions of the greens, fairways, bunkers, etc. Some golfers no doubt look at a tree as just another x#zx#! obstacle to shoot around, but most, I hope, appreciate the unique quality that only a wooded golf course can offer.

The following paragraphs briefly outline some of the more common problems that I have found through past work experiences and through working at Blackhawk. I hope that you will find them useful.

Proper siting of plant materials is important to the health of the plants, and it also helps to reduce the amount of future maintenance. Improperly sited plants are often stressed, making them more prone to insect and disease problems. Plants should be matched to their specific soil, moisture and light requirements. Also keep in mind the ultimate height and spread of plants and space them accordingly. Trees and shrubs are most often planted too close together, or too close to structures. This increases maintenance because they must be continually pruned back, or if left unpruned, removed and replaced. Many people have the idea that shrubs are only useful until they are fully grown, then they should be ripped out and replaced with young plants. This idea is both wasteful and expensive. Shrubs can be maintained for many decades if they are properly sited and pruned.

A number of plants immediately come to mind with regard to improper siting. Paper birch *(Betula papyrifera),* European Mountain Ash *(Sorbus aucuparia),* Pagoda Dogwood *(Cornus alternifolia)* and Canada Hemlock *(Tsuga canadensis)* are all trees which require cool, moist soil, but time and again they are planted on hot, dry sites where they become stressed and slowly die from insect or disease problems. In southern Wisconsin they should only be planted on the north sides of buildings or other plantings which shade the soil. Use a mulch over the root zone to cool the soil and conserve moisture, and irrigate during hot, dry weather.

Many plants are improperly sited with regard to light requirements. Juniper, crabapple, hawthorn, lilac,

The declining tree on the left was planted too deeply as can be seen by the lack of basal flare. The healthy tree on the right was planted properly and shows the normal taper.

pine, spruce, larch, rose, potentilla, spirea, mockorange, forsythia, etc., all require full sun. They may survive in less than full sun, but their form, flowering and fruiting characteristics, as well as overall health, tend to suffer with increasing shade.

Keep in mind the soil requirements of plants when planning a planting. Moisture, drainage, pH and fertility are all important considerations.

Proper planting depth. When planting shrubs, and especially trees, special attention must be given to proper planting depth. The tendency is to plant much too deeply in order to stabilize the plant. It is far better to plant too high, than too deep. Set plants in the planting hole, so that they are slightly higher (1-2'') than they were grown in the nursery. After the soil settles, the depth should be just right.

Planting too deeply predisposes trees to future problems, which reduces their normal life-span. For example, maple decline, a serious disorder affecting Sugar Maple *(Acer saccharum)*, is thought to be caused by planting too deeply. Trees which have been planted too deeply are evident by their lack of basal trunk flare. Instead of a gradual tapering of the trunk, it goes straight into the ground (see photos).

Water stressed plants are a common sight this summer in much of the midwest. Leaf wilting, marginal leaf scorch, and, under severe stress, twig die-back, are all symptoms of stressed trees and shrubs. New plantings (3 years old or younger) should be given first priority since their root systems are small and intolerant of even short periods of drought. Plants should be given the equivalent of 1 to 1½ inches of water per week. Apply three to four inches of wood chips or shredded bark mulch over the root systems of these trees. Older, established trees and shrubs should be given a thorough soaking every 3-4 weeks with a root-feeder or soaker hose.

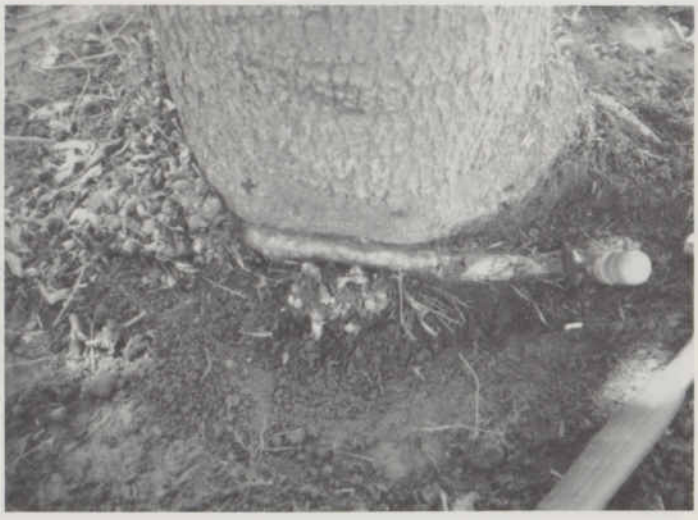
Girdling roots on a tree often lead to decline and premature death. Girdling roots most often develop on bareroot and container-grown trees. The problem starts at planting time if circling roots are not cut or if the root ball is jammed into a small planting pit. Although the problem starts at planting time, it often takes many years to develop. Gradual decline in health occurs along with premature fall coloration. Leaves on the girdled side of the trunk often color-up more quickly than the rest of the tree. Another sure symptom is that the girdled side of the tree has a flattened trunk which goes straight into the ground, while the rest shows its normal basal trunk flare. The problem is fairly easy to correct if it is detected early in the trees' life. The root is often below the soil surface, so the soil must be removed to see it. Once the root is exposed, use a chisel and mallet to sever it. Cut and remove the entire root and place the soil back around the trunk (see photos). There is no need to paint or treat the wound with any type of dressing. It is also a good idea to fertilize and water thoroughly to reduce the amount of stress on the tree.

If a girdling root is found on an older tree, it may do more damage than good to remove it. The stress of cutting a major root may be enough to kill a tree, so use your best judgment or consult an arborist before doing so.

Hedge pruning seems like a simple and straightforward maintenance procedure, but it is often done incorrectly. Hedges should always be sheared so that the top of the hedge is narrower than the base. This shape serves two purposes. First, it prevents lower branches from being shaded out, so that a nice dense hedge is maintained. Secondly, it helps prevent snow accumulation in winter which tends to break branches and deform the shape of the hedge.

If you have evergreen hedges that are incorrectly pruned, gradually (over a number of years) train them back to the correct shape. Leggy, open, deciduous hedges should be cut back to within 1-2' of the ground while dormant (late fall to early spring). Remove all dead canes and selectively remove one-third of the oldest canes. Cut the canes at ground level, making sure not to leave any stubs which would interfere with newly emerging shoots. Then, during the growing season, shear the hedge into the correct form. This method works very well with hedges such as Alpine Currant *(Ribes alpinum)*, Hedge Cotoneaster *(Cotoneaster lucidus)* and privet *(Ligustrum sp.)*, but should not be used on Winged Euonymus *(Euonymus alata)*. Winged Euonymus does not resprout readily, so it must be gradually reshaped by heading back shoots to side branches.

Ornamental crabapples are the most useful and popular small-scale



This girdling root first had to be uncovered but was obvious due to the flattening of the trunk on the affected side. The root was severed and removed completely. Notice how the trunk tissue is indented from the strangling pressure of the root.

ornamental trees in the midwest, but keep in mind that they are high maintenance plants. Regular pruning is essential to maintain attractive and healthy trees. Most crabapple cultivars are grafted, therefore it is important that root suckers be removed so that the understock does not overtake the desired scion cultivar. Watersprouts, dead, diseased and broken branches, inward growing branches, as well as crossing branches, must all be pruned-out to maintain an attractive form. Many arborists are now applying a growth regulator called "Tre-Hold" (manufactured by Union Carbide) to pruning cuts to reduce resprouting of root suckers and watersprouts.

When selecting crabapple cultivars choose those that are disease resistant. Apple scab and cedar-apple rust soon defoliate susceptible cultivars in late summer unless they are sprayed. Fire blight is another disease which can be fatal to susceptible trees. For ornamental purposes, select cultivars with small, highly-colored, persistent fruits. Fruits are more important than flowers since they persist on the tree for many months, instead of just a few short days in spring. If you don't have the time to maintain crabapples, you may want to select small trees which require less maintenance. Hawthorns such as the Cockspur Hawthorn *(Crataegus crus-galli),* Washington Hawthorn *(Crataegus phaenopyrum)* and Winter King Hawthorn *(Crataegus viridis* 'Winter King'), are all excellent alternatives which require less maintenance. If thorns are undesirable, use the thornless form of Cockspur Hawthorn or Winter King Hawthorn, which naturally has very few thorns.

Junipers are very useful low maintenance trees, shrubs and groundcovers, if properly sited. Remember that all junipers require full sun and a well-drained soil. Do not plant them in areas that are heavily irrigated unless the soil is very well-drained and juniper twig blight *(Phomopsis juniperovora)*-resistant species/cultivars are planted. This disease causes foliage browning and twig die-back in highly humid sites with poor air movement.

Avoid using all cultivars of the native Creeping Juniper *(Juniper horizontalis),* since they are all blight-susceptible. Varieties and cultivars of the Chinese Juniper *(J. chinensis)* are blight-resistant, as is the low-growing Broadmoor Savin Juniper *(J. sabina* 'Broadmoor') and many tree forms of the

The above photos show that trunk girdling such as this resulted from leaving guy wires on the tree far too long. Notice how the bark tissue has grown around the wire and rubber hose.

An excellent example of how *not* to prune a crabapple. There is no excuse for leaving pruning stubs such as these.

native Eastern Redcedar *(J. virginiana).*

Staking and guying of newly planted trees is often necessary to anchor the root system, support the trunk and protect them from lawnmowers and vandals. Use staking and guying only if necessary because studies have shown that a tree actually develops a stronger trunk if it is left to grow without supports. When supports are used, there seems to be some confusion as to how long they should be left on the tree. As a rule, wires and garden hose sections should be left on for one year (growing season) for deciduous trees and two years (growing seasons) for conifers. Be sure to remove all restraints since they can soon girdle and kill, or at least badly deform, a tree. The stakes can be left in place longer, if desired, to protect the young tree from mechanical damage. It is also desirable to leave lower branches on the tree since they contribute to the caliper of the trunk and provide shade to the bark so as to reduce sunscald damage in winter.

Leaf chlorosis can be a problem in southern Wisconsin on alkaline soil-sensitive species such as Pin Oak *(Quercus palustris),* River Birch *(Betula nigra),* Red Maple *(Acer rubrum),* White Pine *(Pinus strobus)* and White Oak *(Quercus alba).*

Chlorosis is often worse on golf courses since many turf fertilizers compound the problem. Phosphorus and potassium fertilizers, as well as nitrate-containing fertilizers, should not be used near chlorotic trees. Since the problem stems from alkaline soils, it makes sense to treat the soil to solve the problem. The best method found so far is the sulfuric acid treatment. This treatment involves adding acid to the soil surrounding the tree to lower the pH and make deficient nutrients available again. The specific treatment is detailed in a UW-Extension publication available from your local county agent. The best means of controlling this problem is to avoid planting sensitive species.

Woody Exotic Weeds such as Tatarian Honeysuckle *(Lonicera tatarica),* Common Buckthorn *(Rhamnus cathartica),* and Russian Mulberry *(Morus alba tatarica)* should no longer be used in the golf course landscape. They are all tremendously weedy plants which should be eradicated, since even just a few plants in a landscape will act as a seed source to spread them to unwanted areas. Do yourself and everyone else a favor by removing these species, no matter how large and seemingly attractive they may seem to be.

"Mower blight" is probably the leading cause of death to young trees in the golf course landscape. Mechanical injury caused by the careless use of mowing equipment, especially string trimmers, either totally girdle the trees or set up columns of decay and pathways to insect and disease organisms. This damage is easily prevented by eliminating grass around the trunks of trees. A ring of bare soil, or preferably mulch, should be maintained around the base of trees and shrubs. Glyphosate (Round-Up) is most often used to maintain this ring, but be sure not to spray it on root suckers or other plant parts.

Snow accumulation damage. Evergreens, especially American Arborvitae and upright junipers, are often malformed by heavy snows and ice during the winter months. This problem can be corrected by tying major branches together within the plant. The best material for tying them together is, believe it or not, panty hose. Wire and nylon or plastic twine should never be used because they will slowly girdle branches as the plant grows. Panty hose breaks down over time, so it won't damage the plant and it is neutral in color so it cannot be seen.

I hope that many of these tips will be useful to you in the future. Further literature on some of these topics, and many others, can be obtained from your local county extension office. Good luck with your "Augusta National Pines!"

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Editor's Note: Jeff Epping will complete his master's degree in woody ornamental horticulture this fall at the University of Wisconsin-Madison. He has had work experience at such institutions as the Chicago Botanic Garden and DuPont's Longwood Gardens, near Philadelphia, as well as the Longenecker Gardens in the UW-Madison Arboretum. He spent the summer of 1988 on the golf course staff at Blackhawk Country Club.