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.

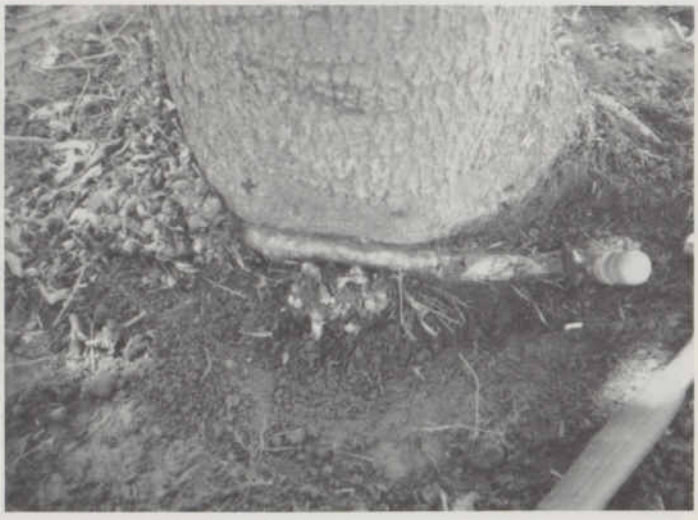
Girdling roots on a tree often lead to decline and premature death. Girdling roots most often develop on bareroot and container-grown trees. The problem starts at planting time if circling roots are not cut or if the root ball is jammed into a small planting pit. Although the problem starts at planting 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.

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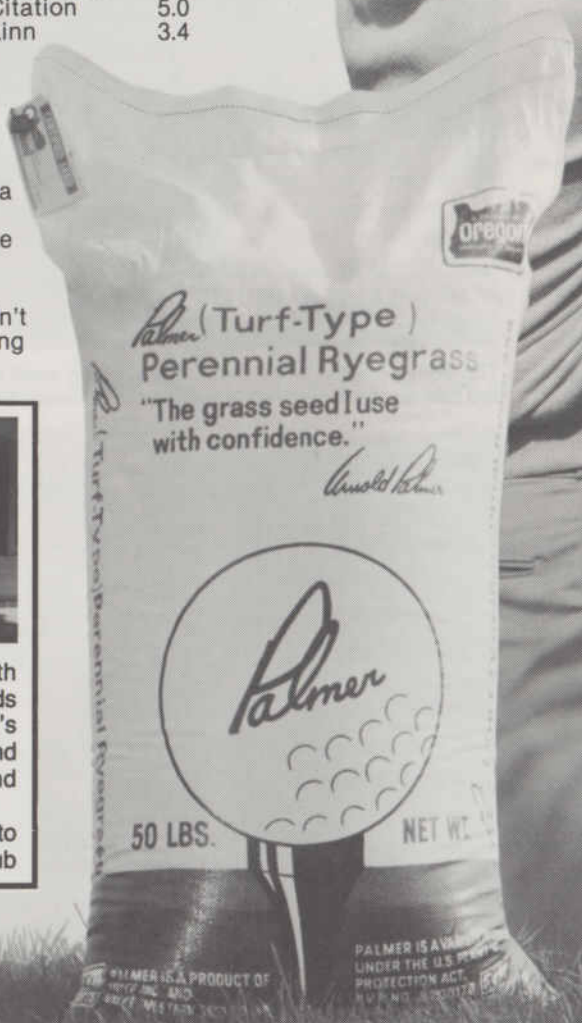

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native Eastern Redcedar *(J. virginiana).*

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!"

Jeff Epping

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.

Drought, Miserable Temperatures and Turf Diseases in 1988!

By Dr. Gayle Worf
Department of Plant Pathology
University of Wisconsin-Madison

As this is written, I have recently returned from a trip through South Dakota, Wyoming and Montana. I wasn't on any golf courses during that time, but I looked at a lot of landscape turf en route — mostly bluegrass. I was fascinated — and impressed — by the very high quality turf that seemed to exist everywhere it had been adequately irrigated. To be sure, most of the grasses were as dry as tinder, but where watered, and — except for occasional high pH areas where there was some yellowing from apparent iron tie-up problems — the turf was luxurious, green and very, very dense. We'd be proud to grow turf of that quality here in Wisconsin!

If the turf can tolerate such conditions, then our turf in Wisconsin should be faring as well in this year of 1988. And in fact, in most of our fungicide trials up to this point, we've had very little to record or report on. And prior to our departure in mid-July, we had received virtually no reports of pathogenic disorders on turf throughout the state. This included *Poa annua,* as well as bent and bluegrass. We've certainly had plenty of high temperatures this year, and our intuition might lead us to believe that turf should be suffering far more than it appears to have done so up to this point!

How have we gotten by without seeing more damage? Your guess is as good as mine, but I'll share my thoughts. Basically, there are two primary reasons. One is the credit you should be giving yourself. Particularly with compaction and moisture extremes, plus moderation in fertility programs, must be terribly important. In the trials at Stevens Point Country Club with Jeff Bottensek, we were seeing only traces of anthracnose disease coming in to date. And it was more intense in the areas of the irrigation pattern that were a bit drier, or where mower compaction was greater. Even though the disease was not intense, one could begin to see the advantages of fungicide treatment.

In the Nakoma plots in Madison with Randy Smith and Chuck Frazier, where rains have been much less generous, the dry pattern within the irrigation system is a bit more evident, and anthracnose is much more intense. The plot area has not been fertilized recently, so as to increase anthracnose potential. And one really sees the benefit of fungicide applications there!

But through it all, the question of temperature and its effects upon turf remains. My bias as a turf pathologist makes me believe that it may in fact be moisture, or humidity, more than high temperature per se that places so-called "stress" on the plant. And much of that stress may be through the motivation of fungi to do bad things to the turf.

One thing is certain. We're witnessing something of a departure from historical patterns of disease development during the recent high temperature years. For instance, at one time we nearly always could depend on dollar spot to show up in our plots somewhere. I've only received one report of significant dollar spot up to this time, and many superintendents have reported none at all. Warm dry soils, especially with low nitrogen usually favors dollar spot. Theoretically, it should be occurring in the Nakoma trials. But it's not, probably because the grass doesn't stay wet long enough from irrigation alone. Yet it's enough to promote anthracnose. It could be that the temperature is usually *too* warm for the dollar spot fungus — its preferred greenhouse temperature is from about 59°-86°F. The anthracnose fungus does better from 71°-90°F, and greenhouse inoculations are successful at temperatures above that.

But Pythium is once again showing up in a lot of places. In recent years it appears to be much more threatening than dollar spot to summer turf quality. The disease has been producing its more classical "grease spot" symptoms in a lot of turf this year, and has been observed doing damage more or less throughout the state. (I've not heard of any problems in the northwest.) Research studies frequently report damage during temperatures in the upper 90's, especially with high night temperatures like we've had this year. One thing about Pythium is its rather wide range of species that are involved. In some ways, it's a wonder we haven't had more problems with Pythium for that reason — and also with its control. Fortunately, the pathogen apparently is continuing to succumb successfully to any good Pythium-controlling chemical. It probably remains an **excellent** idea to continue with rotation of basic fungicide groups to avoid future problems!

Incidentally, Pythium in the classic form is easy enough for most experienced managers to recognize. But we've had several cases in June where turf was going out of condition, allegedly because of Pythium. Pythium was not involved. The problems appeared to be due more to compaction and hard-to-wet environments. Considerable expense and waste of chemical resulted because of misdiagnosis. The new diagnostic kits appear to have a really good role to play for situations where symptoms don't necessarily fit the book, or where, for other reasons we don't feel secure about our diagnosis.

You should also know that the assay is being improved upon rapidly to speed up the process and improve upon its accuracy. But more about that later.

One disease I've not personally observed this year, in contrast to what I might have expected is Rhizoctonia brown patch. I have a special interest in that disease. We so often receive reports of the disease, and difficulty in controlling it with labeled fungicides. We've talked about this before. One question we've wondered about is whether we have different strains, or different species in the state. Brown patch is caused by the fungus *Rhizoctonia solani.* But another disease re-

ported in states to the south of us is "Rhizoctonia leaf and sheath spot", caused by the fungus *R. zeae.* The latter fungus requires higher temperatures than *R. solani.* Yet another fungus — *R. cryzae* — operates at a still higher temperature. Neither of the last two have been reported in Wisconsin. In fact, we've done very little work with Rhizoctonia. If you've encountered brown patch, we'd invite you to submit a sample so that we might build up a collection of the organism(s) for possible future work.

It probably would be useful to try to document in some fashion the disease development pattern on our golf courses over a period of several years. I wonder how many superintendents would be interested in participating in such an exercise.

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Letters

RESPONSE TO "THE USGA SHOULD BE ASHAMED OF ITSELF"

Editor's Note: The following letter was written by Dr. David Cookson to Mr. Rob Schultz in response to Rob's article in the last issue of "The Grass Roots". It is reprinted here with permission from both writers.

July 8, 1988

Rob Schultz
Sports Dept.
The Capital Times
Box 8060
Madison, WI 53708

Dear Rob,

I feel compelled to respond to your article concerning the USGA in the latest *"Grass Roots"*, since I think you have unfairly maligned the one organization in golf whose primary concern is the game in its entirety, rather than just promoting one facet as most golf groups are created to do. As I read your critique, I believe your points are two fold; first, that a "USGA official" was quoted in *Golf Digest* as insulting Andy North thus tarnishing the USGA itself, and secondly, the USGA unfairly sets up Open courses which somehow you translate into golf becoming "a sport for the so-called elite" influenced by "hotsy-totsy USGA goof balls". Let me answer both these arguments as I see them.

First, it is absurd to slander an entire organization for the remarks of "an anonymous USGA official". We in Wisconsin ought to be acutely sensitive to this practice and its ramifications, having sent Joseph McCarthy to the U.S. Senate. This is akin to castigating the *Capital Times* for the personal opinions of somebody working in the circulation department; is that logical? There are over 700 USGA committee people, and 80 or so paid staff; should the USGA be held responsible if one of these persons utters a stupid opinion that *Golf Digest* decides to quote and then doesn't even identify who it is? (You said the USGA official declines to identify himself; I say it is *Golf Digest's* responsibility to identify its sources — are we even sure the comment was made without knowing the source so we can verify its accuracy?) You may be justified in your anger at the swipe at Andy North, but to lash at the USGA as a body for an individual statement that does not reflect the view of the organization itself is misdirected, overly broad, and harmful to the best interests of the game of golf.

As to the second premise, golfers can certainly disagree as to whether U.S. Open courses are "fair". Jerry Tarde at *Golf Digest* and Rob Schultz apparently feel they are not; I feel strongly the USGA is correct in trying to identify the best golfers in all aspects of the game by the way Open courses are presented — incidentally, the same way the British Open and the PGA Championship are set up, which is why they are "majors". Still, this argument has nothing to do with elitism; as you point out, the qualifying for the Open is available to all, and in fact the USGA also runs the national Public Links championship and has a strong and intense commitment to public golf and its enhanced growth and development. I think if you reflect on it you may not really believe that USGA personnel are "hotsy-totsy goof balls" — look at the Wisconsin committee people as a cross section; and to know the USGA administrative staff is to realize that neither hotsy-totsy nor goof ball applies. These people are dedicated, knowledgeable golfers who love the game and are committed to try to widen its enjoyment to as broad and diverse an audience as possible, while at the same time respecting the integrity, fairness, and basic nature of the sport as it has developed over the centuries.

Sincerely yours,

Dave Cookson

Dave U. Cookson
Past President, Wisconsin State Golf Association
Sectional Affairs Committee, U.S. Golf Association

THANKS

July 22, 1988

Mr. Michael R. Semler
Education Director
Wisconsin GCSA
Bishops Woods
200 Bishops Way
Brookfield, WI 53005

Dear Michael:

Just a brief note to sincerely thank you and the Wisconsin Golf Course Superintendents Association for the most welcomed and thoughtful Membership Card recently received. I am certainly honored and wonder if you would be kind enough to pass this letter on to the Association's Secretary, President, and members. Thank you all so very much for this privilege.

My visit in May is a happy memory now, for I enjoyed myself thoroughly. I thought the Hawaiians had the corner on hospitality — but not so. Wisconsin is the new champion! And my new/old fountain pen is as beautiful and cherished as the night it was presented to me.

Thank you all so very much once more.

Sincerely,

Bill

Wm. H. Bengeyfield
National Director
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