

staff for a super day. We also appreciate the time Dr. French from the U of M could spend updating us on current tree concerns. His sincerity and frankness are always welcome.

And speaking of frankness, thanks to our HOLE NOTES contributors for last month, Roger Kisch, Jeff Markow and John Hopko. Very timely subject matter, fellas. Remember, if anyone has a thought they would like to share with the membership, get it on paper and shoot it down to Anita in the M.G.A. office or myself.

Plan to attend our monthly meeting on June 11 at Forest Hills in Forest Lake. Superintendent Lyle Olson will discuss his 55,000 ft. drainage tile project. What an undertaking. It should be interesting to hear Lyle's comments.

Keith Scott who is the M.G.C.S.A. representative for the first annual Green Expo Show is still looking for volunteers to help with this huge endeavor. The date for the Expo is Wednesday, June 13 and will be held at Anoka Vo-Tech, Rum River campus site. You all should have received a special mailing on the event. Get those in

and give Keith a call if you can help him with some of the work.

On a sad note, Superintendent Jerry Weyrens of Angushire Golf Course in St. Cloud died recently while in Arizona. As a gesture expressing our gratitude for Jerry's dedication to the profession, M.G.C.S.A. has sent flowers to his wife, Mary Ellen, and family. Our condolences go out to them.

Most of us have our full compliment of seasonal employees now. We can now begin putting on the fine touches which make upper midwest golf courses some of the best. Have a great month of June and see you on the 11th and 13th, hopefully.

## ALL ABOUT TREES

by JOHN BALL UNIVERSITY OF MINNESOTA  
TIM SPENCER TECHNICAL COLLEGE, WASECA

The most important golf course plants are grasses, no question; but the dominant plants on most courses are trees. By dominant, we are referring to their size. Trees stand above the horizon, define

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## MILORGANITE



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### MILORGANITE ANALYSIS

	Percent
Nitrogen	6.25
Phosphorus	2.38
Potassium	0.315
Sulfur	1.02
Calcium	0.69
Magnesium	0.32
Iron	6.40
Aluminum	1.20
Chromium	0.60
Lead	0.046
Manganese	0.018
Sodium	0.136
Zinc	0.144
	Parts Per Million
Cadmium	79.0
Cobalt	5.1
Copper	405.0
Mercury	4.8
Molybdenum	13.0

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fairways and add a challenge to golfers. Unfortunately tree care is not always a high priority to many superintendents. Trees can withstand a long time period of neglect and they have such a long life span few people will notice any change in the trees' health over several years. However, after many years of little or no care, a mature tree may die and it will take many decades before a new sapling can replace it in stature. It does not have to be this way. With attention to a few elements of tree care, many trees can live for over a century.

The first step in developing a tree care management program is to inventory all the trees on your course. For each tree note its species, size (diameter at 4½ feet above the ground) and condition. When evaluating tree condition you should be looking at the following items:

- 1) Compare twig extension for the past several years to the years previous to that time. The average growth rate should be approximately the same.
- 2) Check the root flare and trunk for

decay. Look under loose bark for fruiting bodies of fungi.

3) Look for premature fall color. Not all trees go through a fall color change (alders and black locust), but for many, premature coloration is an indication of a change in the tree's health.

4) Check the overall condition of the tree's crown. Record the extent of any dieback.

This inventory should be updated every late spring and early fall. The purpose of this monitoring is to alert you to any change in the tree's health as soon as possible. Once the change is noted measures can be implemented to return the tree to a healthy state.

For example, perhaps you noticed an oak tree beginning to turn color about 3 or 4 weeks before the rest. Since this is an indication that something is wrong, you decide to give the tree a closer examination. Once up close you notice the branches are covered with the golden oak scale. Now alerted to the problem, you can begin a spray program to reduce the pest population. Scales are not the only cause of premature fall color, poor drainage and borers may also cause this symptom. The point is that by regularly monitoring your trees you can observe and correct problems before it is too late.

In addition to monitoring you need to begin a regular program of tree care. The most important practices to maintain or improve the health of the tree are: pruning, fertilizing and mulching.

One of the most critical procedures in tree care is pruning. Proper pruning, especially if started when the tree is planted, will produce a tree with a strong, well spaced branch pattern. Unfortunately, it is easy to do more harm than good if you do not know when and how to prune. The best time to prune trees is late winter (February and March). Trees pruned at this time of year close their wounds quickly. They also are less likely to become infected by decay fungi. However, some trees, such as maples, will bleed if pruned at this time. The bleeding is not

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The bleeding is not harmful to the tree, but some people may consider it unsightly. Trees may also be pruned during August so you may want to prune your "bleeders" then. August is also an excellent time to prune oaks. Oaks pruned from midwinter to late spring are attractive to insects carrying oak wilt. When pruning never remove more than 20 percent of the branches in a single season. If too much wood is removed, the tree will compensate by producing a large number of soft, weak shoots called watersprouts. Cutting a branch back to a stub or tiny twig, a practice known as heading-back, will also result in a large number of watersprouts. To prevent watersprouts always prune by thinning out. This style of pruning calls for the removal of a branch at its point of origin or a lateral at least one-third the diameter of the branch being removed.

Regardless of the style of pruning, always retain the branch bark ridge. This is the collar at the base of the branch. You should never cut a branch flush to the trunk since flush cuts require much longer to close. Also avoid covering the cut with pruning

paint. Generally, a layer of pruning paint makes the cut more favorable to fungi than if nothing had been done.

A lot of misunderstanding surrounds the practice of fertilizing trees. Many people believe it is not necessary. But most trees will benefit from fertilizer; vigor will improve so the tree can withstand the competition from turf and environmental stresses such as soil compaction and air pollution.

The best time to fertilize trees is before shoot growth begins in the spring. This way the fertilizer will be available for the spring rapid growth period. The amount of fertilizer for a tree should be based not on trunk diameter, but on the extent of the root system. Since you cannot measure the root system directly, measure the amount of square feet beneath the crown of the tree.

Apply 4 lbs. actual N/1000 sq. ft. of crown area. This should be applied on the surface, not in holes punched in the soil around the tree. It can be applied at once or split applications several weeks apart if you are concerned about the effect on groundcover or turf. With the exception of some micronutrient problems, such as iron for oaks and manganese for maple, the only nutrient trees need supplied as a fertilizer is nitrogen. Trees are very conservative in their use of phosphorous and potassium. You do not need to add them unless soil samples indicate a deficiency.

Mulching is another tree care practice that is frequently overlooked. Mulching provides a tree with a more stable root environment; cooler and damper than the surrounding soil. This will reduce the problem with water stress, especially on shallow rooted species such as birch. A mulch will also reduce weed competition and prevent "lawnmower blight". To be most effective, extend a layer of mulch from the trunk to the dripline. While this is not practical for large, mature trees, it should be done for recently transplanted stock. The thickness of the mulch is very important; only a light layer, one to three inches thick, is necessary. Mulching to a depth greater than three inches may inhibit soil gas exchange and favor the establishment of stem canker fungi. The best material to use for a mulch is composed wood chips or other organic compounds. Avoid using plastic; it inhibits soil gas exchange. Consequently the root

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Table 2.

Snow Mold Results at International Falls  
 Data expressed as means of areas treated  
 Treatments 3 ft. wide by 40 ft. long.

Treatment and Rate	% Area Diseased
No Treatment Check	60
Calogran 6 lbs.	2
Calogran 10 lbs.	0
Fungicide II N	60
Fungicide II D	60
Turfcide 5 lbs.	40
Turfcide 7.5 lbs.	40
FFII N	10
FFII D	5
Calogran 10 lbs plus Fungicide II D	2
plus Turfcide 7.5 lbs.	0
plus Turfcide 7.5 lbs. + Fungicide II D	0
Fungicide II D + Turfcide 7.5 lbs.	30

appear to be dependent on fertilizer. A granular form of FFII without fertilizer has also performed better than Turfcide in previous plots. The lack of control with Fungicide II was not completely expected as it often reduced disease level by 50% but in either case it is unacceptable.

Fairway plots were very disappointing due to lack of disease and non uniform turf areas. Results at one location averaged near the untreated check when disease level and injury -- chemical burn were included in ranking. The benefit of disease control was negated by chemical discoloration due to PMA. Data are presented from the plot at the University of Minnesota location in Table three.

The results from Table 3 show disease control with all products but Thiram and Chipco 26019. Turf appearance over several weeks was best with Daconil, Chipco 26019 and MF701 which contains caloclor and nitrogen. No nitrogen response was observed during April due to nitrogen. Turf color was improved when thiram was added to PMA at 1 Fl. oz. but not when 2 Fl. oz. was applied. PCNB plots appeared to be slightly pale green but the color was judged to be okay on subsequent visits. Thiram may reduce chemical injury but it also reduces

disease control. Daconil 4F results are interesting and combinations will be tested next year on fairway plots. New plot areas are needed for more uniform turf stands and sites which may have higher disease pressure. Any volunteers?

### ALL ABOUT TREES--CONT.

system may become stunted because of the lack of oxygen. If you are concerned about weeds, apply a herbicide to control residual and invading weeds.

The practices discussed here are aimed at maintaining the tree in a healthy condition. By setting up a regular schedule of monitoring, pruning, fertilizing, and mulching, you can lessen the chance of treating a tree problem that can only be resolved by removal. Over the long run this attention to tree care will save you time and money.