Beat the Heat--
(Continued from Page 30)

after the primary stress (poor soil condition) has increased the plant's susceptibility to infection. Superintendents usually apply fungicides when decline symptoms appear, but until they remedy the primary problem, these symptoms may appear year after year.

* Increase air movement. Wind helps increase the humidity gradient between the leaf and atmosphere so that water more readily transpires through stomata and cools the plant. Therefore, a bentgrass green surrounded by trees or situated in a low area enclosed by berms is prone to heat stress due to a lack of air movement.

You can enhance air movement by removing vegetation. Unfortunately, convincing members to remove trees can be like pulling teeth. Thus, superintendents in the Transition Zone and the South routinely use fans to encourage air movement, improve transpiration and cool the turf. Fans are usually permanent fixtures, which you can inconspicuously locate in vegetation surrounding your green.

* Syringe. A plant suffering from heat stress often will close its stomata even when adequate soil moisture is available. When this happens, it is unable to cool itself. A light application of water to the leaf surface—syringing—will provide evaporative cooling if the atmospheric relative humidity is low enough for significant evaporation to occur. You should recognize the difference between syringing and irrigation, however. Syringing refers to wetting the leaf surface only. Bentgrass with a shallow root system could require midday watering to nurse it through the heat of the day. This is merely frequent irrigation, however, not syringing.

Favoring Bentgrass With Good Cultural Practices

You also should give special attention to cultural practices on bentgrass greens to ensure greater survivability during summer heat. Cultural practices you perform in the spring and fall, when bentgrass is most efficient at photosynthesis, will dictate how that turf performs in the summer.

You should encourage bentgrass to store food before high summer temperatures arrive. In a sense, summer is bentgrass' resting period. Bentgrass plants store any excess food they produce during cool weather for later use. Maximizing spring food storage reduces the likelihood of mid-summer starvation. To accomplish this, mow at the highest acceptable height, maintain a balanced fertility program, irrigate to encourage plant-stress resistance and select heat-tolerant bentgrass cultivars.

* Mowing. Ultra-low mowing probably has lead to more problems with summer bentgrass decline than any other cultural factor over the past 10 years. Maximizing leaf area encourages a positive energy balance in the plant. With
more leaf area present, the plant's ability to produce food will be greater. Our research shows that even a slight increase in mowing height, say from 4/32 inch to 5/32 inch, can make a large difference in summer turf quality (see bottom graph, page G 13). The additional leaf area seems to provide the food-processing machinery necessary to maintain a positive carbohydrate balance and avoid summer starvation.

Although grass plants may tolerate a lower mowing height during cooler temperatures in spring and fall, it only makes sense to mow higher during these periods to maximize carbohydrate storage. As we just discussed, bentgrass plants tend to expend surplus carbohydrates during summer months.

Some advisors suggest that you can reduce bentgrass mowing heights during summer months because the plant is producing little food anyway and it will produce no new roots. However, our results indicate that some photosynthesis and food production occurs even during periods of high temperatures.

Furthermore, carbohydrates are necessary not just for growth but also for maintenance of tissues, including roots. Mowing at the highest acceptable height in midsummer encourages survival of existing roots.

* **Fertilizing.** The bentgrass plant that has all essential nutrients available to it in adequate quantities is better prepared for heat stress than one that is malnourished. Nitrogen is the staple in the program, so you should apply it at levels that maintain adequate density and growth. Low-annual-nitrogen strategies for the sake of green speed are not conducive to good plant health and summer-heat tolerance. Likewise, excessively high nitrogen levels produce a succulent plant that is less resistant to high temperatures. You should assess other soil-chemical factors such as pH, phosphorus and potassium with regular soil tests. Potassium, in particular, may help increase heat tolerance. Superintendents commonly apply potassium at levels equivalent to nitrogen on sand-based greens.

* **Irrigating.** Superintendents have a tendency to overwater greens. Amount and frequency of irrigation should depend on weather conditions, soil type and rooting depth. You should wet soil to the depth of the root system with each irrigation. Then allow it to dry nearly to the point where drought symptoms first appear. Of course, if roots have deteriorated to a depth of 1 inch in mid-summer, the turf may need two or more irrigations per day according to these guidelines. Thus, if you water your greens on a set schedule, applying the same amount of water every day without considering environmental conditions or rooting depth, you should re-evaluate your program.

* **Selecting cultivars.** If you are re-establishing greens, consider the new bentgrass cultivars that demonstrate good heat tolerance. Cultivars that have performed well in our heat-tolerance tests (in Manhattan, Kan.) include Crenshaw, L-93, Penn A-4 and SR-1020. Consult National Turfgrass Evaluation Program trials for results from areas near you, and pay special attention to performance during the summer months. Just remember that selecting a heat-tolerant cultivar will not solve all your problems with bentgrass decline. You also must consider environmental conditions, soil type and cultural practices.

To maintain bentgrass greens through high summer temperatures, you must understand the causes of the heat stress and take corrective action. Focus on modifying the plant's environment and on year-round cultural practices to help your bentgrass will remain stress-free.

**Practices That Encourage Heat Tolerance In Bentgrass**

1. Install fans to help cool greens with restricted air movement.
2. Syringe greens to provide evaporative cooling to plants under heat stress.
3. Mow at the highest acceptable height to increase grass plants' ability to produce food.
4. Irrigate to match water needs—not by a rigid schedule—to reduce stresses on the grass plants.
5. Fertilize adequately to increase plant health and vigor.
6. Select heat-tolerant bentgrass cultivars.
7. Construct greens with proper techniques and correct any underlying soil problems on existing greens.
Treatments Save Crabapple Trees

By LAURA SMIES
Autumn Tree Care

Cool, wet weather, as we experienced last spring, can be very destructive to flowering crabapple trees -- especially larger, susceptible varieties. The rainy weather provided a favorable environment for the "apple scab leaf fungus" that grows in nearly all landscapes with flowering crab trees. A prudent course of action is to monitor precipitation and stay alert to the possibility of apple scab.

Once infected with the fungus, flowering crabs require timely treatments to prevent early defoliation and loss. Apple scab begins at bud break and requires three consecutive fungicide applications. If the first treatment is missed, applications should be immediately scheduled for the following season.

Proper diagnosis requires an onsite examination of the flower cluster leaves, since they are the first to be exposed as the buds open. By mid-summer, blotchy brown areas on the leaves become evident, making trees look wilted and sick. Early defoliation is the most common sign.

Defoliation weakens the tree, and the effects can be life-threatening if treatment is not administered and a tree is infected year after year. Mid-summer leaf loss compromises the tree's ability to produce food and store it over the winter. The problem becomes even more complicated when infected trees expend a second flush of leaves, further depleting their energy.

Horticulture to the Rescue

Proactively planting apple scab-resistant trees is one solution. A list of genetically tolerant and resistant crabapple trees is available through reputable nurseries, tree care companies, the Chicago Botanical Gardens and the Morton Arboretum. These lists specify crabapple varieties that are not susceptible to Venturia inaequalis, the fungus that causes apple scab. Thus, they will not require the timely fungicide treatments as part of their plant healthcare.

Solutions for infected trees are available through ISA-member tree care companies. Fungicidal treatments, applied by licensed professionals, are highly effective. Furthermore, pruning and fertilization are critical measures for building a tree's natural defenses.

Using a licensed applicator ensures safety to the family, community and environment. It also assures quality, because the applications should be finely misted over the trees, which is best accomplished by a professional.

Never Too Late

Heavy apple scab infections, season after season, can result in the loss of a tree. If you have spotted early defoliation in previous years, you should sign up for treatment immediately. Even though a specimen may look healthy now, the tree is almost surely infected. Starting with a fertilization program this year can minimize damage and build necessary food reserves for next winter.

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(Editor's Note: This article was reprinted with permission from On Course magazine, February 2000 issue. Laura Smies is an arborist for Autumn Tree Care.)
Hiring For The Season

With the golf season upon us, also comes the need for staff. Low unemployment rates and a generally tight labor market increase the demand for child labor, therefore your knowledge of the rules and regulations is more and more important.

The Minnesota Department of Labor and Industry has several brochures and articles pertaining to the hiring guidelines, records, parental leave, overtime, minimum wage and any other hiring topic you are looking for. If you have questions or concerns regarding these issues, please call the Minnesota Department of Labor and Industry at (651) 297-3313 or (800) DIAL-DLI, or their web site features a lot of information at www.doli.state.mn.us —Mike Brual, Human Resources Committee.

Turf Research Benefit Week Set for June 5-9

Sixteen golf clubs will participate in this year’s MGCSA Turf Research Benefit Week from June 5-9. Entry forms have been mailed. Participants are encouraged to put together foursomes at $80 per person ($320 per group) and mail to the MGCSA office promptly as course allocation is of a first-come, first-serve basis.

Maybe you know some members at your course who’d like the opportunity to play one of the metro areas great private clubs. Please call the office if you need entry forms.

Courses participating in this year’s event are: Dellwood CC, Golden Valley CC, Interlachen CC, Izaty’s G&YC, Mendakota CC, Midland Hills CC, Minnesota Valley CC, North Oaks GC, Rolling Green CC, Southview CC, Stillwater CC, The Minikahda Club, Town & Country Club, Wayzata CC, White Bear Yacht Club and Woodhill CC.

MGCSA 2000-01 Dues Statement Will Be Mailed This Month

It’s that time of year again. Your 2000-2001 MGCSA Dues Statement will be mailed this month. Please fill out carefully as many area codes have changed recently. The 2000-2001 Membership Roster information is taken from this form and will be printed in August.

Greentrac’s Dave Oberlee To Speak At May 12 Meeting At Stonebrook Golf Club

Dave Oberlee, Greentrac, will be the featured speaker at this month’s meeting on May 12 at Stonebrook Golf Club in Annandale. Dave will talk about the Internet and its vast possibilities. Host superintendent Eric Peters is sure to have Stonebrook in fine shape for the golf mixer.

Scholarship Scramble Set for June 21 At Rich Spring GC

The MGCSA Scholarship Scramble is a month earlier this year. The Scramble takes place June 21 at Rich Spring Golf Course in Cold Spring. Entry forms will be mailed early May. Help support the Scholarship program and sign up early.
North Star Turf Joins TTCSP Two Million Dollar Club

North Star Turf, Inc., St. Paul, earned a Textron Turf Care And Specialty Products (TTCSP) Two Million Dollar Club Award for 1999. The award is given to dealers who help finance more than $2 million in sales through TTCSP Leasing & Financing. The presentation was made at a dealer meeting during the recent GCSAA Conference and Show, held in New Orleans. A special guest at the ceremony was golf legend Gary Player, who participated in the presentation.

North Star Turf president Dan Miller (center right) and vice president Kirby Burmeister (center left) accepted the award from Player (center), Textron Turf Care and Specialty Products president Phil Trailes (right) and Textron Golf, Turf Care and Specialty Products Group CEO Carl Burtner (left).

New Name, New Partnership, Same Business

Garrett Gill and Paul Miller are pleased to announce their partnership in Gill Miller, Inc., Golf Course Architects as of March, 2000. The partnership recognizes the contributions of Paul Miller to the golf course design firm formerly known as Williams, Gill & Associates, Inc. of River Falls, Wis. Miller has collaborated with Gill on golf course designs across the United States since August of 1990. The company has worked in 33 states and has completed over 200 golf course projects. The best known and critically acclaimed of their work, Willinger’s Golf Club in Northfield, Minn., demonstrates the quality of design in response to numerous environmental obstacles.

Garrett Gill, a member of the American Society of Golf Course Architects since 1981, followed his father, David Gill, in the profession and established his own design practice in 1985. Along with his ASGCSA membership, Gill is a registered landscape architect in Wisconsin and Texas and a member of the American Society of Landscape Architects. He earned a Bachelor's Degree in Landscape Architecture from the University of Wisconsin-Madison and a Masters of Landscape Architecture Degree from Texas A & M University. Garrett and his wife, Rita Kozak, make their home outside of River Falls.

Paul Miller is a registered architect in the State of Minnesota. He holds a Bachelor's Degree in Landscape Architecture from the University of Minnesota. His background includes extensive turf management experience at Crow Valley Golf Club in Bettendorf, Iowa, and Town and Country Club in St. Paul. Paul resides in Woodbury, Minn.

Minnesota golf course projects by Gill Miller, Inc. include Crystal Lake Golf Club in Lakeville, Inver Wood and Arbor Pointe in Inver Grove Heights, Glen Lake Golf and Practice Center in Minnetonka, Majestic Oaks South in Ham Lake, The Bridges in Mounds View, Cedar Creek in Albertville, Pebble Creek Country Club in Becker, Eagle Ridge in Coleraine, Lakeview National in Two Harbors and the Legacy in Faribault. Their newest course, White Eagle Golf Club, is slated to open this summer. White Eagle is an 18-hole championship course and residential development located in St. Joseph Township near Hudson.

Miltona Acquires Soderholm Quality Products

Miltona Turf Products has announced that it now offers a new line of professional quality hand tools through its acquisition of Soderholm Quality Products. Golf course superintendents and other turf care specialists now have a direct source for pruning saws, bow saws, hack saws, chain saw files and numerous other files along with plumbite, gradient and laser levels. As with all Miltona products, in-stock items can be shipped within 24 hours. A complete product catalog is available on-line at www.miltona.com.

Miscellaneous

MGCSA member Robert Reihe has taken a new position with Evergreen Sprinkler, Inc., a well-known golf course irrigation specialist.
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Misc. 8 h.p. Briggs engine repair parts
Misc. Kohler engine repair parts
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2 New Picker Drums
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Miscellaneous
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(semi-pneumatic wheels)
Toro Triplex Greensmower parts
National Mower parts
Leco 500 Bed Bars
Misc. Toro Sand Pro parts
New Bunton (25" rear mower)
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New Toro Series IV
Metal Greensmower Basket
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SPRING SPRUNG, THEN FLOPPED

Spring had sprung for many of us very early this year, then it seemed to hide for many weeks. But hence, it has come upon all of us. I for one feel for those who chose to energize their irrigation systems while the temperatures plummet below freezing. I hope you wrapped things that could freeze!! Remember where we are... I also was looking forward to an early spring and opened earlier than I ever had in the nine years I've been here, March 24th, but we didn't mow a thing until April 18th. Call it whatever you want, but the feeling just wasn't there. And if you can't feel when things are right, and it just doesn't seem right, then don't do it. We all anticipated an early spring, the writing was on the wall, but the law of averages was also there!! Sure I caught a little flack about not mowing or letting carts out yet, but everyone was very understandable. It was still early. And now, that was the past and everyone is happy. I guess what I'm getting at is this. We all opened early, some mowed everything. I usually do before we open, but the feeling of, "is it spring?" just wasn't there. Maybe I got lucky this year, but I hate to take natural cover off of my turf. If I had mowed, maybe I would have lost some, but one never knows..... I'm not a gambling man... Yet everyone is still happy and understood!!

ENERGIZE IT!!

I am not talking about the energizer bunny either!!! But here we are, Mid May and we have started our irrigation systems. The start of the golf season has been declared. I have always felt, once the irrigation system has been fired up, we are baby-sitting our courses. Yeah, we had a few breaks, or had some pump problems, but now is the time..... That we have to have someone make sure nothing blew up last night. The first couple weeks are crucial, and even a weekend or two that you aren't running full staffed you just shut the pumps down, why worry... But who doesn't think about it? Who doesn't wait for that phone call at 8:30 in the evening that there's water spewing up on the 3rd fairway. Or you go in, in the morning hoping the system hasn't shut down on low pressure. I guess a lot of it has to deal with preventive maintenance, knowing what you're doing, working with professionals, and a little luck. But the strong buck is having someone you can call in case you have a problem and don't know the answer!! Don't be afraid to contact the people who know what's going on if you're not sure. Remember, fools are those who thought they knew something, but really had no clue, but was afraid to ask anybody because they would admit their inferiority. But professionals will always ask if they don't know or are just not sure. Be a professional and just pick the phone and ask!!!

FISHIN' 

What would my articles be without a spif about fishing?? Wintertime is time to fish, and also time to relax; then there is fishing opener. Many of us give up "opener " for work. I for one can't. I have the world's biggest "opener" party. Ha ha. But we have fun and forget about everything. NOT!! I may have the weekend off, but I still think about work, and find a reason to go in and see how things are going. But as I always say, friends keep us in check. We hear their work problems, and for many of us think "that's nothing." "You should spend a day in my shoes." But it does matter to us in the scope of things. We all put things in perspective, and many of us work off of the things people tell us, and in some ways, it helps us understand some of the people we have working with us. I hope that made some sense... Anyway, if you had a chance to sit in a boat, soak up a few rays, and possibly catch a few......fish I mean, then good for you!!! With that I'll close.... I hope your spirits are up, your turf is healthy and you have a smile on your face!!! See ya next month,

- Steve Shumansky
Editor
Workman 2100 and 1100

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