



NORTHERN MICHIGAN TURF MANAGERS ASSOCIATION

3733 APOLLO DRIVE • TRAVERSE CITY, MICHIGAN 49684 • 616-943-8343

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Executive Secretary
Thomas Reed
3733 Apollo Dr.
Traverse City, MI. 49684
Phone 616-943-8343



Volume 16 # 1

Editor
C. E. "Tuck" Tate
P.O. Drawer 472
Frankfort, MI. 49635
616/352-4398

WEDNESDAY, AUGUST 26th, 1987, LUNCHEON
LAKEWOOD SHORES GOLF AND COUNTRY CLUB, INCORPORATED
7751 Cedar Lake Road, P. O. Box 457, Oscoda, MI. 48750
Phone (517) 739-2073

This will be a luncheon meeting so that everyone can get there, enjoy the educational session, play golf and get home at a reasonable time. It is a very fine golf course to play and the club has an excellent reputation for serving fine food. Rick York is the superintendent (739-2311) and Doug Brehm is the golf professional (739-2075). Starting times are not necessary because golf will begin after the luncheon meeting.

11:00 A.M. - Cocktails
12:00 Noon - Luncheon
1:00 P.M. - Speaker Walter Wilkie

Mr. Walter Wilkie, President of Wilkie Turf in Pontiac is our speaker. Wilkie Turf is the Distributor for Toro for S.E. Michigan. Prior to taking over this distributorship Walter owned March Irrigation in Muskegon. As such, Mr. Wilkie installed irrigation systems at many of the top golf courses across the U. S. The topic chosen for this meeting will appeal to all members of N.M.T.M.A.; as Walter discusses the "ONE MINUTE MANAGER." It is a subject that you cannot afford to miss.

Lakewood Shores directions. M-32, M-72 and M-55 all run East and West. Get to U. S. 23 the best way possible for you. The Clubhouse is located 4 miles north of Oscoda on Cedar Lake Road. If traveling north on U.S. 23 into Oscoda, turn right at Burger King, go $\frac{1}{2}$ mile to the next light which is Cedar Lake Road and turn right. The Clubhouse is $\frac{3}{4}$ mile on the left. (Bear right at the fork in the road about $1\frac{1}{2}$ miles up) If traveling south on U.S. 23 into Oscoda, turn right at the Burger King and follow the same directions. Any further questions, please use the phone number above or ask.

COST: Luncheon: \$6.00, Carts, \$15.00 for 2 passengers, Total package: \$13.50 each.

On your calendar, mark down the next date of September 22nd, as the Michigan Musser Open Benefit Tournament at Grand Traverse Resort Village "BEAR COURSE". Further details will be forthcoming in our next letter.

To be a success one must have enough judgment to be right more often than he is wrong. And have enough capital, so he can afford to stay in business long enough to profit from his mistakes and to capitalize on them.

The Kleinknecht Encyclopedia

BEHIND THE GREENS
BY
JON SCOTT, CGCS, PRESIDENT

While many thought it would never end, I think the season is starting to wind down for most of us in northern Michigan. Yes, there's still aerifying to work in around the club championships, and lots of fertilizer to be put out, not to mention all the fall projects to get done, and the guessing game on budgeting to play, but at least the nights will be cooler, the play slower, the grass greener, and, hopefully, the hours will be shorter. I know it is said every year, but without a doubt, this has been my all time prize winner for tough seasons. From what I hear from some of you, I won't get any arguments. Tell me, Frank Hemminger, don't they get easier as the experience gets greater?

Once again, apologies do not suffice to explain the delay in getting our membership book mailed to the members. As this is being written, the book is heading your way. The only positive note is that we have had a significant increase in new members this season and were able to include most of them in the directory. The problem with getting the book out in a timely fashion will be addressed at our next board meeting, and a format will be established at that time for next year's publication.

The Michigan State MTF Turfgrass Field Day will be held Thursday, September 3rd. We would like to organize a transportation pool for our members to attend. If you haven't attended before or in recent years, you are missing one of the best opportunities to review current research results in time for budgeting and fall ordering. It is also a great social gathering of all state turf managers, and a chance to get some unbelievable bargains on supplies and equipment. You might come away from the auction with a real steal! If you are interested in either driving or riding down to MSU on the 3rd and back that evening, call myself or Tom Reed, and we will make the arrangements.


Also, on September 14, the first annual Michigan Golf Course Superintendents Golf Tournament will be held at Forest Acres Golf Course in East Lansing. This will be a fully flighted, handicap format with many prizes and dinner. Details will be forthcoming, but all of you who like to have fun as well as compete should mark this on your calendar as well as the Michigan Musser on September 22 at the Grand Traverse Resort. Fall is a great time to get away and enjoy some of the benefits of this great profession.

We are in the process of looking for candidates for this fall's board elections. If you are interested in helping your association by working on the board through the next year, call myself, Tom Reed, or any board member to let us know. The nomination committee will be meeting soon to gather a list of candidates.

Don't forget your trees and shrubs this fall with your fertilizer applications. All plants have had a severe test this summer with the heat and drought, and will need a little help to get through the winter and spring. Wait until the rains start and the soil temperature cools down before applying to avoid further stressing the plant, and follow guidelines in your textbooks or call your extension agent for proper methods. Don't be surprised, however, if you lose some material this winter due to the rough summer. The time to prepare the members and/or owners is now so they know what to expect.

Our next meeting is at Lakewood Shores in Oscoda where Rick York is the new superintendent. Rick is from the Detroit area and is eager to host the NMTMA and meet our group. I have met Rick previously, and I know he will be a welcome addition to our association. Let's all plan on being there August 26 to show him our appreciation and make a new friend.

See you then.

A technical service bulletin from  AQUATROLS CORPORATION OF AMERICA, INC.

AQUA-GRO COMPATIBILITY

AQUA-GRO can be applied in combinations with many materials including fertilizers, insecticides and fungicides, however the proper sequence of mixing is very important.

Fertilizers: When preparing stock solutions of AQUA-GRO and water soluble fertilizers (particularly Peters) add the AQUA-GRO to the stock solution first. Many chemical compounds, particularly inorganic fertilizers, evolve or absorb heat when placed into solution. This phenomena is known as the "heat of solution", and can affect compatibility with products such as AQUA-GRO.

Iron Chelate: Iron chelate can also be applied in combination with AQUA-GRO. We recommend that only half the normal rate of Iron be applied. (In combination with AQUA-GRO penetration is greatly enhanced).

The following fungicides and insecticides are known to be compatible with AQUA-GRO:

Banol	Fore
Bayleton	Fungo
Captan	Koban
Daconil	Oftanol
Duosan	Rubigan
Dursban	Subdue
Dyfonate	Tersan
Dyrene	

NOTE: AQUA-GRO is NOT recommended in combination with Actidione.

If you would like to mix AQUA-GRO with other fertilizers or pesticides try it on a small scale first (usually 1 quart is enough) before mixing up a batch. As AQUA-GRO can increase penetration of both soil and foliar applied pesticides try a few plants first to insure there is no phytotoxicity (this will usually show up in 24-48 hours if there is a problem).



Extra practice tees at the Jack Nicklaus Academy of Golf allow instructors to work with groups of students on chipping and pitching.



The Evolution Of The Super-Range

(Reprinted with permission from SportsTURF magazine, P.O.Box 156, Encino, Ca. 91426)

sportsTURF

The driving range has been the homely workhorse of golf—that is until a team of designers, superintendents and golf professionals decided it could be a show horse instead. Let's face it—the range is the battle zone of golfdom. Even under controlled use and regular repair, the divots from irons and woods make the driving range tee at most courses seem like a blemish rather than the potential moneymaker it is. But this might be changing.

It has taken talent, teamwork and technology to design and maintain golf's impressive new teaching tool, the "super range." Used as a centerpiece of a golf school, the "super range" draws dedicated duffers from near and far. It also can provide a beautiful "front yard" showcase for an entire course, despite the daily punishment it must take from students and others who use it for practice. The aesthetic and the monetary rewards associated with this attractive innovation can be equally as superior.

A few superintendents are beginning to appreciate the challenge of improving the driving range. Bob Farren at Pinehurst Country Club in Pinehurst, NC, Julian Hopkins at the Hills of Lakeway in Austin, TX, Tom Alex at Grand Cypress Golf Course in Orlando, FL, and Tim Gavelek at Alta Mesa Country Club in Mesa, AZ, have new respect for their driving ranges. The reason is they aren't just driving ranges, they are carefully-designed practice and teaching areas that are improving the relationship between the superintendent and the golf professional and generating important revenue to their courses.

Without taking up much more space than a large driving range, roughly ten acres, a superintendent working with the teaching pro at his course can provide the aspiring golfer with a place to use every club in his bag and practice every possible shot he may face on the course. This is done by adding features such as target greens with multiple pin placements, practice greens, practice bunkers and multiple tees. It's more work for the superintendent, but the work is more rewarding.

The result is a school area where golf professionals can teach students skills in a situation closely resembling what they will experience on the course. Computer-assisted video equipment helps the instructors analyze the student's swing and body motion. By refining the golfer's swing and having him practice a wide variety of shots over and over again in a situation much like the actual course, the instructor can do a better job. One instructor can effectively train five to seven students at a time.

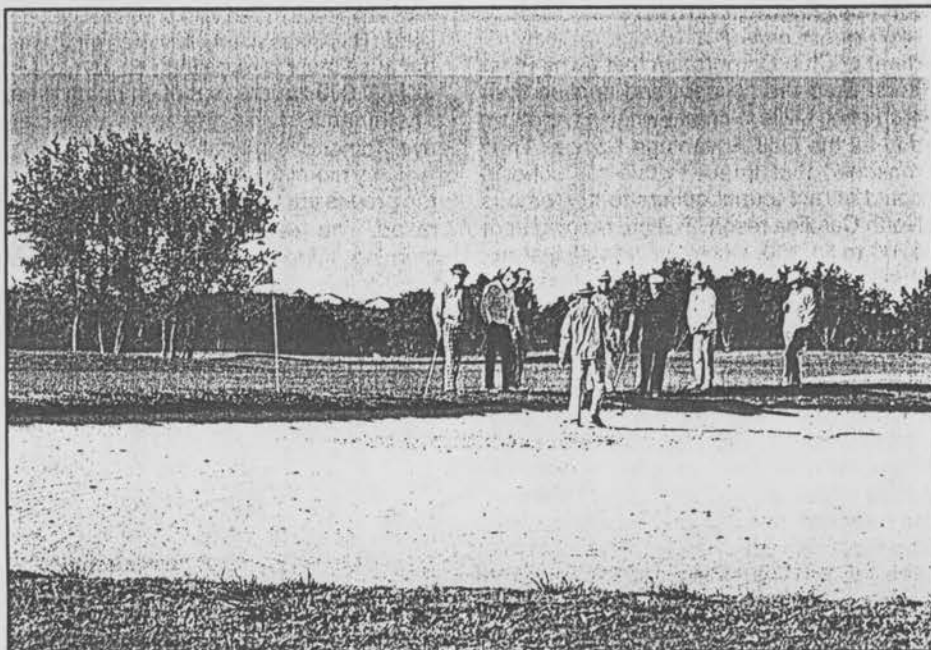
Golf lessons have always been available from teaching pros at all types of courses, resort courses being no exception. The pro generally teaches the basics of driving, chipping, pitching and putting to students while trying not to disturb golfers on the course. This is not easy when there is a single practice green, an occasional driving range and a rare practice bunker—all spread out around the course. As a result, many golf instructors have inadequate facilities to provide their students with confidence in their game before they go out onto the course.

While there have been cases of superintendents working with pros to make golf training facilities more organized, it is the evolution of the range area at Pinehurst over the past seven years and the improvement of the Pinehurst concept by Jack Nicklaus in 1981 at the Hills of Lakeway that have resulted in the "super range."

Pinehurst began offering junior golf programs in 1965 on its driving range called "Maniac Hill" by its designer, Donald Ross. The range was located next to the second of four courses designed by Ross for Pinehurst in the early 1900s and adjacent to sod nursery. Three more courses have since been built at the resort for a total of seven.

In 1979, Jack Lumpkin, director of instruction for Pinehurst, wanted to make adult training programs available. The manage-

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An instructor teaches students sand play in the large practice bunkers at the Lakeway Academy of Golf.



Large tees at both ends of the driving range at Grand Cypress enable superintendent Tom Alex to let portions of the tee recover while other portions are being used.

Super-Range

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ment of Club Corporation that owns Pinehurst liked the concept and applied their marketing skills to create what is known today as the Golf Advantage School. They reasoned that three- to five-day schools could attract tourist golfers to the famous North Carolina resort. Tuition, ranging from \$700 to \$1,300, would include all instruction, greens fees to any of the resort's courses, lodging and an assortment of other amenities.

The decision was made to convert the range, practice green and sod nursery into a training center for the school. By removing a few trees, an eight-acre square area was available for a classroom building, the range and other practice features. The tee on one end of the 350-yard-long range and the nearby practice green remained available for golfers preparing to play any of the resort's courses. Bermudagrass target greens were added to the range. A second large tee area was constructed on the opposite end for the school. Another large bentgrass putting green was built next to the existing practice green. In the remaining space two chipping greens were installed and surrounded by two practice bunkers. Each chipping green has three different pin placements. Finally, the area around the chipping greens and bunkers was graded to provide an assortment of uphill and downhill lies.

Today the school area is used for more than 50 classes every year says Ken Crow, director of the Advantage Schools. Each of five instructors works with no more than six students at a time. While one instructor teaches his group pitching and sand play, other instructors work with their students on chipping, putting, driving and developing an effective swing. Each group has three intensive two-hour sessions each day. When the last class ends at 3 p.m., the instructors take four students out onto the Number Two course to help them apply what they have learned that day.

"You can imagine how much repair work there is to complete before the following morning," says Crow. The task falls into the capable hands of superintendent Bob Farren, Crow's brother-in-law. Farren is responsible for the school area, general landscaping around the clubhouse and the Number Two course. Farren and three other superintendents report to Brad Kocher, chief superintendent for all of Pinehurst's seven courses.

"Teamwork is critical to keeping classes on time and the school area in top condition. When the students arrive for class early each morning, everything has to be ready. That means Bob has to schedule most maintenance for the evening and early morning. Once classes start, distractions are kept to a minimum."

"We do 90 percent of the maintenance in the evening," explains Farren. "First we sweep up the divots and broken tees with a Parker Sweeper. The divot holes are filled

with sandy soil mixed with perennial ryegrass seed. This takes nearly 40 hours each week because there is more than an acre of tees and 20,000 square feet of chipping area." The range and chipping areas are mowed every other day after all divots are repaired.

Every morning before the students arrive, the greens are mowed and the bunkers are raked. The tees are mowed every other morning. "First impressions are very important for the student or the golfer using the practice area," says Crow. "A beat-up driving range is a poor introduction to a golf course. The entire area is overseeded in late summer just as the courses are."



The practice greens at Lakeway are walk-mowed each morning before classes begin.

"Everything we do for the golf courses we do for the golf school," says Farren. "The irrigation system was upgraded and expanded when the changes were made in 1980. We aerify the course, like we aerify the fairways, four times each year. In some ways the school receives more care than the course. It needs more fertilizer, topdressing and overseeding. The divot work is almost a full-time job for one person."

Crow is in the process of breaking out the cost of maintaining the school area from the golf course. Club Corporation is evaluating the Advantage School program for other resort courses it owns. "We are seriously looking to improve the range areas of five or more courses at the present time," says Crow. "Bob is providing us with the maintenance cost information so we can make a practical decision about the profitability of golf schools at other locations. So far, our figures show the revenue produced by the school is easily worth the cost of additional maintenance for the range area."

A former Advantage School instructor, Mike Labeau, took the "super-range" concept to Arizona three years ago when he accepted the golf pro position at Alta Mesa Country Club, in Mesa, AZ. The course is private except for the Pinehurst-like range area. It is superintendent Tim Gavelek's second experience with an improved range. "The range at Ventana Canyon in Tucson, where I used to work, has tees on both ends

of the range," Gavelek said. "When I came to Alta Mesa, the range really impressed me. It shows a range can be more valuable to a course than previously thought."

LaBeau can work with students who are not members of the club without leaving the course. The range generates a profit in addition to a reputation as the best practice range in the Phoenix area. Gavelek assigns one member of his crew just to the range. In the winter, Gavelek overseeds the target greens but not the range. "Golfers pay more attention to accuracy and worry less about distance," says Gavelek. "You see fewer golfers lifting up big hunks of turf trying to hit the ball 250 yards."

Both teaching professionals and superintendents seem to agree that Jack Nicklaus took the "super-range" concept and perfected it at the Hills of Lakeway in 1981 and Grand Cypress in 1983. In both cases, the developers hired Nicklaus to design a golf course and a golf academy. He had been impressed by the school at Pinehurst but thought it lacked one primary feature, practice holes. So he included three full-length practice holes to the range configuration, one par 3, one par 4 and a par 5. Each of the holes has five different tees, three different pin placements on each green, fairway bunkers, uneven lie mounds, and rough of varying heights of cut. Nicklaus gave instructors everything they could possibly want, including computerized videotape equipment that analyzes a golfer's swing.

When Nicklaus designed his version of the "super range," he consulted with Ed Etchells, his supervisor of golf course maintenance at Golf Turf, the maintenance division of Golden Bear. He knew the beating the academy turf would take. He also knew there were two ways to control turf wear. The first was to design the academies with enough tee area to distribute the traffic. The other was to have Etchells and his agronomist, Steve Batten, put together a recommended maintenance program that would accelerate the recovery of the turf.

The superintendents at the academies have followed these recommendations since the courses and the academies opened. Julian Hopkins at the Hills of Lakeway has the larger of the two academy areas, 15 acres. Despite the poor Texas economy, Clayton Cole, director of the Academy of Golf, has not cut back the maintenance budget. In addition to revenue from 42 school sessions each year, the academy holds clinics every year for the Southern Texas PGA and corporations. There are three types of personal memberships it sells to individual golfers each year ranging in price from \$125 to \$745. Members can polish their skills at the academy anytime classes are not being held. The adjacent 18-hole Hills is private.

The 7,500 square-foot practice putting green and the three practice hole greens are bentgrass, very unusual for golf greens in Texas. Hopkins cuts the tournament-fast greens at 1/8 inch with a walking greens

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Super-Range

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mower. The two pitching greens are Tifgreen bermudagrass mowed at 5/32 inch. The fairways, range, tees, six target greens and the roughs are Tifway bermudagrass. All bermudagrass is overseeded with perennial ryegrass in the fall. "There are five different heights of cut for the turf at the academy," states Hopkins. "We even mow the driving range at 7/16 inch, the recommended height of fairways for PGA tournaments."

Hopkins is extremely cautious with his fertilizer program. Most nitrogen is in a slow release form, either sulfur-coated urea or methylene urea from Scotts. Potassium levels are checked regularly to make sure roots have the nutrients they need to withstand traffic stress. The tees are given an extra pound of nitrogen each month in the form of ammonium sulfate. Hopkins uses sulfur coated urea and ammonium sulfate to counteract alkaline soil conditions.

Located 150 miles from the Gulf of Mexico, Austin is characteristically hot and humid from May through October. Hopkins is on constant watch for brown patch and *Pythium* during this period and applies fungicides weekly. He uses primarily wettable powders, alternating fungicides frequently to avoid problems with resistance. In the late fall and spring, his attention shifts over to leaf spot and dollar spot.

To assure turf hardness, he regularly applies potassium in his fertilizer program and puts down an ounce of iron in the form of ferrous sulfate every two weeks. All chemicals are applied to the greens with a walk-behind spray boom. No vehicles or riding greensmowers are allowed on the putting greens.

The irrigation system at the academy provides an unusual amount of control over moisture. Each green is a single station on the hydraulic Toro system. Three central controllers allow a separate station for every two irrigation heads on the fairways and driving range. Hopkins irrigates the bermudagrass from sundown to 5 a.m. and the bentgrass greens between then and sunup.

Besides aerating the tees and greens three times each year, Hopkin's crew topdresses the tees with sand every week and sometimes twice a week. During the winter, ryegrass seed is mixed with the sand. Most of this work is done on Mondays when the academy is closed. "That one day is very important to the maintenance program," says Hopkins. "It gives us a chance to catch up on repair work and gives the turf a well-deserved day of rest. It's also the day we apply all pesticides."

"The academy is not a second sister to the golf course when it comes to maintenance," says Hopkins. "When I budget for the course, I also budget for the academy." The academy shares equipment with the golf course. The only special maintenance equipment needed for the academy are sweepers to pick up the divots and a ball retriever for the range.

When the academy was new, three people

of the 18-member maintenance crew for the Hills of Lakeway spent the majority of their time working at the academy. After six years of experience keeping the academy in top shape, Hopkins now assigns only one crewmember to the academy on a full-time basis. "If he needs help, I can call one or two guys over from the golf course for a few hours," states Hopkins. "Part of the trick is scheduling jobs like aeration, topdressing and applying pesticide so one crew can do both the course and the academy on the same day."



Lakeway superintendent Julian Hopkins keeps a close watch on nutrient levels on the bentgrass greens.

Nicklaus changed very little when he designed the Academy of Golf at Grand Cypress Resort in Orlando. It has all the features of Lakeway plus a lake on the par five practice hole. The greens are Tifdwarf bermudagrass instead of the bentgrass at Lakeway.

Superintendent Tom Alex is responsible for the academy and the 27-hole Grand Cypress Golf Course. Alex is used to challenges because he came to Grand Cypress from the Tournament Players' Club in Jacksonville, FL, the notorious course designed by Pete Dye. The experience at TPC has been valuable to Alex since Nicklaus designed Grand Cypress in the Scottish tradition with steep bunkers and heavily-mounded fairways.

It's not the fact that Alex has a 27-hole, maintenance-intensive course to maintain on top of the academy that causes him the most concern, it is the limited amount of time he has to run equipment. "We're trying not to put lights on some of our equipment, but we may end up doing that," Alex confesses. During three- and five-day schools, his crew must complete all major work between four in the afternoon and eight the next morning.

From September to May, schools are virtually back-to-back, with only an occasional

one-day break in between. "The hardest time is during transition when we oversee the entire academy with perennial ryegrass," says Alex. "The fall is a bad time for insects and diseases in Orlando. They make overseeding that much harder, especially when you have to live up to the quality golfers expect from a Nicklaus course." Like Hopkins, Alex is very careful about fertilization and irrigation to avoid problems with diseases. "We can't push the ryegrass too much, even on the tees." He also maintains a close watch for sod webworms and treats regularly with Proxol and Dursban.

As the academy grows in popularity and Grand Cypress opens a fourth nine at the golf course, Alex's work will grow. "It's staggering to think about the amount of work that has to be done, but the success of the academy makes it worthwhile," Alex reflects. "We must be doing something right because ten more courses in the area are planning to expand their ranges into school areas."

In Clearwater, just 90 miles from Cypress Gardens, the Professional Golf Association Tour has opened its version of the "super-range" called the Family Golf Center. The facility centers around a driving range and two miniature golf courses on 22 acres. Within the range area are nine target greens, each averaging 4,000 square feet, bordered by bunkers. The ninth green is a recreation of the 17th green at the Tournament Players Club at Sawgrass surrounded with sand instead of water.

More than two acres of bermudagrass/ryegrass tees are divided into two tiers to accommodate more than 120 golfers at a time. On the side of the range are practice bunkers. A unique series of lights positioned on poles behind the tees and on the surface out on the range illuminate the Family Golf Center for night practice. Two PGA teaching professionals and three apprentice instructors hold group and individual lessons seven days a week. Even the miniature golf courses are not the windmill variety. They are designed to provide the same roll and angle putts found on golf courses.

"We hope private investors and municipalities will provide the land and capital to build Family Golf Centers in major metropolitan areas across the country," says Rick Evans, vice president of the PGA Tour. The goals, according to Evans, are to provide a facility for the public to learn the game of golf and to offer a convenient facility for golfers to practice. Five more Family Golf Centers are in the planning stage, including one in Scottsdale, AZ, and one in Arlington, TX. Evans believes more than 100 of the centers will be built in the next ten years.

The driving range, once an unpleasant necessity for some golf courses and their superintendents, is evolving to better serve the needs of today's busy golfers. At the same time, it is producing new revenues for all types of golf courses. By working with the golf professional and golf course designer, the superintendent is providing his employer not only with quality turf, but with greater financial stability. ☺

Moisture and heat stress continue to have major impact on turfs of all types. For several weeks we have already experienced typical summer stress problems which we normally expect to begin about mid-July. So if "normal" weather continues, we can expect these turf stresses to continue along with some turf loss. Irrigation of these turfs to supplement rainfall will be necessary for turf recovery. The most severe home lawn turf losses to date seem to have occurred where the turf was irrigated for some time, then was left without adequate moisture during extended moisture and heat stress. The result has been a turf which is highly susceptible to a combination of environmental stress and disease pressure. Once irrigation is begun, the program must continue to maintain a quality turf. Raising the mowing height, if possible, can be helpful to reduce environmental stress during the summer. The environmental stress tends to predispose the turf to many diseases, particularly the patch diseases. There are more diseases active on turf in Mich. this year than perhaps any other year. Dr. Joe Vargas reports wide spread disease activity on both general turfs and golf courses. The patch disease Necrotic ring spot has caused significant turf loss on Kentucky bluegrasses. Interestingly, the use of Lawn Restore and Green Magic has given the best recovery from patch disease on research plots and has been reported as quite effective on field sites as well. Rubigan applied at 2 oz. per 1000 sq. feet has been effective on some occasions but may also cause some phytotoxicity to the turf. Certainly some nitrogen (about $\frac{1}{2}$ pound per 1000 sq. feet per month during the summer) and regular watering are necessary to reduce susceptibility to Necrotic ring spot. Because the organism affects the roots, once the disease becomes active it is necessary to follow a program of light frequent irrigations. On research plots Kentucky bluegrass watered daily has no evidence of patch disease injury. Plots which are watered upon the appearance of wilt have a number of patches present, while a limited amount of turf loss has occurred. Unwatered plots have had serious turf loss. Brown Patch has been found on perennial rye grasses as well as on bent grasses and annual blue grass. Among the effective chemicals is Daconil 2787. Summer patch and anthracnose are both very active on annual blue grass on golf courses and will need attention if good turf density and uniformity are to be maintained. With summer patch, Green Magic and Lawn Restore have been quite effective on this patch disease. Careful irrigation, using syringe cycles during peak stress periods is also essential to hold the annual bluegrass when this patch disease attacks the turf. Pythium, normally not much of a problem in Michigan has also been observed on bentgrass golf turfs. Excess water from rainfall and/or irrigation, along with high temperatures are necessary for this disease, to be active. If you find Pythium activity, treat to prevent its spread. With the very high temperatures, broadleaf weed control may not be quite as effective. Bruce Branham recommends that the amino forms of phenoxy only be used at this time. Volatilization and drift from the ester forms can be significant now even though the efficacy is higher. Crabgrass is growing very actively now with the high temperatures. Acclaim is the recommended post emerge treatment for crabgrass. As with other weed control programs, the best control occurs when the weed is actively growing. Water the turf well a few days before applying Acclaim increases efficacy. If this is not possible, the Acclaim label suggests 8 oz. of wetting agent per 100 gals. spray on drought stressed crabgrass. Although we have no specific information regarding temperature conditions, we suggest care in applying any chemical when the temperatures exceed 90 degrees F. This also applies to fertilizer.