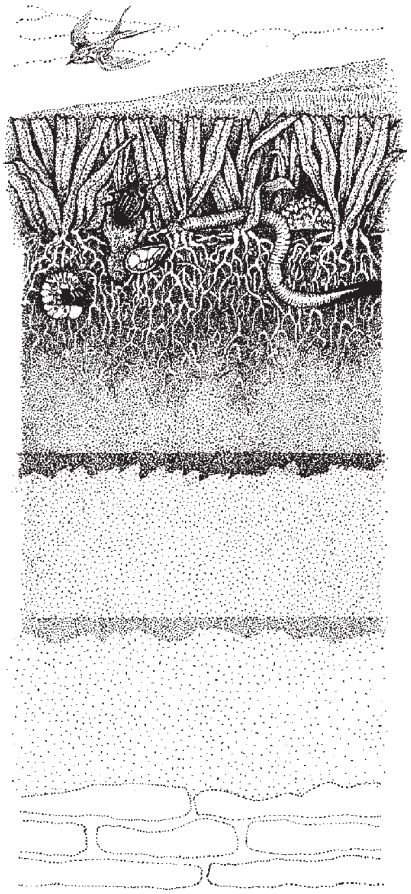
CORNELL UNIVERSITY TURFGRASS TIMES

CUTT

Winter 1993 • Volume Three • Number Four • *A Publication of Cornell Cooperative Extension*



What About Tall Fescues for New York State?

The very aggressive marketing of tall fescue by seed companies appears to be having an impact in New York State. More than ever I am seeing tall fescue and mixes containing tall fescue being written into construction specifications. Touted as a wear tolerant, low maintenance grass, tall fescue is being used in many situations where Kentucky bluegrass or perennial ryegrass have been used in the past. What about tall fescue? Is it all that it is cracked up to be? More important, is it a superior replacement to other grasses typically used in New York? ■

Tall fescue use seems to be making its biggest gains on sports fields and school grounds. It is a grass that is undeniably one of the toughest, most wear tolerant grasses. It is a relatively easy grass to establish, provided that soil temperatures are warm. Thus, like ryegrass, it is well suited for the frequent overseeding requirements of multi-use fields. The newer cultivars are very attractive, often looking like Kentucky bluegrass when seeded at heavy rates.

Low Maintenance

Tall fescue is an extremely drought tolerant grass and is able to maintain its color and vigor without irrigation much further into a drought period than other cool season grasses. Tall fescue is able to avoid drought because it has a very deep, extensive root system. Therefore, it captures moisture at depths in the soil profile that other grasses can not.

While tall fescue has very good drought avoiding qualities, it cannot be called a water conserving grass. Studies have consistently shown that the water use rates of tall fescue exceed other cool season grasses.

Tall fescue will do well with little fertilizer. One or two fertilizer applications annually at 1 pound of nitrogen per 1000 square feet are all that is normally needed to have a quality stand of turf. Also, with the exception of an occasional outbreak of brown patch, tall fescue has few pest problems.

The largest input required in maintaining turfgrass is mowing. Tall fescue has a very fast vertical growth rate, requiring more frequent mowing. The newer dwarf types may have slower growth rates than other tall fescue cultivars, but they still grow much faster than other cool season grasses. A demonstration recently conducted in Rochester by cooperative extension agent Jim Willmott found that the clippings removed off a dwarf tall fescue plot were more than triple that of adjacent fine fescue plots. This very rapid growth rate will not

continued on page 4

This Times

Short Cutts

1993 Cornell Turfgrass Field Day

June 10, 1993, at the Turfgrass Research Field Laboratory in Ithaca, NY

7th International Turfgrass Research Conference

July 18-24, 1993, at the Breakers Hotel in Palm Beach, FL

1993 Cornell Turfgrass Field Day

Mark June 10, 1993 on your calendars. That is the date to attend the 1993 Cornell Turfgrass Field Day. Held every other year at the Turfgrass Research Field Laboratory in Ithaca, the Field Day is an opportunity for you to see and learn about the research studies ongoing at Cornell. As in the past, the Field Day will include tours of the plots, equipment displays, and a barbeque lunch. Stay tuned for more details.

New Faces in the Turfgrass Science Program

Several people have joined the Turfgrass Science Program at Cornell over the past year, either as graduate students or staff.

Panyotis Nectarios has been a graduate student in Marty Petrovic's program for about a year, working on the effects of cultivation techniques on pesticide and nutrient leaching.

Scott Ebdon joined Marty Petrovic's program about a year ago as a PhD candidate. Formally with AgriTurf, Scott is looking at techniques for predicting water use of turfgrass species and cultivars.

Chris Sanchirico has just assumed the technical responsibilities in Marty Petrovic's program for the nutrient and pesticide leaching studies.

Debbie Sender started working this year as a technician in Marty Petrovic's program.

Fred Crisafulli began graduate studies in Marty's program this fall. A former technician with Nassau County Cooperative Extension, Fred is working on a municipal solid waste compost/sod production study.

Jennifer Carter has joined Joe Neal's staff as a technician.

Ting Zhou joined Joe Neal's program as a post doctoral assistant, working on bio-control of weeds.

S. J. Koo is a new graduate student in Joe Neal's program working on the mode of action of Impact herbicide.

Richard Uva is a talented photographer and illustrator working on a weed identification guide for turfgrass, landscape, and nursery, with Joe Neal.

Michelle Moore is a new technician in Mike Villani's program working on his biotechnology projects.

Linda Ferguson-Kolms is a technician in Mike Villani's program working on fungal pathogens for biological control of scarabs.

Arel Diaz is a PhD candidate studying the effects of composts on microarthropod populations.

Dave Han is an MS student working with Eric Nelson on the biology of root rotting Pythium species.

Peter Trutmann is a new research associate working with Eric Nelson on compost extracts and there effects on pathogens.

We welcome these people to the program.

International Turfgrass Research Conference

Hundreds of turfgrass research scientists from around the world will gather next summer for the 7th International Turfgrass Research Conference, scheduled for July 18 - 24 at the Breakers Hotel in Palm Beach. A record number of papers will be presented this year, including symposia on characterizing surface conditions of sports fields, and pesticide and nutrient fate.

All turfgrass managers are invited and encouraged to attend. For more information, contact Dr. George Snyder, University of Florida - EREC, P. O. Box 8003, Belle Glade, FL 33430, or phone 407-996-3062.

Season's Greetings

CUTT, "CORNELL UNIVERSITY TURFGRASS TIMES" is published four times per year by Cornell Cooperative Extension and the Turfgrass Science Program at Cornell University, Ithaca, New York 14853. Address correspondence to: *CORNELL UNIVERSITY TURFGRASS TIMES,* 20 Plant Science Building, Cornell University, Ithaca, NY 14853; telephone: (607) 255-1629

Editor-in-Chief: Norman W. Hummel, Jr.
Masthead Illustration: Benn Nadelman
Illustrations: Patti Witten and Timothy Tryon
Design & Production: Ghostwriters, inc., Ithaca, NY

Cornell University is an equal opportunity, affirmative action educator and employer.

A Comparison of Natural Organic Fertilizers

The use of natural organic fertilizers is becoming more popular in our industry. The release of nutrients from these fertilizers is dependent on microbial breakdown of the organic fertilizer. This paper reported on a study that looked at the effect of the addition of a microbial inoculum (provided in the fertilizer) on nutrient release. Pots of tall fescue and bermudagrass were treated with Ringers Turf Restore, with and without the inoculum, and with urea. Urea treated pots had much greater growth rates and nitrogen recoveries (in clippings) than the inoculated and uninoculated organic fertilizers. The Turf Restore with the inoculant did not enhance turf growth compared to the uninoculated material. Also, the presence of inoculum did not impact infection with Rhizoctonia spp.

(From: C. H. Peacock and P. F. Daniel, 1992. A Comparison of Turfgrass Response to Biologically Amended Fertilizers. HortScience 27(8): 883-884.)

Irrigation of Turfgrass With Effluent

Sewage effluent and other secondary waters have become important sources of irrigation water in some parts of the country. Limited supplies of potable water in New York may force some to look at effluent as an irrigation source in this state as well. It is important, then, that we know the effects of the use of effluent on turfgrass growth. This paper reports on a 3 year study whereby turf was irrigated with sewage effluent. The effects of the water on soil quality was investigated. The paper reported that the soil pH was not greatly influenced by effluent use. Three years of effluent use resulted in slight increases in salts (electrical conductivity), sodium, phosphorus, and potassium when compared to irrigation with potable water. The concentrations of iron, zinc, manganese, and copper were all found within normal ranges. The authors concluded that with the effluent water they used, they found no detrimental effects from use for three years.

(From: C. F. Mancino and I. L. Pepper, 1992. Irrigation of Turfgrass With Secondary Sewage Effluent: Soil Quality. Agronomy Journal 84: 650-654.)

Organic Sources for Sports Turf Rootzone Mixes

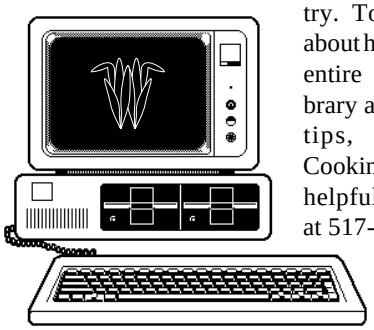
Peats and other organic materials are commonly used in rootzone mixes for sports fields and putting greens. It is normally a component of a mix with sand, and provides greater moisture and nutrient holding abilities of the rootzone mix. We know little, however, about characterizing peats for these purposes. This paper reported on a study that looked at the influence of peat on moisture retention in a rootzone mix. The primary characteristics of the peat that were evaluated were percent organic matter (of the peat) and fiber content. The results showed that peats with fiber contents >45%, such as coarse sphagnums, may be too coarse. These peats increased the moisture holding capacity of the mix, but much of that water was held in the peat too tightly to be available to the plants. Likewise, peats with fiber contents less than 20%, as in mucks, contained to many fine particles that slowed down infiltration rates.

(From: E. L. McCoy, 1992. Quantitative Physical Assessment of Organic Materials Used in Sports Turf Rootzone Mixes. Agronomy Journal 84: 375-381.)

Turfgrass Information File

If you need information, the turfgrass information file (TGIF) is a tremendous source. Stationed at the Michigan State University Libraries, TGIF is the only on-line library service exclusively for the turfgrass industry. Thousands of research and popular articles in many topics can be accessed through TGIF. All you need is a computer and modem, and pay a small annual fee for access to this valuable resource. If you don't have a computer, the staff at the TGIF Center will be happy to perform a search for you for a nominal fee.

TGIF is providing a great service to the industry. To learn more about how to have an entire turfgrass library at your fingertips, call Pete Cookingham (a very helpful gentleman) at 517- 353-7209.



Scanning the Journals

A review of current journal articles

Sewage effluent and other secondary waters have become important sources of irrigation water. The authors concluded that no detrimental effects were found after three years' use.

Peats with fiber contents >45%, such as coarse sphagnaums, increased the moisture holding capacity of the mix, but much of the water was unavailable to the plants.

Tall Fescues

continued from cover

Tall fescues are undeniably one of the toughest, most wear tolerant grasses.

only influence the frequency of mowing, but also the cost of clipping disposal where clippings are removed.

Overseeding Programs

Continuous overseeding is necessary to maintain thick stands of tall fescue on athletic fields, as is the case with other bunch type grasses. Maintaining turf density in tall fescue stands appears to be especially important. Failure to do so will cause the grass to develop clumps of very coarse texture.

Tall fescue is not very compatible with other cool season grasses. Mixtures of 90% tall fescue and 10% bluegrass can be used successfully if the lawn area is maintained to favor the tall fescue; that is, low fertility and no irrigation. Overseeding tall fescue into existing fields of other grasses can have undesirable results. I have seen several school grounds that were sold on a tall fescue overseeding program that for some reason was discontinued. Evidence of the programs' failure exists as unsightly and difficult-to-control grassy weed problems across the entire properties.

Table 1. Comparison of Maintenance Requirements of Cool Season Grasses.

Grass Species	Irrigation Needs	Fertility Needs	Mowing Frequency	Pest Problems	Adaptation to New York
Tall fescue	low	low	high	few	fair
K. Bluegrass	med	low-med	med	some	excellent
Per. Ryegrass	med	med	high	some	very good
Fine fescue	low	low	low	some	excellent

While there will be some applications for tall fescue in New York, it is certainly not the wonder grass some have touted it to be.

A Superior Alternative?

Is tall fescue a superior alternative to Kentucky bluegrass, perennial ryegrass, or fine fescues? On Long Island and the extreme southeast corner of New York State, tall fescues are a viable option for non-irrigated turf areas. There may be other applications for tall fescue in upstate New York, but landscape architects, contractors, and turfgrass managers should be very selective of the application.

Table 1 lists some of the characteristics of cool season grasses commonly used in New York State. For general lawn areas, Kentucky bluegrass, or mixtures of bluegrass with fine leaf fescues will provide a quality lawn, and will do well in low maintenance situations. Kentucky bluegrass and perennial ryegrass are the preferred species for athletic fields. Perennial ryegrass is especially well suited for overseeding, and much better than tall fescue for this purpose. Perennial ryegrass germinates very quickly, even in cool soils, has good wear tolerance, excellent close mowing tolerance, and is very attractive.

In summary, Kentucky bluegrass, perennial ryegrass, and the fine leaf fescues have for years performed well in New York State in most turfgrass situations. While there will be some applications for tall fescue in New York, it is certainly not the wonder grass some have touted it to be. Be careful in deciding where tall fescue fits into your establishment plans or maintenance program.

Norman W. Hummel Jr.
Dept. of Floriculture and Ornamental Horticulture

Rest

continued from page 5

The new specifications are more flexible than the 1989 version in areas I thought there could, and should be more flexibility. The changes should allow perfectly acceptable materials to be used; materials that would not have met the overly restrictive specifications of the past. At the same time, the specifications' limits are very clearly defined. In other words, there will be no doubt if a material does or does not meet specification.

After I made my recommendations for changes to the USGA, the proposed specs went through the most rigorous and comprehensive review ever. Scientists, architects, and others from around the world were invited to review the specs. Where appropriate, their suggestions were incorporated into the specifications giving them a strong foundation as well as international credibility.

A complete review of the literature was written that provides the scientific rationale for the pending specifications. These will be published by the USGA Green Section early in 1993.

My year "off" was a great experience for me in that it gave me the time to do a thorough job on a sorely needed project. It was an opportunity to meet many new people in a segment of the industry that most of us don't normally have contact with. I had a chance to travel extensively, and to visit some very fine golf courses. It was a pleasure to work with the USGA Green Section staff; a very dedicated and experienced group of individuals. Finally, it was very gratifying to feel that my efforts have contributed to the turfgrass industry in some way, and not solely within the borders of New York State. It was a great year indeed!

Norman W. Hummel Jr.
Dept. of Floriculture and Ornamental Horticulture

A Time of Rest

The word "sabbatic" is derived from the Greek term sabbath, meaning a time of rest. A sabbatic leave is a privilege college professors are entitled to to refresh, refocus, and to work on projects they just wouldn't be able to accomplish in the course of their normal activities.

Having recently returned from a one year sabbatic leave, I have been asked by many curious people how I enjoyed my "time off", and to what exotic places did I travel. Well, I didn't spend the year at home watching TV game shows and eating bon-bons. I traveled to places like Tomball, Texas, Olathe, Kansas, and some town in western Ohio (I don't recall the name of the town, but it was flat, hot, and was surrounded by nothing but corn fields). I did have a great year, though, and would like to share with you a synopsis of what I worked on, and how the turfgrass industry may be affected.

Laboratory Standards

For over thirty years the USGA specifications have been the most widely accepted and used greens construction specifications in the industry. Since their inception, they have relied on laboratory test results to determine if a rootzone is acceptable or not. The original specs included a brief and rather incomplete writeup of the test procedures.

In the past few years several new labs have begun to offer physical testing services. With no industry standards, a problem of quality control was obvious. It was common for superintendents to send identical samples to different labs, only to receive very different results. When you consider that the USGA Specifications are based on these laboratory results, you can see why there might be a serious problem.

Having 14 years experience informally testing rootzone mixes, I approached Jim Snow, national director of the USGA Greens Section about writing standard test procedures for the industry to follow. With USGA support, I was able to take a leave for a full year to work on the lab standards, and to work on a revision of their specifications.

I spent the first couple of months visiting eight labs around the country to assess their current operating procedures, and to discuss potential changes with the lab directors. After my visits, it was safe to say that no two labs were performing the tests the same way. In fact, my visits uncovered serious shortcomings in a few of the labs, from the use of inappropriate equipment to math errors. One lab had been sending out erroneous results for years. Only three of the eight labs had a trained agronomist on staff.

To assess the seriousness of this problem, I split a uniformly mixed rootzone sample, and sent a subsample to all the labs. The variation in the results I received back only reconfirmed the need for standard test methods.

Test methods published by the American Society of Agronomy and the American Society of Testing and Materials (ASTM) were then adapted for putting green and sports turf rootzone mixes. The procedures provide a cookbook approach to the testing process, and include all mathematical formulas. While these standards will no doubt improve the operating procedures in most labs, please be advised that the competence in the lab personnel interpreting the results will likely remain as it was before.

These procedures have since gone through a critical review by several soil scientists, and are now being submitted to ASTM as accepted and published standard test methods. Most labs will be adopting these procedures soon. While there are no guarantees, the results coming out of the labs should be much more consistent than in the past. Also, a quality assessment program to monitor lab performance is being considered.

USGA Specifications

The USGA Specifications for Putting Green Construction have gone through two revisions since the original, the latest in 1989. For many reasons, the 1989 specs were very controversial and a source of much criticism for the USGA Green Section. Jim Snow asked that I 1) critically review the specs and make recommendations for revisions; 2) provide a scientific rationale for the new specifications, and 3) identify areas of research.

For several months I was a student again, studying the scientific literature in soil modification, soil physics, and geotechnical and drainage engineering. For the first time, work performed in other disciplines was incorporated into the specs. This review resulted in a couple of significant changes to the specs. For example, by incorporating known rules in drainage engineering, we were able to make the intermediate coarse sand layer (choker layer) optional, provided that a gravel meeting very specific criteria could be found. This change alone could result in very substantial cost savings with no effect on green performance.

The original specifications, published in 1960 by Dr. Marvin Ferguson, were designed to allow the use of local materials in putting green construction. It was Dr. Ferguson's philosophy that I embraced when I reviewed the specs and made recommendations for changes.

continued on page 4

Having 14 years experience informally testing rootzone mixes, I approached Jim Snow, national director of the USGA Greens Section about writing standard test procedures for the industry to follow.

For several months I was a student again, studying the scientific literature in soil modification, soil physics, and geotechnical and drainage engineering.

After I made my recommendations for changes to the USGA, the proposed specs went through the most rigorous and comprehensive review ever.

It is Time to Review and Plan Ahead

IPM Corner

It is time to review your past season's pest management program and plan for 1993.

Did you meet the goals of your 1992 pest management program? Was your pest management season a success or failure? What types of techniques and control strategies were new and different? Were these new techniques successful and cost effective?

Incorporate the information learned from the 1992 data into next season's pest management plan.

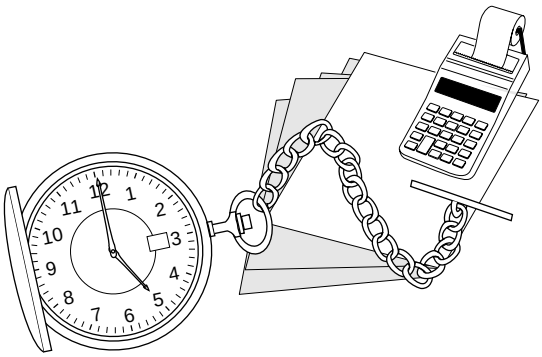
Another turfgrass growing season has passed. I doubt insects, diseases and weeds are on your mind now. However, after you take a well deserved break (hopefully in a subtropical or tropical environment), between repairing equipment and plowing snow, it is time to review your past season's pest management program and plan for 1993. Utilize the following information as a foundation. Augment this information with your own ideas to develop a specific review program for your turfgrass situation.

Start the review process by assembling your 1992 pest management records. Collect your field notes, scouting data sheets, and pesticide application information. Don't forget to include notes from your daily ledger or diary. If you do not have this information, do the best you can by recreating the season from your memory. If you are unable to develop a historical perspective, plan methods to collect turfgrass and pest data for 1993. Previous CUTT articles have detailed information on methods and techniques for collecting field pest data.

Answer the following pest management questions. They will help start the review process. Did you meet the goals of your 1992 pest management program? Was your pest management season a success or failure? Note the reasons for the success. Examine why and where things went wrong. What types of techniques and control strategies were new and different? Were these new techniques successful and cost effective? Describe troublesome turfgrass areas and pest problems. Employees, field notes and scouting data are valuable resources to help answer these questions. Expand this list of questions to suit your needs.

Conduct a simple analysis of the pest and pesticide data you collected. Create simple charts to help summarize data. Begin by examining all the pest data. Assess where, when, and what type of pest problems you encountered. The types of data necessary to conduct an analysis include, but are not limited to general pest information such as, dates when you started and stopped seeing the pest, how frequent the pest was observed, pest severity ratings over time and all the locations you observe the problem. Determine the total area the pest was a problem either in square feet or acres. Look for pest trends, problem areas, and the success or failure of control actions.

For each pest calculate the number of pesticide applications (per product), amounts (gallons, or lbs.), and Acre Treatments (ATs). ATs equal acres treated times the number of applications. AT levels are an excellent method to follow pesticide use trends. Total the amounts and frequency for each class of pesticide (insecticides, fungicides, herbicides).



Estimate the average labor hours to mix, apply, and clean equipment for each application. To calculate total labor hours multiply the number of applications with the average labor hours per application. Determine total cost of pesticides by adding the cost of the products and total labor hour costs.

Design a graph or chart to consolidate the pest and pesticide data together. Graph individual pest levels by date. On the same graph, mark the dates specific pesticides were applied. Evaluate the pest and control trends. The combined data is an excellent indication of the success or failure of your pest control efforts.

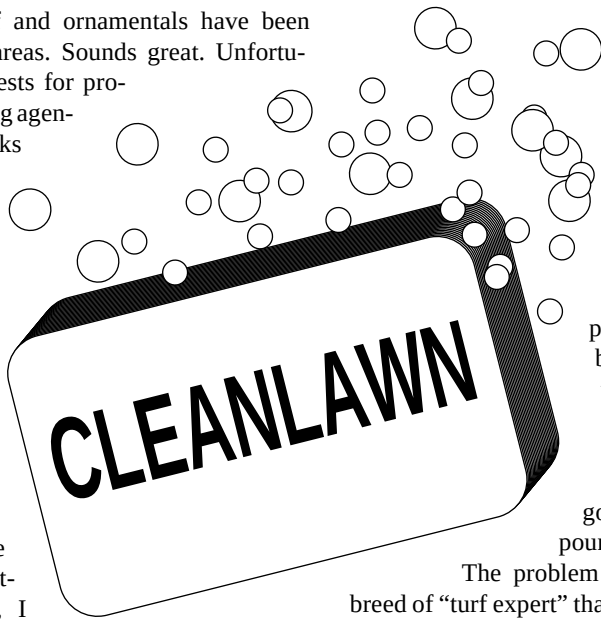
Incorporate the information learned from the 1992 data into next season's pest management plan. If you had trouble addressing these types of questions spend the winter designing a scouting program. Develop field data sheets and summary reports. Contact your local Cooperative Extension agent for assistance.

GERARD W. FERRENTINO, ORNAMENTALS IPM COORDINATOR

Everyone's a Turf Expert

This message is for all of you who work hard every day maintaining quality turf for many to enjoy. Beware! There is an awful lot of grant money available these days for research and educational programs for alternative agriculture.

Recently, turf and ornamentals have been listed as priority areas. Sounds great. Unfortunately, many requests for proposals from granting agencies "encourage links to advocacy or environmental groups" or encourage these groups to apply.



Since I was considering applying for such a grant, someone at Cornell suggested that I involve an advocacy group to improve my chances of getting funded. So, I called such a group, and spent an hour on the phone with an individual from that group. I don't know what it was that made me snap. Maybe it was when she said that we need to wash our lawns, trees, etc. with soap. "Cleanliness is godliness," she said.

Wait a minute! I have eight years of college education in Agronomy, five years experience on a golf course, eleven years experience in extension which has demanded that I answer about 2,000 phone calls and make dozens of field visits every year. I have devoted over half my life learning and living this industry. And I should ask someone like this for advice, just so I can get funded?

Maybe my days of public service are numbered. I'm just not willing to cower to someone who has never had their job, business or reputation on the line, never been on a golf course, much less put a pound of seed in the ground. The problem is that this is the new breed of "turf expert" that is going to be receiving the grants (some with our tax dollars) to educate you and the public on a better way of maintaining turfgrass.

Norman W. Hummel Jr.
Dept. of Floriculture and Ornamental Horticulture

"Cleanliness is godliness," she said. Wait a minute! I have eight years of college education in Agronomy, five years experience on a golf course, eleven years experience in extension which has demanded that I answer about 2,000 phone calls and make dozens of field visits every year. I have devoted over half my life learning and living this industry. And I should ask someone like this for advice, just so I can get funded?

Pest Watch

continued from back cover

Look For Winter Annual Broadleaves Now

This year I have been told by many turfgrass managers that crabgrass was particularly plentiful. This seems rather odd considering the cool moist weather we have had. One possible explanation is thin turf resulting from the 1991 drought. If you did not reseed and nurture the turf to maximum density—the logical outcome would have been crabgrass infestations. Once established, the crabgrass can effectively out-compete many turfgrasses, resulting in bare spots after the crabgrass is killed by frost.

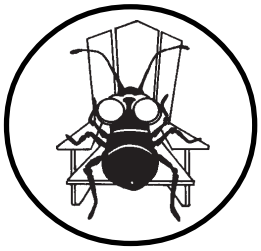
The relatively early frost in some parts of New York killed the crabgrass in late September. I have seen an abundance of winter annual broadleaves germinating in such areas. Scout now for chickweed, corn speedwell, pineappleweed, and other winter annuals which will be easier to control this fall before they get well established. You may even find some late germinating dandelion and clover seedlings. These may also be controlled in the fall.

I am often asked how late (in the fall) you can wait to apply broadleaf herbicides. I have had success applying three-way mixtures of 2,4-D + MCPP + dicamba as late as mid-November in a mild season in Ithaca, NY. As long as you are still mowing the grass, the herbicides will be effective. However, keep in mind that you may not see symptoms until spring, and that control of some species may not be as good as if you applied the herbicide in September or October—the preferred application time in New York.

Joseph C. Neal,
Dept. of Floriculture and Ornamental Horticulture

Once established, the crabgrass can effectively out-compete many turfgrasses, resulting in bare spots after the crabgrass is killed by frost.

Weed Control Research Update



Pest Watch

When preemergent herbicide applications are made too early in the spring, the control runs out in mid-season; when applications are just a little late, no control is achieved.

Our research suggests that application timing for some products may be more flexible.

Late Fall Applications of Preemergent Herbicides Control Crabgrass

It is generally acknowledged that the optimum time to apply preemergent herbicides is one to two weeks before crabgrass emergence—about the time the forsythia is in full bloom. On Long Island or in the lower Hudson valley, this occurs about mid to late April. In upstate New York, the timing is a little later; between late April and mid-May (depending upon the local conditions and spring weather patterns. This is a busy time of year on golf course superintendents and for landscape managers; therefore, preemergent herbicides are often applied at the "wrong" times. When applications are made too early in the spring, the control runs out in mid-season; when applications are just a little late, no control is achieved.

However, our research and that from several other universities suggests that application timing for some products may be more flexible. Late fall applications of Barricade** (prodiamine) @ 1 lb/A and Dimension** (dithiopyr) at 0.5 lb/A were equally effective as spring treatments. Pendimethalin or Ronstar (oxadiazon) @ 3 lb/A, applied in the late fall were equal to spring applications in two of three tests. In the one test where control was better with spring applications, a mid-summer drought followed by rain stimulated a late flush of crabgrass germination, reducing the effectiveness of most treatments. The efficacy of Team (benefin + trifluralin) @ 2 lb/A and Dacthal (DCPA) @ 10.5 lb/A were consistently greater from spring rather than fall applications. Other research has suggested that Gallery** (isoxaben) may be more effective when applied in late fall, as compared to spring.

Currently, only Ronstar is specifically labeled for late fall applications for crabgrass control the following season. However, remember that under unfavorable conditions (too wet or too dry), full-season control may not be achieved regardless of the season of application. This will be more evident further south where the growing season (and the crabgrass germination season) is longer. Late emerging crabgrass can be controlled with MSMA or Acclaim (fenoxaprop).

**Note: at present, Barricade, Dimension, and Gallery are NOT labeled in New York.

Reference: Rossi, F.S., J.C. Neal, and A.F. Senesac. 1989. Comparison of Seasonal Herbicide Application Timings for Crabgrass (Digitaria spp.) Control in Cool-Season Turfgrass. Proceedings of the Weed Science Society of America 29: 34-35.

JOSEPH C. NEAL,
DEPT. OF FLORICULTURE AND ORNAMENTAL HORTICULTURE

Pest Watch continues on page 7

Cornell Cooperative Extension

CORNELL UNIVERSITY TURFGRASS TIMES
20 Plant Science Building
Cornell University
Ithaca, NY 14853

Printed on recycled paper