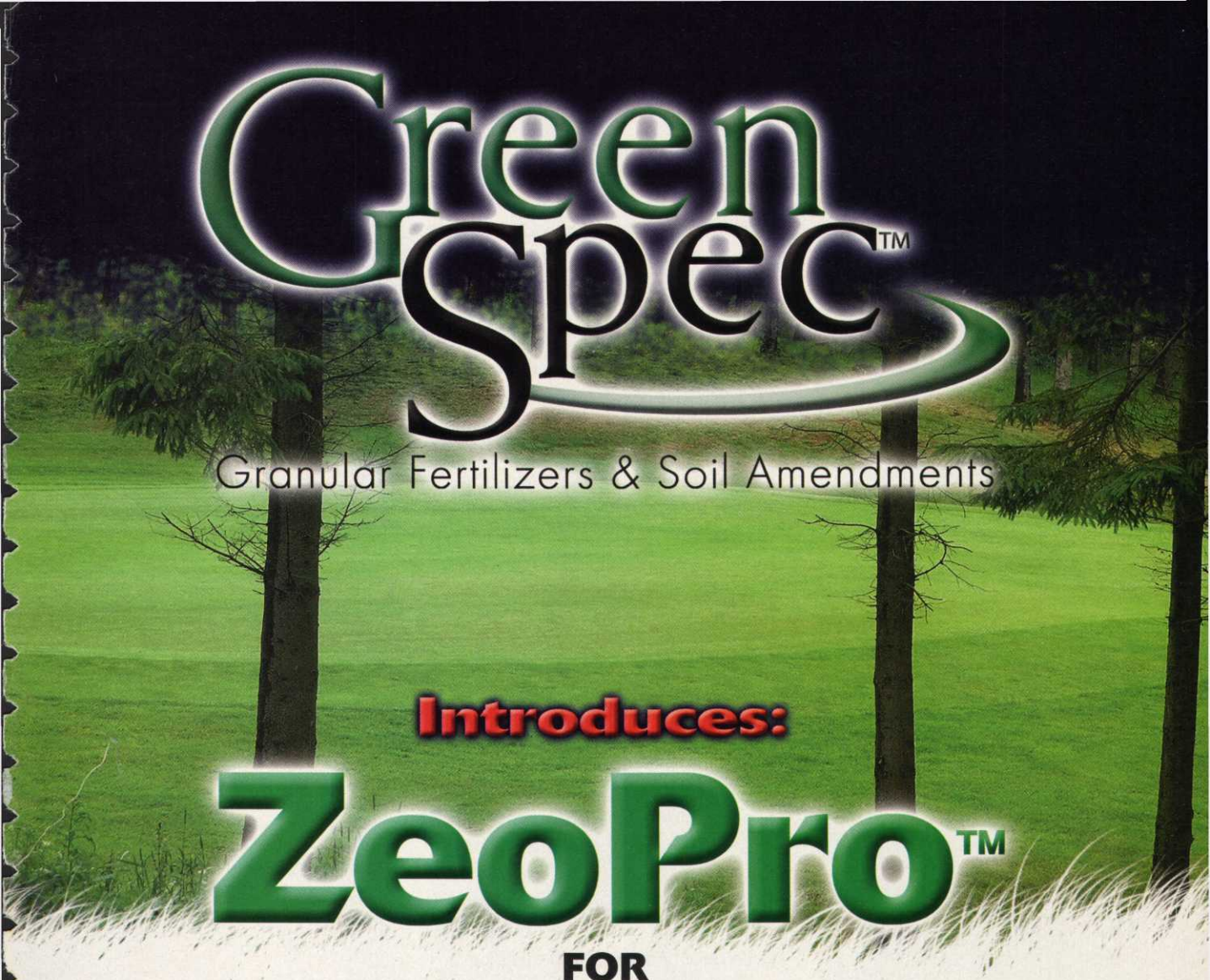


Introduces:

ZeoPro™

FOR

New Construction • Reconstruction
Drill and Fill • Core Aerification
DryJect®

- A natural occurring mineral with microscopic pores
- NASA developed "synthetic apatite" delivers essential nutrients in balance
- Facilitates an Increase in Actual Nutrient Availability
- High CEC improves nutrient reserves and facilitates meeting plant demands
- Reduces nutrient loss to leaching promoting a healthier environment

GRIGG BROTHERS
P.O. BOX 128 • ALBION, IDAHO 83311
For a Distributor Near You Call:
1.888.246.8873
or find us on the web at *www.griggbros.com*

Licensed from the National Aeronautics and Space Administration Under U.S. Patent Nos. 5,433,766 and 5,451,242

DryJect® is a registered trademark of DryJect LLC

GRIGG BROS.

Continued from page 50

Manufacturers of PGRs, for various reasons, have not yet noticed a correlation between PGR sales and rising fuel costs.

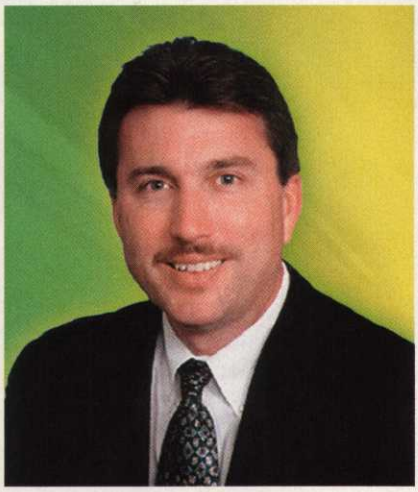
"It's probably a little early to tell," says Laylah VanBibber, the marketing manager for PBI/Gordon. "Certainly PGRs can help hold the fuel costs for mowing, but the real benefit is from labor savings. Less mowing frees staff up to do other tasks."

Among the various PGRs used by superintendents, two are often utilized to reduce total clippings: Primo Maxx (Syngenta Professional Products) and Cutless (SePRO). The latter product is often tank-mixed with Primo to provide longer residual, less rebound effect, less scalping and less bronzing, according to Roger Storey, the vice president of SePRO's turf and ornamental business.

"We haven't tracked or noticed a direct correlation between increased Cutless use and gasoline price increases in the golf market," Storey says. "However, Cutless will reduce the amount of clippings and frequency of mowing; therefore it can reduce both labor and fuel costs."

Other PGRs — such as Proxy (Bayer Environmental Science), Embark (PBI/Gordon), and Trimmit (Syngenta) — are primarily used to suppress *Poa annua* seedheads and promote conversion to bentgrass.

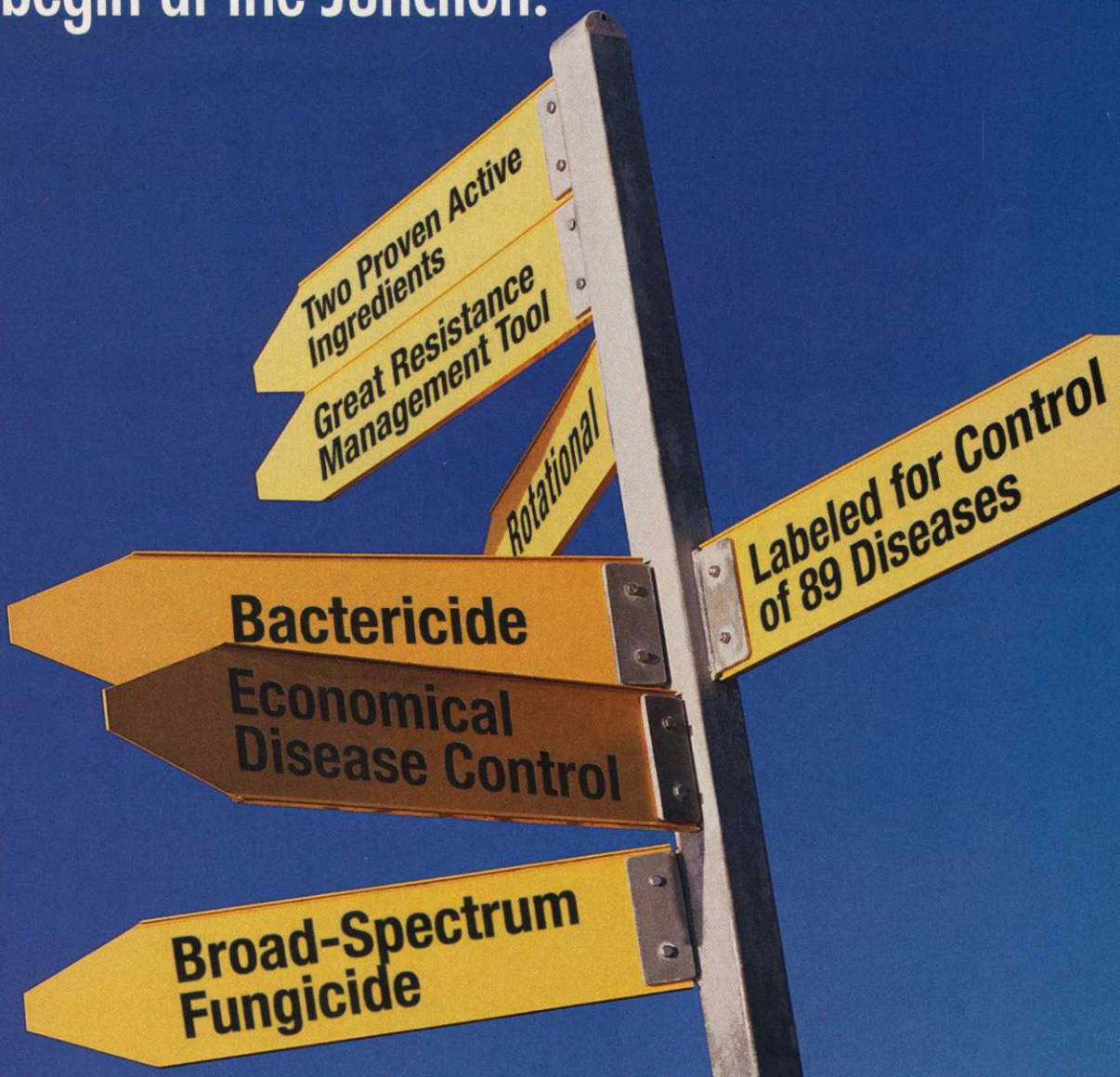
"PGRs fit nicely into our program," Coldiron says. "I couldn't see managing quality turfgrass today without them." ■



> "Cutless will reduce the amount of clippings and frequency of mowing; therefore it can reduce both labor and fuel cost."
>
> **ROGER STOREY**
> VICE PRESIDENT
> SEPRO

PHOTO COURTESY: SEPRO

The best disease control programs begin at the Junction*.



Junction*is an ideal broad-spectrum fungicide/bactericide that offers a unique combination of two active ingredients—copper hydroxide and mancozeb—to provide labeled control of 89 different bacterial and fungal diseases. A valuable resistance management tool and economical rotational fungicide, Junction provides excellent contact and knockdown activity in a spray-dried, low-residue formulation for a high degree of application flexibility.

Nursery and ornamental professionals rely on the proven chemistry of Junction for a convenient, economical solution to disease control on a wide range of plants. Be sure you're headed in the right direction with Junction Fungicide/Bactericide.

For more information about Junction call **1-800-419-7779** or visit **www.sepro.com**.

Junction*
Fungicide/Bactericide

Labeled for use in:
- **Nursery**
- **Greenhouse**
- **Golf courses**
- **Landscape**
- **Sod farms**
- **Industrial and municipal turf**

SePRO **SePRO Corporation** Carmel, IN 46032

*Trademark of SePRO Corporation. Always read and follow label directions.

PGR Use Growing Like . . . Crazy

BY KARL DANNEBERGER

In the last 10 years plant growth regulator (PGR) use has gone from a marginal to an integral part of golf course management programs. In the early 1980s mefluidide (Embark) was the first plant growth regulator widely used on fine golf course turf. Embark was and still is primarily used on *Poa annua* or *Poa annua* containing fairways for seedhead control in the cool-temperate regions of the United States.

Paclobutrazol (Trimmit) and flurprimidol (Cutless) followed and were effective and marketed for transitioning predominantly *Poa annua* fairways to creeping bentgrass. With these three PGRs, the common number of applications per year usually ranged from one to two.

In the early 1990s trinexapac-ethyl (Primo) expanded the use of PGRs well beyond the one or two normal applications. At this point PGR use went from the niche-type activities to encompassing the idea of reducing clippings, enhancing environmental stress tolerance, improving color and density, and reducing the severity of certain diseases. To give you an idea of PGR usage, I conducted an informal survey recently.

Last year I surveyed golf course superintendents mostly from Ohio but also from surrounding states and Canada to find out how PGRs were being used. Although it wasn't a scientific survey, some of the information for greens management is of interest.

Ninety superintendents or golf courses responded to my Plant Growth Regulator Survey sent via my e-mail list, representing 26 percent of those on the list. Of those who responded, 30 categorized their putting greens as primarily creeping bentgrass (33 percent), 12 as primarily *Poa annua* (13 percent), and 48 as a mix of creeping bentgrass and *Poa annua* (53 percent). Out of the 90 respondents, 78 said that they made at least one PGR application to their greens (87 percent) annually, while 12 did not (13 percent).

Of the respondents, 84 percent used PGRs for greens management. Based on the greens species composition, 100 percent used PGRs on primarily *Poa annua*, 85 percent on a mix of creeping bentgrass and *Poa annua*, and 77 percent on primarily creeping bentgrass. Where PGRs used for seedhead control was the greatest was on primarily *Poa annua* greens (75 percent) and creeping bentgrass/*Poa annua* mixed greens (75 percent) with the least on primarily creeping bentgrass greens (13 percent). The PGRs used for seedhead control cited by participants was Embark or Primo/ethaphon (Proxy) combination.

INTERESTINGLY, IT APPEARS MOST SUPERINTENDENTS USING PGRS TEND TO SHORTEN THE APPLICATION INTERVAL VS. INCREASING THE RATE

Of the 76 respondents who used PGRs in greens management 82 percent used Primo, while 16 percent used either Trimmit or a Trimmit/Primo combination. Weekly or biweekly applications of PGRs for greens management accounted for 85 percent of the application scheduling. I would mention that some respondents replied with a seven- to 10-day schedule or 10-day schedule. If the application frequency was seven to 10 days, it was considered weekly. If 10 days was specified, it was considered biweekly.

Respondents also mentioned that frequency was also based on the growing season conditions. Interestingly, it appears that most superintendents using PGRs, primarily Primo, tend to shorten the application interval vs. increasing the rate.

The broad and frequent use of PGRs is one of the most dramatic changes I have seen in golf course management in the last 25 years.

Karl Danneberger, Ph.D., Golfdom's science editor and a turfgrass professor from The Ohio State University, can be reached at danneberger.1@osu.edu. See his Web site — Superintendents' Korner — at http://hcs.osu.edu/sk/.

Conditions worthy of devotion.

It's not an easy job protecting the conditions that golfers love. It requires daily vigilance. Especially when it comes to something as prevalent as dollar spot. You have to fight back with a trusted product that works, a product like Banner MAXX® fungicide. Its systemic mode of action and broad-spectrum control make it a constant in the ongoing protection of your turf.

You can be assured that Syngenta is there protecting your course year in and year out. We are there for you through the eventful days and the not-so-eventful.

stamp out Gray Leaf Spot in perennial ryegrass

Prevent the dreaded *Pyricularia grisea* (for which there is no cure) by planting new, Gray Leaf Spot resistant ryegrasses developed by doctors for Turf Merchants.

Even the best home lawns, parks and golf courses have Gray Leaf Spot in late summer when days are hot and humid.

Gray Leaf Spot isn't pretty. It strikes quickly, affecting young ryegrass seedlings first with gray-to-brown lesions, often contorting tender blades into fishhook shapes. With prolonged hot, humid weather, large, mature turf areas can be lost to this dreaded disease.

In existing, older ryegrass turfs, Gray Leaf Spot can be addressed by applying a preventive fungicide, but once the pathogen has developed, little or nothing can cure it.

It's prudent to take precautions.

Pledge today to eradicate Gray Leaf Spot in your turf.

Specify these GLR™ resistant varieties from Turf Merchants, Inc.

All this and more — *naturally* from:

TMi
TURF MERCHANTS, INC.

33390 Tangent Loop / Tangent, OR 97389
Phone 541.926.8649 / FAX 541.926.4435
800.421.1735

Paragon GLR™
- Top-rated NTEP performer
- Traffic stress tolerant
- Number 1 for spring green-up
- Gray Leaf Spot and Crown Rust resistant

Protege GLR™
- Highly disease resistant
- Exceptional seedling vigor, density, and leaf texture
- Top-rated NTEP performer

Manhattan 5 GLR™
- Next step up in the Manhattan tradition
- Salt tolerant
- Resists stem rust and leaf spot

plus Pizzazz, Manhattan 4, and VIP 3

scope us out: www.turfmerchants.com

TURFGRASS TRENDS

WHITE GRUB CONTROL

White Grubs Still Pose Challenge to Turfgrass Research

By Rick Brandenburg

White grubs have been one of the key insect pests of turfgrass throughout the world and in particular in the United States. Very few locations that can grow quality turf are immune to potential damage from the larvae of a number of beetles. The feeding of the grubs damages turfgrass by destroying the integrity of the root system, loosening the soil and often attracting various predators that destroy the turf to gain access to the grubs as food.

There is a wide range of grub species in the country ranging from the Japanese beetle grub to grubs of the Oriental beetle, green June beetle, European chafer and various masked chafers to name a few. Life cycles vary as do the preferred sites of infestation. Despite the variations and differences, there is one consistent theme: White grubs are as much, if not more, of a problem today, than at any time in the past.

Even with new materials, it is important to develop better understanding of factors that influence white grub infestations and management.

Maybe it is our increased expectations and desire for the perfect golf course or sports field that make it appear to us that grubs are now more serious than in the past. It is possible our increased use of irrigation and other cultural practices have made turfgrass in many areas more susceptible or a better host. Maybe it is simply that the white grubs are taking advantage of what we are offering — better food and a more suitable environment.

Whatever the reason and whether it is real or perceived, if we add up all the insect concerns across the country, I think we'd find grubs would rank as No. 1. Fire ants, mole crickets and other pests may certainly be more of a problem in selected locations, but overall grubs stay at the top. Grubs remain a serious problem primarily because they are a soil insect that lives underground. This creates problems for early detection and getting the insecticide in contact with the white grub.

Modern insecticides such as Mach 2 (halofenozide), Merit (imidacloprid) and Arena (clothianidin) work most effectively when applied in a more preventive manner rather than as a rescue to clean up an existing problem. This requires a thorough knowledge of pest history of infestations and the life cycle of the insect. While this was initially a big shift in thinking for most turfgrass managers, we have become fairly proficient in our wise and cost-effective use of these materials.

Continued on page 58

IN THIS ISSUE

OUR SPONSORS

FIGURE 1

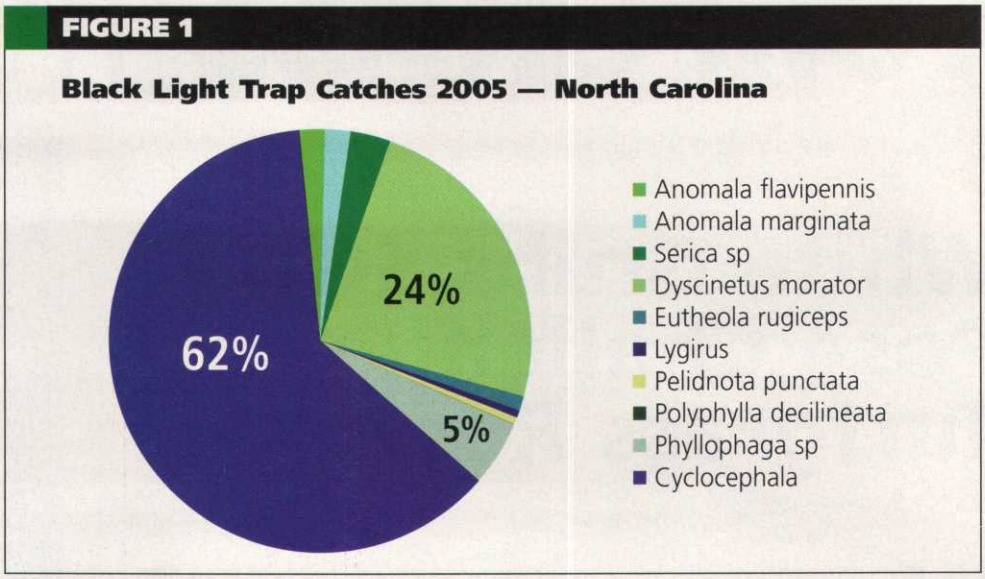


Figure 1. Distribution of species of white grub adults captured in light traps across North Carolina, 2005.

Continued from page 57

Even with new, more environmentally sound materials available, it is important that we develop a better understanding of white grub biology and the factors that influence white grub infestations and management. Perhaps that should be restated to say that now with the new insecticides, it is more important than ever to develop the best possible understanding of pest biology. While scientists have been studying white grubs for a long time, there is still a lot to learn.

Add to this the fact that our turfgrass systems have also evolved over the last 25 years and it leaves us with much still to learn about white grub biology and ecology. Some areas, such as the southern United States, lag behind in our data base for understanding white grubs. The rapid population increase in the South over the past 25 years has resulted in a lot more turfgrass and new problems showing up throughout this region.

Unfortunately, we don't have a lot of history of research in some areas and we can't always extrapolate information from other areas. As a result, there's a lot of research taking place in many locations focusing on white grub ecology and management.

In North Carolina, we have experienced an increase in white grub problems in turf on both warm- and cool-season turfgrasses. There are problems with southern masked chafers, northern masked chafers, Oriental beetles, green June beetles, Japanese beetles and others depending upon the location and type of turfgrass. The severity of the problems, the cost of control, and the need for effective control has prompted renewed research to gain better insight into white grub biology in the Southeast. It is hoped that this research in conjunction with other studies, such as those by Dr. Eileen Buss at the University of Florida, will paint a clear picture of white grub problems in the Southeast and add to our understanding of these pests on a national basis.

Initial research in North Carolina has begun with the basics. We are determining the full complement of species of grubs present through a network of light traps and pheromone traps. This allows us to not only determine the species and the timing of their flights (and an indication of egg laying and hatch), but also the distribution of each species.

While we have seen a few species show up in certain areas that we did not necessarily expect, the majority of the species found were the masked chafers and Japanese beetles with a few Oriental beetles in the western areas of the state. The light traps (not used to capture Japanese beetles) determined that masked chafers (Cyclocephala sp.) were far and away the most

Continued on page 60

TURFGRASS TRENDS LIVE!

October 16-17, 2006

2200 FarmLinks Blvd. · Sylacauga, AL 35151

FARMLINKS
AT PURSELL FARMS

Golfdom

A NEW EDUCATIONAL & NETWORKING EVENT SUPERS SHOULDN'T MISS!

This October, superintendents will have an opportunity to spend two days at FarmLinks and experience TGT LIVE! – a new educational and networking event. FarmLinks is the world's first research and demonstration golf course. It was created to showcase turf and product performance through the course's ability to serve as a living laboratory and an ongoing focus group for industry leaders.

Register now and join the staff at TGT, Golfdom, plus industry experts for a unique educational experience.

Keynote Speaker
BILL KUBLY

Bill Kubly is the CEO of Landscapes Unlimited, the largest golf course builder in the United States. Kubly founded Landscapes Unlimited in 1976, following his five years of work for a local golf course construction company. With five years experience and his landscape architect degree from the University of Wisconsin, Kubly formed his one-man operation. With a pickup truck, a pipe wrench and a pipe cutter, he began handling small irrigation projects for local golf courses.

Kubly's company now employs more than 1,000 professionals during its peak season and has a project resume which includes many of the most notable locations in golf, including Sand Hills Golf Club and FarmLinks Golf Club. Kubly will give a candid speech on the "State of the Golf Course Industry."

Featured Speakers

Jack D. Fry is a professor in the division of horticulture at Kansas State University. Fry helped establish K-State's Golf Course Management undergraduate program in 1998 and teaches courses in turfgrass management and golf course operations. He recently co-authored the textbook, "Applied Turfgrass Science and Physiology." Fry will speak on "Ball Marks, Brown Patch, and other Bentgrass Afflictions."

Dr. Frank Wong, a University of California Riverside cooperative extension specialist, has a Ph.D. in plant pathology from Cornell University. Some of his current research includes biology and management of fungal diseases affecting turf grasses, and fungicide resistance management for turfgrass pathogens.

Mark Langner is the director of agronomy and applied research at FarmLinks Golf Club. If anybody can tell you what the future holds for golf course maintenance, it's Langner, who will speak on what it's like to be in charge of maintenance at the research and demonstration golf course owned by Pursell Technologies Inc.

Dr. Bruce Clarke, director of the Center for Turfgrass Science at Rutgers University, is a research scientist whose work with turfgrass diseases, in particular summer patch and anthracnose, has helped golf courses and golf course superintendents throughout the world. Clarke, a New Jersey Turfgrass Association Hall of Fame award winner, has authored numerous articles in professional publications and published two acclaimed books on turfgrass pathology. He will speak on several aspects of disease control, including new products in the pipeline.

Dr. Jeffery Higgins is executive director of business development for Pursell Technology Inc. He came to PTI in 1999 from Auburn University, where he was an extension turfgrass specialist and associate professor. Higgins holds several degrees, including a Ph.D. from Clemson University. He will speak on fertilizer trends in the golf course industry.

Matt Shaffer is the superintendent of Merion Golf Club. Shaffer, who graduated from Penn State University, says Merion is his dream job. The course hosted the U.S. Amateur last year and will host the U.S. Open in 2013. Shaffer loves hunting, fishing, gardening and wood-working. The title of his talk is, "Merion: Where Playablity Is First And Aesthetics Are Second."

Frank Dan Dinelli is the certified golf course superintendent of North Shore Country Club. He is graduate of Michigan State University with a degree in turfgrass management. Dinelli has won several environmental stewardship awards. He will speak on the "Use of Compost on the Golf Course."

Schedule of Events

Monday, Oct. 16

7 to 8:15 a.m.
Breakfast

8:30 to 9:30 a.m.
Jack Fry, a professor in the division of horticulture at Kansas State University, will speak on "Ball Marks, Brown Patch, and other Bentgrass Afflictions."

9:30 to 10:30 a.m.
Frank Dan Dinelli, certified golf course superintendent of North Shore Country Club, will speak on the "Use of Compost on the Golf Course."

10:30 to 11:30 a.m.
Dr. Frank Wong, a University of California Riverside cooperative extension specialist, will speak on "Trends in Fungicide Use and Resistance Development for the Control of Turfgrass Diseases."

11:45 a.m. to 12:45 p.m. – Lunch

1:00 to 2:00 p.m.
Dr. Bruce Clarke, director of the Center for Turfgrass Science at Rutgers University, will speak on "Aspects of Disease Control."

2:00 to 3:00 p.m.
Matt Shaffer, superintendent of Merion Golf Club. Shaffer, will speak on, "Merion: Where Playablity Is First And Aesthetics Are Second."

3:00 to 4:00 p.m.
Dr. Jeffery Higgins, executive director of business development for Pursell Technology Inc., will speak on "Fertilizer Trends in the Golf Course Industry."

4:00 to 5:00 p.m.
Mark Langner, director of agronomy and applied research at FarmLinks Golf Club. will speak on "The Unique Challenges of Being the Superintendent at FarmLinks."

Tuesday, Oct. 17

7 to 8 a.m. – Breakfast
8:15 to 10:00 a.m. – Seminars

8:15 to 9 a.m.
Larry Aylward, editor in chief of Golfdom, will speak on key trends in the industry.

9:00 to 10:00 a.m.
Keynote Address by Bill Kubly, CEO of Landscapes Unlimited, the largest golf course builder in the United States. Kubly will give a candid speech on the "State of the Golf Course Industry."

10:15 a.m. – Golf

TURFGRASS TRENDS LIVE!

REGISTRATION

To register, visit **www.golfdom.com** and click the **TGT Live!** banner or contact Jennifer Kanaba at **jenkanaba@yahoo.com** or **1-440-235-3250**

REGISTRATION FEE: $300

Fee includes seminars, meals and golf.

ACCOMMODATIONS:

The Jameson Inn
89 Gene Stewart Blvd.
Sylacauga, AL 35151
- $60.00 per night + taxes

Please make your reservation by contacting the hotel directly at (256) 245-4141 and requesting the TGT Live! room block in order to receive the group rate.

Key West Inn
32210 USA Hwy. 280
Childersburg, AL 35044
- Single $59.00 per night + tax
- Double $64.00 per night + tax

Please make your reservation by contacting the hotel directly at (256) 378-0337 and requesting the TGT Live! room block in order to receive the group rate.

RENTAL CARS

Avis - Avis has assigned a specific discount number for TGT Live! The Avis Worldwide discount number is J999013. Please use this number when calling Avis directly at 800-331-1600 to receive the best possible car rental rates.

BIRMINGHAM INTERNATIONAL AIRPORT

Located approximately 50 miles via car from the conference hotels.

AIRLINE

American Airlines has assigned a discount code for the TGT Live! event. When making travel arrangements on American Airlines please contact the meeting services desk at 800-433-1790 and use the code A58H6AJ.

CONTINTENTAL AIRLINES

Please contact Continental Meeting Works at 800-468-7022 and provide the Z Code ZTFM and agreement code VHBCLO. Coach/First Class tickets over $599 (excluding tax) will receive a 15% discount, $299-$598 a 5% discount and under $299 will receive a 2% discount.

**Please note there is a $10 service fee collected, per ticket, for all tickets issued through Meeting Works Reservations.*

Golfdom

FARMLINKS AT PURSELL FARMS

Not just tested more. Trusted more.

"We're in our second season with the 2500E's and we can't even find a drip mark on the shop floor."

Ian Martinusen • Superintendent
Breezy Bend CC • Winnipeg • Manitoba

Superintendents around the world are discovering the cut quality and peace of mind of the 2500E Hybrid Riding Greensmower. This industry-exclusive electric cutting system saves on fuel and reduces operating noise. Yet it can still handle your toughest scalping and verti-cutting jobs. There's a controller for every reel–three in all–so it's easy to maintain consistent speeds, as well. And with extras like a tilt-steering wheel and self-diagnosis, the only question you'll have about the 2500E is: 'what took me so long to try it?'. Call your local John Deere distributor or 1-800-537-8233 for a demo.

Less Leaks. Less Noise. Less Fuel.

www.JohnDeere.com

JOHN DEERE GOLF & TURF
ONE SOURCE™

JOHN DEERE

FIGURE 2

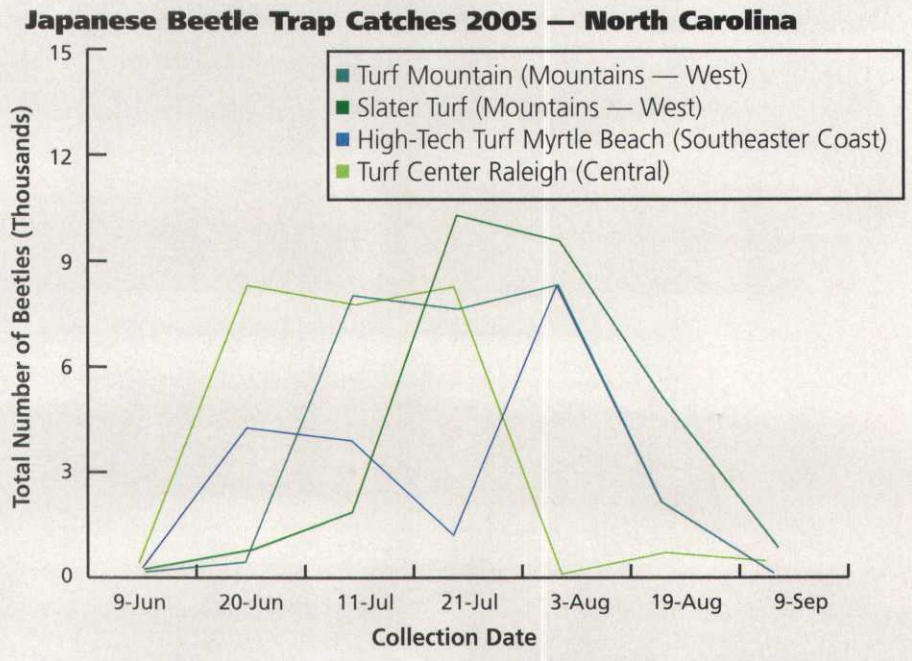


Figure 2. Timing of Japanese beetle trap captures for locations in North Carolina and South Carolina in 2005.

Continued from page 58

abundant species (Figure 1). What has been surprising has been the timing of flights in different areas of the state. We operate under the assumptions that since insects are cold-blooded that activity will begin in warmer areas at an earlier calendar date than in cooler areas. However, light trap catches from 2005 demonstrate that the reliability of this assumption is suspect.

Data from a southern coastal area near Myrtle Beach show beetle flights occurring at the same time as in a much cooler area in the foothills of western North Carolina (Figure 2). We know that rainfall, or the lack of it, can delay the emergence and flights of the beetles. However, soil moisture and rainfall were not limiting factors in the Myrtle Beach area. While somewhat surprising, it confirms the message that we so often preach about monitoring your pests and not taking any pest management steps based solely upon the calendar date.

An equally interesting situation occurs in the Phoenix/Scottsdale area of Arizona. Recent grub problems in turfgrass, especially on golf courses, have been exacerbated by the presence of javelinas coming in out of the desert to feed on the grubs and destroy turfgrass in the process. In the past three years, Dr. Kai Umeda, turfgrass specialist at the University of Arizona, has initiated a program to monitor beetle flights with light traps since turfgrass managers were reporting poor control from insecticide applications. The resulting data show a wide range of beetle flights throughout the valley area.

Not only is the climate in different areas playing a major role, but different species are present that influence the timing of beetle flights and egg laying (Figure 3).

Without this information, grub control was challenging and frustrating. With this newly acquired data, grub control is now a practical and cost-effective venture.

There are many factors that influence white grub populations and unfortunately we don't understand them all. Why are white grubs more of a problem? I certainly believe that more irrigated turf is a contributing factor simply because the eggs and small grubs need fairly good soil moisture to survive. If left up to nature there would be many years when