

CONNECTICUT CLIPPINGS

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June, 1999

Seeing gray spots

by Pat Vermeulen — Turf Topics

Superintendents in cool-season turfgrass zones once looked to late August as the peak of their season. With the worst heat dissipating, they looked to lower temperatures to allow weary grasses, and workers, to recuperate.

Last year, that could not have been further from the truth. During much of August and September, the perennial ryegrasses on courses from the Atlantic coast to Nebraska withered as if

they had been sprayed with herbicide by a vandal. The cause was not a prankster but *Pyricularia grisea*, a new invader called gray leaf spot. Until recently only a research footnote, it has progressed into an epidemic.

Just eight years ago a pair of Penn State researchers, Dr. Peter Landschoot and Bryce Hoyland, found gray leaf spot on two courses in their state. The disease received scant attention over the next three years because it only

caused foliar, or leaf, damage and left mature plants unaffected.

Then in 1995, the disease caused devastating losses of up to 90 percent on fairways and rough. By last summer, gray leaf spot had spread into nearly 20 states, and now it is considered a threat for wider infestation.

Prior to breeding efforts in the 1960s, perennial ryegrass was a difficult turf to mow — the end of the leaf would tear instead of cut cleanly — and was not used on many courses. After its improvement through selective breeding, many courses used it as a permanent monostand.

(continued on page 12)

INSIDE THIS ISSUE:

- President's message..... 2
- Japanese ladybugs vs.
hemlock woolly adelgids.....3
- Ellington Ridge - host of
1999 Invitational..... 6
- Commercial member profile-
meet Dick Hoskings.....7
- Grass Catcher.....8
- Golf Retirement Plus.....12

Many Connecticut courses experience winter injury

1999 is off to a peculiar start in the Northeast. A number of courses experienced winter injury due to prolonged ice cover and repeated freeze/thaw cycles.

We have had some warm weather this spring, but we've also had enough cold weather and frost to prevent the turf from really popping. Recovery from winter damage is going slowly at courses that are not using covers, and the

bentgrasses at many courses are still showing the purpling effects of cold temperatures. Root growth observed at courses from Rochester to central New Jersey is white and healthy, but the cooler temperatures seem to be postponing the normal flush of root growth. One has to wonder if the weather will turn hot overnight?

The forsythias are early

this year, probably due to last season's drought. Nonetheless, preemergent herbicides should be going out soon if they aren't already. We have seen hyperodes weevil adults out and about, so be sure to scout for them.

*Northeast News Update
of the USGA Green Section-
Dave Oatis, Director, Matt
Nelson, and Jim Skorulski,
Agronomists.*



Anthony Grosso
1999 CAGCS President

Our first two golf meetings of the year were held at Pequabuck Golf Club (April 26) and Watertown Golf Club (May 11). Many thanks to both Peter Pierson and Bob Viera for providing us with excellent golf courses that were in superb condition.

Our monthly meetings have become a great opportunity for us to get away from our own courses and businesses for a day and to converse or commiserate (whatever the case may be) with

our peers. Either way, it is always a great day with friends.

All of our monthly meeting sites are finally filled for 1999, thanks to Dave Vibber and Ellington Ridge Country Club who were approached at a very late date and came to our rescue by agreeing to host the annual Invitational Tournament on July 26th. Thanks, again!

We are looking for meeting sites for the millennium (2000) and beyond. So, if you're interested in hosting a monthly meeting, the S & R Tournament or the Invitational and have not held a meeting in a while (or, even if you have), please contact Dennis Houle or me and we will be glad to work something out with you and your club.

With the amount of outside outings

most clubs are now experiencing, golf sites and dates are at a premium and need to be booked at a much earlier date than in the past.

CAGCS will be offering three educational seminars this year. The first seminar, "Practical Golf Course Maintenance" taught by Gordon Witteveen and Michael Bavier, will be held on October 25th.

On December 1 & 2, CAGCS will co-host two GCSAA one-day continuing education seminars: "Bentgrass Management Relationships to Physical, Mechanical, Biological and Chemical Stresses" and "Problems & Solutions: Using Annuals & Perennials in the Golfscape".

As you can see, the educational opportunities this fall are excellent — mark your calendars now!

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Released Japanese ladybugs are multiplying and killing hemlock woolly adelgids

by Mark S. McClure and Carole A. S-J. Cheah

Mark S. McClure, an entomologist at the Valley Laboratory of the Connecticut Agricultural Experiment Station in Windsor, has discovered a ladybug the size of a poppy seed that might save the hemlock forests of the East.

A tiny ladybird beetle, also known as a ladybug, has been imported from Japan by Station scientists to help control the deadly hemlock woolly adelgid, *Adelges tsugae*. The adelgid, which is also native to Japan, is an aphid-like pest of eastern hemlock (*Tsuga canadensis*) and Carolina hemlock (*T. caroliniana*) in the eastern United States.

In Connecticut, it was first observed in Middlebury and New Haven in 1985; it now occurs in all towns except Canaan, Colebrook, Goshen, Norfolk, North Canaan, Stafford, Torrington, Willington and Winchester.

Fortunately, hemlocks in nurseries and in most ornamental landscapes can be protected from the adelgid by using various cultural and chemical control practices (to learn how, write for a free copy of Station Bulletin 925 to: Publications, Box 1106, New Haven, CT 06504). Unfortunately, the adelgid has been uncontrolled in forests and in heavily wooded ornamental landscapes because native predators are ineffective and trees cannot be treated thoroughly with chemical pesticides.

The ladybug, however, discovered in 1992 in Japan by Dr. McClure and subsequently named *Pseudoscymnus tsugae*, has shown great potential for

biological control, a process whereby natural enemies control pest numbers.

The importation of any living organism into the United States must be approved by the USDA, Animal and Plant Health Inspection Service (APHIS). Approval requires submission of a report which details all known information on the organism, its potential impact on the environment, and the risks and benefits of its release.

Ladybugs are predators of numerous insect pests including scales and aphids; few ladybugs are harmful. Furthermore, our studies with *P. tsugae* determined that this ladybug is highly specific to adelgids, all of which are considered pests, and that releasing the beetle would have no adverse impact on the environment. On the basis of our research and reports to APHIS, we received permission to receive shipments of *P. tsugae* from Japan and to release it in Connecticut.

Since 1994, we have been rearing *P. tsugae* at our Windsor laboratory. From a starting population of less than 50 adult beetles, we now have reared more than 55,000 adult ladybugs for studies on its biology and for field experiments.

We have released nearly 50,000 adult

(continued on page 4)

In an interview with Steve Kemper of the Hartford Courant in 1998, Dr. McClure is quoted as saying:

"The hemlock woolly adelgid [a tiny insect] was introduced accidentally from Asia and established itself in our hemlock forests, which are totally defenseless against it.

It's a case of an exotic pest pretty much having its way on an important native species. This adelgid first arrived in Connecticut around 1985 from states to the south.

I had expected it to move in somewhat slowly, like other invading species have, but the following spring, infestations were cropping up all over the southern coast. It was quite the invasion. I started looking into what had been done scientifically with this insect and there was no literature whatsoever, so we started a pretty vigorous research program."

Continued from page 4

ladybugs in hemlock forests in Bloomfield, Cheshire, Hamden, New Fairfield, New Hartford, Pomfret, Washington and Windsor, CT, and in Charlottesville and Montebello, VA.

Our studies are evaluating the potential of the ladybug to become established and to control hemlock woolly adelgid in the northern and southern ends of the infestation. This past spring we also provided the New Jersey Department of Agriculture with a back-up colony of *P. tsugae*.

P. tsugae is not the same ladybug that appears in large numbers on the sides of light colored houses in the fall. The ladybug with the annoying aggregating behavior is another Asian species, *Harmonia axyridis*, which is a much larger beetle, about the size of a

small pea, and mainly orange in color with black spots. *P. tsugae* is only about the size of a poppy seed and is jet black; fortunately, it does not display the annoying aggregating behavior of *H. axyridis*. Despite its being somewhat of a nuisance at times, *H. axyridis* is undoubtedly eating huge numbers of aphids and, therefore, is a great benefit to farmers and gardeners. In fact, *H. axyridis* even attacks hemlock woolly adelgid during the spring, although the adelgid is not a preferred prey.

Any natural enemy needs to possess a number of important attributes if biological control is to be successful.

- ✓ Its life cycle must be compatible with that of the host
- ✓ It must be able to disperse in the

forest

✓ It must be able to overwinter and survive weather conditions throughout the year and become established

✓ It must find mates and reproduce

✓ It must reduce numbers of the pest.

Our studies thus far have revealed that the Japanese ladybug, *P. tsugae*, possesses many of the important qualities of a successful biological control agent.

Indeed, we have found that *P. tsugae* feeds on all life stages of its prey and that its life cycle is well synchronized with that of the adelgid. For example, both insects have two generations each year in the field.

Spring egg laying by ladybugs

→



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normally coincides with peak egg laying and hatching of adelgids; furthermore, a second generation of ladybugs occurs in June around the time that the second generation of adelgids does. Also, when adelgids are inactive for about 14 weeks during the summer, adult ladybugs are able to survive by feeding on dormant young adelgids. Three or more generations of *P. tsugae* can be reared each year in the laboratory under controlled temperature conditions.

To determine the dispersal ability of *P. tsugae* we hung yellow sticky traps that are attractive to both male and female adult ladybugs in a hemlock forest at various distances from our release trees. In addition, we sampled hemlock branches for beetles by inspecting them or by tapping them

with a stick while holding a white sheet beneath to catch the falling ladybugs.

We found that adult ladybugs actively explore branches for adelgids and move off release trees to nearby ones if need be. We have been able to find some on hemlocks more than 100 meters away from release trees during the same season as release, which is no easy task considering that these ladybugs are tiny.

To investigate the cold hardiness of *P. tsugae* in Connecticut and in Virginia, we returned to release sites in April and May in hopes of finding live ladybugs. We were delighted when yellow sticky trap catches and sampling of hemlock branches in spring revealed that adult ladybugs survived the winter in 1995-1996 (an extremely cold,

snowy winter) and 1996-1997 and 1997-1998 (both were mild, relatively snowless winters).

Several adult ladybugs that had wintered over were observed on infested branches that had been broken by snow and had fallen from trees which suggests that ladybugs probably spend the winter in the litter on the forest floor. The ability of *P. tsugae* to survive a variety of winter conditions in both states confirmed establishment and was exciting news because doing so is a major hurdle that any introduced natural enemy must overcome.

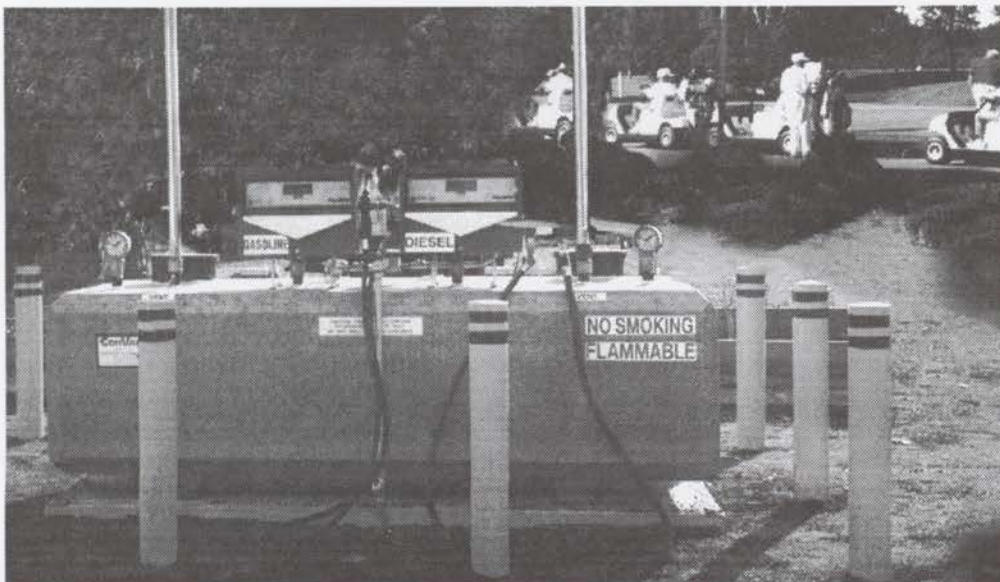
By examining branches for several hours monthly on release and adjacent trees at each release site, we have been able to document that the ladybug is in fact successfully developing, reproduc-

(continued on page 10)

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Ellington Ridge Country Club, the site of many championships over the years, including 15 CT PGA championships, three CT open championships, one New England amateur championship, USGA qualifiers—just to name a few—will host our annual invitational tournament on July 26th.

CAGCS is again pleased to announce that the Bruedan Corporation will sponsor the Invitational.

The course was built in 1959 with

Ellington Ridge CC to host CAGCS Annual Invitational Tournament July 26th

by Heather Garvin

Geoffrey Cornish as architect. The 18th hole is the signature hole and was rated the toughest par 4 in Connecticut by the *Connecticut Golfer on line Yearbook* in 1999. Over the years, the course has received recognition from the *Connecticut Magazine* being rated the 9th best private club in CT and the 3rd toughest private club in CT in 1997 and 1998.

Three golf holes were included in the Bests 18 holes in CT with the 13th (par 5), 17th (par 3) and 18th (par 4).

The fairways are wide with 89 sand bunkers throughout the course. Some of the greens are sloped dramatically and below the hole is the favored location from which to putt. The club is working with architect Stephen Kay on a master plan.

Ellington Ridge will host the CT Women's State Amateur in the year 2000.

Our host superintendent, Dave Vibber, has been the superintendent at

Ellington Ridge for the past 20 years.

He is originally from Auburn, MA, and got into golf while at UMASS majoring in Animal Husbandry (dairy farming). He discovered there was a better future in turf and changed majors, graduating in 1963. Dave did his placement at Mount Pleasant CC in Boylston, MA, with Dick Blake, CGCS.

From 1964 to 1966, Dave was stationed with the Navy Seabee, mobile construction battallion, as their photographer. While in the Navy, Dave worked part time at Potowomut GC in Rhode Island. In 1966, Dave took the position of superintendent at The Orchards GC at Mount Holyoke College, South Hadley, MA. Dave came to Ellington Ridge CC in 1980.

Dave lives in Enfield with his wife, Rhea. They have two children, Teri, a sophomore in college, and Alan, a senior in high school. Dave enjoys working out and hiking in his free time.

Hole	1	2	3	4	5	6	7	8	9	OUT	10	11	12	13	14	15	16	17	18	IN	TOT
Par	4	5	4	3	5	4	3	4	4	36	4	5	4	5	4	3	4	3	4	36	72
Blue 73.8/133	378	566	400	192	580	350	195	389	456	3506	348	554	390	518	376	200	445	245	475	3551	7057
White 71.4/128	365	501	360	181	485	339	185	375	431	3222	334	536	378	495	359	174	403	185	435	3299	6521
Red 71.9/117	350	441	274	133	445	325	159	285	374	2786	319	468	314	409	274	117	324	143	322	2690	5476
Hdcp	9	5	15	17	13	7	11	3	1		8	6	12	10	14	18	4	16	2		

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Meet our commercial members

by Bob Chalifour

In previous years, the editorial staff has introduced our host superintendents, board members, and highlighted events of our association. However, without contributions and sponsorships by our commercial members, our association would not be able to offer CAGCS members affordable membership and events. In future issues, we will be profiling commercial members, as well as some of the behind-the-scenes people that answer the telephones, our questions, fill parts orders, etc.

For our first profile, we would like to present life member—

Dick Hosking — On a recent trip to Milford, I visited with Dick Hosking, a CAGCS member since 1964. Dick started his own water works distribution Company (I & E Supply). After many years of hard work, he sold it four years ago. Today, Dick is Operations Director for Milford Landing.

Milford Landing, a former sewage treatment plant, has been transformed into a beautiful marina and park. Dick credits his long-time association with golf course superintendents for his ability to create the extremely manicured landscaped grounds. Needless to say, every tree, shrub, flower and turf area has irrigation.

Dick was instrumental from the very beginning in the development of the marina. As the project began to take shape, the mayor convinced Dick to take on the job of running the operation—and what an operation! It is conveniently situated next to shops and restaurants, has 40 slips and 60 moorings, and is a favorite stop for many boaters. The Landing has been recognized in *Offshore Magazine* and *Soundings*.

With their children now grown, Dick and his wife, Judy, enjoy playing golf a couple of times a week. No boat rides! Dick sold his boat two years ago—Judy still has not recovered.

Milford Landing's Dick Hosking and his staff welcome all boaters, as well as non-boaters alike, to enjoy the ambiance of Milford Landing. Bring your picnic lunch or order take-out from a neighboring restaurant.

The UMassTurf Program

<http://www.umass.edu/umext/turf>

The site includes the diagnostic sheet, how to take and send a sample, and weekly pest updates as well as other information useful to turf managers.

Dr. Schumann welcomes suggestions of additional information to be included.

Be sure to use an express delivery service that delivers directly to UMass offices. Regular priority mail or UPS will go to the Campus Delivery and delay the samples by a day or more.

Always call ahead to make sure the lab is receiving samples (413/545-

3413). If Dr. Schumann is out of town, she will leave alternative diagnostic lab information on her voice mail message.

There is also a new address to use when sending turf samples to UMass:

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— Congratulations —

John and Sharon Napier on the adoption of their baby boy, Ryan Edward.

Michael and Nancy Marino on the birth of their daughter, Ashley Marie, born May 10th, weighing in at 5 lbs. 7 oz.

Shawn Howland, a past recipient of CAGCS scholarships, for receiving his Doctor of Medicine Degree from the University of Florida College of Medicine in Gainesville, FL, on May 22nd.

He is the son of commercial member, Matt Howland.

— Condolenses —

To the entire Smith family, Jud (CAGCS Secretary) and Walter (life member) on the passing of their brother/son, Paul.

To John Napier and his family on the recent passing of his father.

The 1999 Membership Directory will be mailed out to the membership sometime this month.

* * * * *

Twenty years ago Gerald S. Pullman, plant pathologist at UC Davis, reported that a thin sheet of clear plastic spread over the ground may be the simplest answer to rid the soil of fungi, and reduce the growth of weeds and nematodes.

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* * * * *

Welcome new member

George Goodwin - Class Commercial
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With our sponsorship, we receive two parking tickets, a quantity of daily passes (good for one day only) and 10 sponsor badges.

The "Will Call" trailer will be at the Millane Nursery Garden Center on Rt. 99 in Cromwell. Parking passes and sponsor badges should be signed out and returned after use, so someone else can use them.

Your CAGCS membership card and/or your GCSAA membership card will be good for admission at all public access gates.

* * * * *

Invitations for the annual CAGCS Invitational Tournament scheduled for July 26th will be mailed to Class A & B members during the week of June 21st.

Because not all teams are able to bring their golf professional, the committee has ruled that the combined handicap total of each team cannot exceed 60.

* * * * *

Deadline for September *Clippings* is August 8th.

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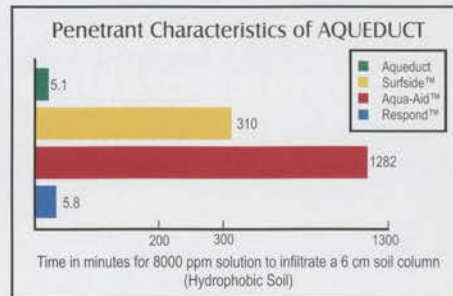


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Granular: Apply 2.5 lbs of AQUEDUCT/1000 sq. ft. (1.25kg/100 m²). Reapply at 2.5 lbs./1000 sq. ft. on a weekly basis as needed. AQUEDUCT DOES NOT NEED TO BE WATERED IN FOLLOWING APPLICATION. Irrigate before next mowing or leave baskets off.

Note: Aquatrols highly recommends the use of Primer® 604 Matrix Flow Soil Surfactant if a program approach to prevention of soil-water management problems is desired.

Following Topdress Applications:

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Granular: To treat areas following topdress applications, apply 2.5 lbs./1000 sq. ft. (1.25kg/100 m²). Reapply at 2.5 lbs./1000 sq. ft. on a weekly basis as needed. AQUEDUCT DOES NOT NEED TO BE WATERED IN FOLLOWING APPLICATION. Irrigate before next mowing or leave baskets off.

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Dogs of summer

by Steve DiVito, CGCS

Thor is my 17-month old German Shorthaired Pointer who is successful at harassing geese at Western Hills GC and East Mountain GC during the golf



season. I'll run him early in the morning before play gets out on the course and before there are golf balls available for him to steal.

Once winter comes, our geese populations tend to shift and we don't see as many as we do in the summer. The geese tend to use Joe Malay's course to feed during the winter months if there is no snow cover, due to

the proximity of Hop Brook Dam. When Hop Brook GC closes for the winter, I'll exercise Thor there and try to harass some of the geese for Joe.

For the most part, this dog will harass geese differently than a Border Collie or a Lab will. He will tend to slowly stalk the geese until he makes them so nervous that they take off. Once the first goose takes flight, he will chase and flush the rest of the flock. Sometimes, youthful exuberance takes over and he flat out chases any goose that moves.

Monthly meeting golf results

April 20 - Pequabuck GC

Low Gross Winners

1st - M. Dukette & T. Watroba
2nd - B. Pope & M. Chrzanowski

Low Net Winners

1st - M. McDermott & E. DeStefano
2nd - W. Weischet & E. Morrison
3rd - G. DePaola, M. Gostowski & S. Ramsay
4th - J. Stahl & T. O'Neill
5th - S. Moran & S. Gennings

Kickers

J. Ruzbatzky & P. Bonini
M. Chevrier & J. Barbieri
W. Urban & D. Houle

Closest to the Pins

#4 - M. Fuller (11'9")
#16 - E. DeStefano (4'2")

Longest Putts

#2 - J. Callahan (7'4")
#10 - J. LaBrie (32'4")

Longest Drive - T. Girardi
Closest to the Line - W. Weischet

May 11th - Watertown GC

A Division

Gross	Net
Front - P. Bacon 37	Front - M. Cornicelli 33.5
Back - L. Kennedy, Jr. 39	Back - M. Dukette 34.5
Total - S. Moran 81	Total - S. Niven 79-7-72

B Division

Gross	Net
Front - G. DeVaux 40	Front - M. Fuller 32
Back - W. Weischet 41	Back - W. Urban 35
Total - J. Streeter 83	Total - N. Hall 83-13-70

C Division

Gross	Net
Front - S. DiVito 45	Front - S. Donovan 33
Back - A. Baviello 46	Back - K. D'Amico 30.5
Total - M. McDermott 95	Total - B. Akins 72

D Division

Gross	Net
Front - R. Silva 47	Front - M. Faherty 31
Back - R. Chalifour 46	Back - G. Wise 32.5
Total - J. Malay 98	Total - D. Rackliffe 97-38-59

Closest to the Pins
#4 - N. Hall - 8'
#15 - P. Sabino - 4'
Closest to the Line
O. Regan

Longest Drive
T. Gerzabek
Longest Putts
#13 - G. Wise 20'
#18 - E. Johnson 30'

Calendar of Events

June 22nd - Grassy Hill CC
Tim Gerzabek, Supt.
2nd Round of CAGCS Championship

July 26th - CAGCS Annual
Invitational Tournament
Ellington Ridge CC
David Vibber, Supt.

August 4th - Tunxis Plantation
Charles Babcock, Supt.
ABCD Best Ball of Four

Sept. 18th - CAGCS Family Day
Lake Compounce
Southington, CT

September 27th - Pautipaug CC
Anthony Grosso, Supt.
President's Cup &
McLaughlin Trophy

October 4th - CAGCS Annual
S & R Tournament
Clinton CC
Michael Decker, Supt.

October 19th - Oak Lane CC
Lawrence Dodge, Supt.
Supt./Ass't. Tournament

November 8th - Old Lyme CC
Brian Skelly, Supt.
CAGCS Annual Meeting

Educational Opportunities

* October 25th
Practical Golf Course Maintenance

* December 1st & 2nd
*Bentgrass Management Relationships
to Physical, Mechanical, Biological
and Chemical Stresses*

~ and ~
*Problems & Solutions:
Using Annuals & Perennials
in the Golfscape*

*Sites yet to be determined

Continued from page 5

ing, and sustaining its populations level. Furthermore, in a laboratory, adult females have displayed an uncanny ability to economize their egg laying. They apparently seek out hemlock branches with adelgids and then lay a number of eggs that can be supported by the number of adelgids on that branch.

Our studies thus far indicate that *P. tsugae* is significantly reducing adelgid numbers, not only on release trees, but also on adjacent trees.

In the first experiment, we released adult ladybugs in June, 1995, onto five infested hemlocks in a Windsor forest. At that time, we placed some infested branches inside nylon sleeve cages to protect adelgids from the ladybugs. We left other infested branches without cages and, therefore, exposed

to ladybugs.

In May, 1996, we compared the number of adelgids, alive and dead, on branches that were caged and not caged. Much to our delight, we found that adelgids were 88% less numerous on branches that had been exposed to ladybugs than on caged branches which suggests that *P. tsugae* had significantly reduced adelgid numbers.

Unfortunately, the experiment could not rule out the possibility that the cages themselves, had somehow enhanced adelgid survival, for example, by excluding incidental native predators or by moderating the microclimate of the branch.

Therefore, we conducted a second experiment at the Windsor site in 1996 and 1997 to determine the impact of ladybugs on adelgids without the use

of exclusion cages. A new group of infested trees was selected in a different section of the hemlock forest. Adelgid egg masses present on branches prior to the release of 1,100 adult ladybugs in 1996 and a year later in 1997 were counted and compared. This was done for branches on which ladybugs were actually released and on nearby branches without ladybugs.

We found that 11 months after releasing ladybugs, adelgid numbers had been reduced by 87% on release branches and by 27% on nearby branches on which ladybugs had not been released. The slightly reduced numbers of adelgids from 1996 to 1997 on this latter group of branches suggests that some ladybugs may have dispersed from release branches onto

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these nearby ones during the course of the experiment, or that native predators may have been present on these branches.

Our studies during 1997 in Bloomfield, Hamden and New Hartford, CT, and in Montebello, VA, were equally exciting.

Comparison between areas in these hemlock forests where *P. tsugae* was released and control areas at least 500m away, revealed that adelgid densities had been reduced 47-88% in only five months by a starting population of only 2,400 to 3,600 adult ladybugs.

These same levels of adelgid reduction were observed when branches on which ladybugs were released were compared with branches enclosed in cages to protect adelgids from ladybugs. These data confirmed the effectiveness of *P. tsugae* as a predator of hemlock woolly adelgid and dispelled previous concerns that cages themselves affect adelgid survival.

Successfully establishing *P. tsugae* in our forests may also have the added benefit of controlling other adelgids. Our preliminary studies have revealed that this ladybug also attacks and develops from egg to adult on other adelgid pests including balsam woolly adelgid, Cooley spruce gall adelgid, and pine bark adelgid. These and other alternate adelgid hosts help enhance the establishment and survival of *P. tsugae* in the conifer forests of eastern

North America.

Clearly, *P. tsugae* possesses many important qualities of a successful biological control agent for hemlock woolly adelgid.

However, we emphasize that additional studies are needed to substantiate that *P. tsugae* is an effective control and to justify the intensive effort that will be needed to rear enough ladybugs for release throughout the adelgid-infested area.

Because the rearing *P. tsugae* is labor intensive, it is unlikely it could be mass-reared commercially and made readily available to the public.

If *P. tsugae* proves to be a successful biological control agent for hemlock woolly adelgid, we hope to release enough ladybugs to reproduce and spread from relatively few release sites throughout the

entire adelgid-infested area on our own.

We would like to thank Dr. McClure for providing us with this research information. He has agreed to share further information which we will gladly pass on to our membership.

2000



Consider yourself a candidate.

Applications for the 2000 Environmental Steward Awards are available from the May issue of *Golf Course Management*, the GCSAA web site (www.gcsaa.org), affiliated chapter presidents, program sponsors and the GCSAA service center (800/472-7878).

We'll look forward to receiving your application by October 1, 1999.

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Gray spots

(continued from page 1)

Gray leaf spot, conversely, was all but invisible. The relative unimportance of the disease early on meant scientists spent little time studying its management and control. As a result, there are far more questions today than answers.

An outbreak becomes apparent with reddish-brown spots on leaf blades, in turf patches about 6 to 8 inches in diameter. Although the symptoms of gray leaf spot can be confused with other diseases, immediate confirmation of potential infections by a turfgrass pathologist is important, since entire fairways can become infected within days.

Early symptoms are even less obvious on seedling perennial ryegrass since leaf blades are slender and lesions are invisible to the naked eye. A distinct twisting of the leaf tip, which causes blades to look like small fish-hooks, is the easiest way to identify outbreaks.

The good news is that fungicide combinations have proved successful in controlling the disease. The bad news is that anywhere from three to 15 applications are required since disease activity cannot be predicted. In addition, the disease can remain virulent until recurring hard frosts. For courses with tight budgets that have not had to treat perennial ryegrass, fungicide costs of \$20,000 to \$50,000 (depending on acreage and conditions) have increased the price of keeping turf alive.

This new invader has shown to be a formidable opponent and has, in many respects, humbled the turfgrass industry. The USGA Green Section will keep in touch with researchers and act as a clearinghouse of information for courses that may be struck by the disease. Golfers should be aware that gray leaf spot presents new challenges to the turfgrass industry and that taking bold management steps will be necessary to prevent future outbreaks.

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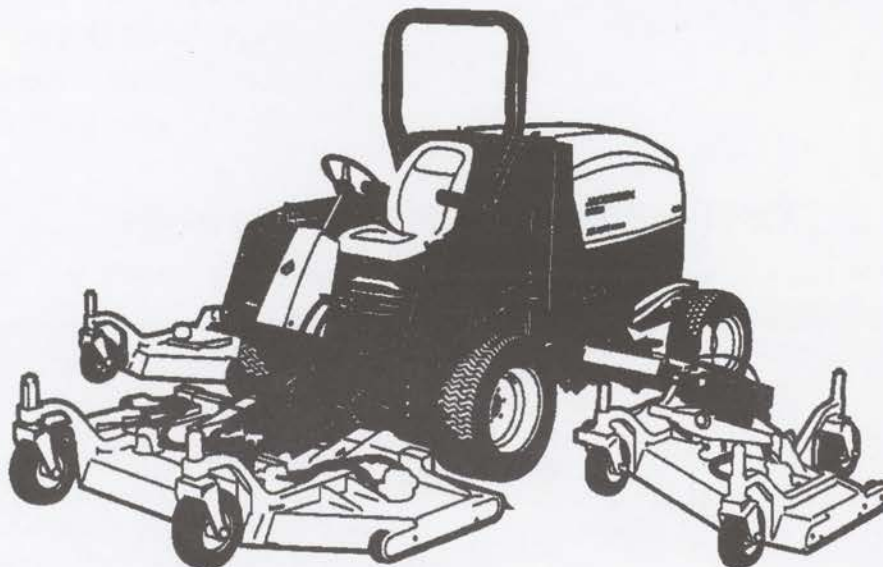
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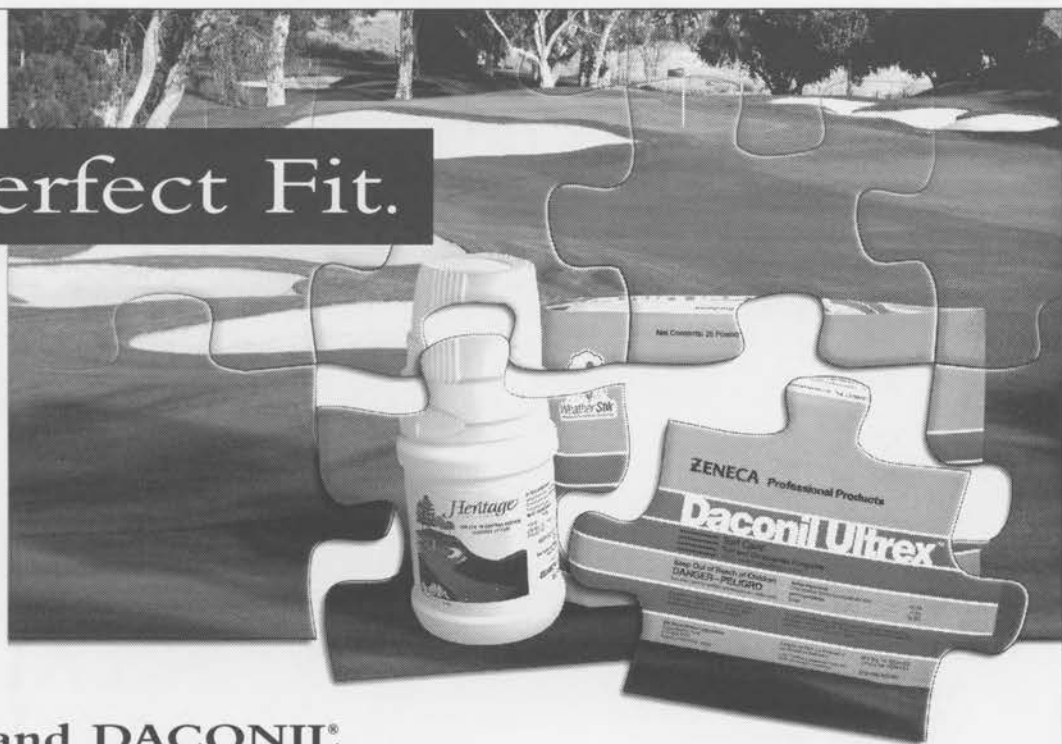


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