CORNELL UNIVERSITY TURFGRASS TIMES

CUTT

2010 Issue 1 • Volume 21 • Number 1

Controlling Invasive Crane Flies and White Grubs: Two for One?

Damaging infestations of invasive crane flies are building in home lawn, golf course and other turf settings across western NYS. As a short-term management approach, insecticides can be a reliable and efficacious control tactic. We have demonstrated or validated the efficacy of a wide range of control products available to pest management practitioners in New York State. Even though invasive crane flies were not detected until 2004 in the Northeast U.S., there are >200 products labeled for the control of larvae, including viable alternatives for preventive and curative control windows. Among them are several classes of active ingredients: anthranilic diamide (chlorantraniliprole), biologicals (*Beauveria bassiana*), carbamate (carbaryl), insect growth regulators (azadirachtin), neonicotinoids (imidacloprid), organophosphate (chlorpyrifos, trichlorfon), oxadiazine (indoxacarb), pyrethroids (e.g., bifenthrin), and dual compounds (bifenthrin+carbaryl, bifenthrin+imidacloprid, cyfluthrin +imidacloprid).

Nevertheless, it is the need for an additional insecticide application that may be one of the most serious consequences of invasive crane fly establishment. As we understand them currently, the best control windows are in spring (April to May) or autumn (September to October), essentially too early or too late to overlap with the traditional periods of preventive (June to early August) and curative (late August to early September) white grub control. Like white grubs, invasive crane flies are bound to become widespread locally. Our previous studies showed, for instance, that within 1 or 2 seasons after initial detection, 22-98% of golf course greens and tees are already infested. Prevention or suppression of crane flies may thereby entail broad applications across whole lawns and fairways. The result is that turf managers are forced to contemplate an additional insecticide application, implying a costly new economic and environmental burden to the turfgrass industry.

Certain long-residual insecticides, when applied as early as April to target other turf pests (e.g. bluegrass billbugs and annual bluegrass weevil), can persist long enough to prevent white grub outbreaks

continued on page 4

This Times

Proudly supported by the New York State Turfgrass Association.

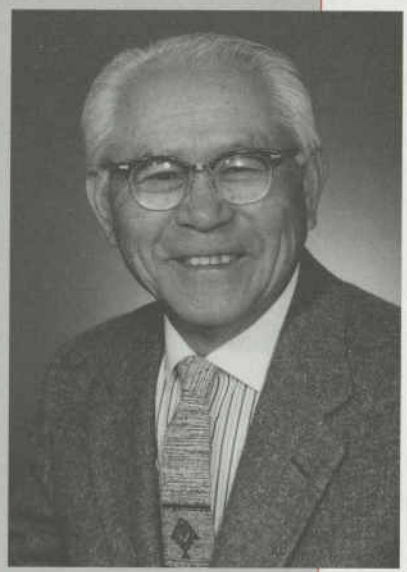
CUTT, "Cornell University Turfgrass Times" is published four times per year by the Turfgrass Science Program at Cornell University, Ithaca, New York 14853. Address correspondence to: Cornell University Turfgrass Times, 20 Plant Science Building, Cornell University, Ithaca, NY 14853; phone: (607) 255-1629; email: fsr3@cornell.edu.

Editor: Frank S. Rossi, Ph.D.

Design & Production: NYS Turfgrass Assn. Latham, NY

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

Passing of a Legend



Haruo Tashiro, Cornell University Professor Emeritus in the Department of Entomology at the New York State Agricultural Experiment Station, passed away peacefully on December 8 in Golden, CO at the home he shared with his son Steve and Steve's wife Patricia. He was 92 years of age. "Tash," as he was affectionately called by his many friends and colleagues, was a world leader in the biology and management of insects and mites on turfgrass and woody ornamentals.

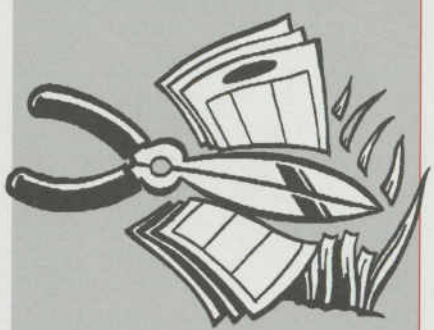
Tashiro received his B.S. (1945) in botany and zoology from Wheaton College in Illinois and his M.S. (1946) and Ph. D. (1950) in entomology from Cornell University. He was a research entomologist with the U.S. Department of Agriculture (USDA) in Geneva, NY, from 1950 to 1963, before becoming the investigations leader and research entomologist with USDA at Riverside, California. In 1967, he returned to Geneva to serve as professor of entomology until his retirement in 1983.

Throughout his active scientific career, Tashiro produced numerous publications on the biology, ecology and management of insects affecting horticultural crops and turfgrass. Perhaps best known is his 1987 publication, Turfgrass Insects of the United States and Canada. This book was the first comprehensive reference to bring together under one cover a discussion of practically all insects and other arthropods destructive to turfgrass in the United States and southern Canada. It soon became the standard reference for the subject. The book was revised in 1999 by Tashiro, his former graduate student, Pat Vittum, and Mike Villani, who succeeded Tashiro as the turfgrass and soil ecologist at Cornell.

Among his many accomplishments, Tashiro conducted seminal studies on the European chafer (Rhizotrogus majalis) during the 1950s and 1960s, elucidating the biology of the insect, identifying trapping techniques, and identifying management strategies.

Tashiro was not only an excellent scientist but an accomplished artist. His detailed drawings of anatomical features of insects, his skill in cartography and his photos grace the pages of his books on turfgrass insects. His artistic skills were recognized by many, including his colleagues Paul Chapman and Siegfried Lienk. Since they were not able to find an artist who could provide the morphological accuracy necessary to illustrate a book on insects affecting apples in New York, they asked Tashiro if he was willing to try. The book, Tortricid Fauna of Apple in New York, was published by Cornell University in 1971 and remains a classic.

Tashiro was born in Selma, California, on March 24, 1917. During his youth, Tashiro was among the approximately 110,000 Japanese Americans interned in camps during World War II because of their ancestry- an act the federal government apologized for in 1988. In 1942, he married Hatsue Morimitsu whom he had met at their church in Sacramento. Rumor has it that he courted her by bringing gifts of vegetables from his family's farm in nearby Orosi. Tashiro always considered Geneva his home and he and Hatsue raised three children there. He was involved in many civic organizations and was an avid golfer and gardener in his spare time. He is survived by his daughter Elaine Gerbert and her husband Pierre (Laurence, KS), his son Steve and his wife Patricia (Golden, CO) and his daughter Wendy (Byron Bay, Australia). Tashiro was predeceased by Hatsue on April 7, 2006. She was buried in Dinuba, CA, where Tashiro will also be laid to rest. Tashiro will be remembered as a gentleman, excellent scientist and an inspiration to his family and friends.



Anthony M. Shelton, Ph.D., Cornell University
Pat Vittum, Ph.D., University of Massachusetts

Kao-Kniffin Joins Turfgrass Team as New Weed Scientist!

We are pleased to announce that Jenny Kao-Kniffin, Ph.D. will be joining the Department of Horticulture at Cornell University in July 2010 as the Weed Ecologist of Urban Landscapes. Her research and extension programs will focus on developing biological weed control methods that will be integrated into cultural management practices.

Professor Jenny Kao-Kniffin received her Ph.D. from the University of Wisconsin-Madison in Land Resources, with a specialization in Ecosystem Ecology. She received her Master's degree in Biological Sciences and Bachelor's degree in Environmental Studies from the State University of New York at Binghamton. Professor Kao-Kniffin's doctoral work examined the identity and function of rhizosphere microorganisms associated with invasive weeds and native plants. She is currently a Postdoctoral Research Fellow with the National Science Foundation (NSF) on a project that investigates landscape-scale patterns of microbial composition and activity in the Arctic Coastal Plain of Barrow, Alaska. Dr. Kao-Kniffin will be joining the Department of Horticulture at Cornell University in July 2010 as the Weed Ecologist of Urban Landscapes. Her research and extension programs will focus on developing biological weed control methods that will be integrated into cultural management practices.

New York State Turfgrass Association

Calendar of Events

2010

August 18	**Sullivan County Challenge - Steve Smith Memorial Tournament** Grossinger Resort and Golf Club, Liberty, NY
August 24	**CNYGCSA Poa Annual Tournament** The Links at Sunset Ridge
September 23	**AdkGCSA Poa Annual Tournament** Cronin's Golf Resort, Warrensburg, NY

2011

January 11-13	**Empire State Green Industry Show** Rochester Riverside Convention Center, Rochester, NY
February 28	**Western Regional Conference** Millennium Hotel, Buffalo, NY
March 16	**Adirondack Regional Conference** High Peaks Resort, Lake Placid, NY

By popular request, the Empire State Green Industry Show, will again be held in NOVEMBER starting in 2012!

2012

November 13-15	**Empire State Green Industry Show** Rochester Riverside Convention Center, Rochester, NY

2013

November 12-14	**Empire State Green Industry Show** Rochester Riverside Convention Center, Rochester, NY

For more information go to www.nysta.org or contact our office at (518) 783-1229.

CUTT

Feature Story

continued from page 1

Forced to intervene against invasive crane flies in the spring, will turf managers enjoy protection over the same area from white grubs in the summer?

in the summer. Indeed, several products carry "guarantees" for the season long control of one or more kinds of insect pests. Turf managers may not necessarily be "condemned" to an additional widespread application to protect susceptible turfgrass when they suffer infestations of both pest complexes. We therefore examined this approach as a management strategy for tandem control. Forced to intervene against invasive crane flies in the spring, will turf managers enjoy protection over the same area from white grubs in the summer? Likewise, will those forced to intervene against white grubs in the summer, enjoy protection from invasive crane flies in the fall?

Methods

The field study was conducted on a low maintenance nonplay area of a golf course located near Lockport, NY. The site was chosen based on well-established populations of the European crane fly *Tipula paludosa*. Turf composition was a mix of perennial ryegrass and other unidentified grasses (approximately 80%), as well as broadleaf perennial weeds such as chickweed and dandelion (approximately 20%). Grass was maintained at a cutting height of 2.5 inches over the course of the study. The study was conducted as a randomized complete block design with 6 repetitions of 4 treatments. Each treatment plot was 1 x 1 meter.

Liquid and granular formulations were applied with a pressurized CO2 sprayer system and a drop spreader, respectively. Products, formulations and rates are summarized in Table 1. All three insecticides are registered and labeled for use on invasive crane fly larvae in New York State: Acelepryn 1.67SC (chlorantraniliprole), Merit 0.5G (neonicotinoid) and Provaunt 30 SG (indoxacarb). For each product, both the lowest and highest recommended application rates were included as treatments. The insecticide treatments were applied to separate plots at each of three seasonal windows for targeting white grubs such as Japanese beetle (JB) larvae. The first application was made 21 May 2009 to simulate an early preventive window prior to JB egg laying. The second application was made 6 July to simulate a late preventive window to target JB eggs and first instars. The third application was made 28 July 2009 to simulate an early curative window to target first and second instars.

The effect of treatments on the abundance of crane fly larvae was measured on 2 November, or 165, 120 and 100 days after application. This species of crane fly completes larval development in early June, aestivates all summer, pupates in September and emerges as an adult in September/October. Rating the plots in November thereby measured residual protection against new crane fly larvae of the fall population. Each plot was rated by collecting five 2-inch diameter soil cores, from which larvae were separated through a heat extraction technique in the laboratory. Soil samples were discarded after 24 hours of extraction. The number of larvae from each plot was tallied using a dissecting microscope. Percent control was calculated with respect to the untreated check plots.

Results

In the untreated check plots, the mean density of crane fly larvae was 74/sq ft. There was a significant effect of treatment on larval densities for all three application

Table 1. Insecticidal treatments (low and high rates are based on label recommendations)

Product method	Product/1000 sq ft	Pounds AI/acre	Application
Acelepryn 1.67SC, low	5.43 ml	0.104	liquid
Acelepryn 1.67SC, high	10.86 ml	0.209	liquid
Merit 0.5G, low	1.4 lb	0.3	granular
Merit 0.5G, high	1.8 lb	0.4	granular
Provaunt 30SG, low	0.138 oz	0.1125	liquid
Provaunt 30SG, high	0.275 oz	0.225	liquid

dates (P<0.05, ANOVA).

For the first application date (21 May), a significant reduction in fall crane fly populations was attributed to the following treatments: chlorantraniliprole (low 66%, high 93%) and imidacloprid (low 50%). No carry-over residual effect was detected for either rate of indoxacarb or the high rate of imidacloprid for the suppression of fall populations after spring application.

For the second application date (6 July), a significant reduction in fall populations was attributed to the following treatments: chlorantraniliprole (low 98%, high 100%), imidacloprid (high 45%) and indoxacarb (low 45%). No carry-over residual effect was detected for the low rate of imidacloprid or the high rate of indoxacarb for the suppression of fall populations after early July application.

For the third application date (28 July), a significant reduction in fall populations was attributed to the following treatments: chlorantraniliprole (low 88%, high 94%), imidacloprid (high 53%) and indoxacarb (low 58%, high 72%) (Table 2, Fig. 3, Fig. 4). No carry-over residual effect was detected for the low rate of imidacloprid for the suppression of fall populations after late July application.

Discussion:

Are turf managers necessarily condemned to an additional application when they suffer infestations of invasive crane flies on top of white grubs? Probably not. Certain long-residual insecticides do hold potential for the tandem control of ECF and other susceptible turf-infesting insect pests such as white grubs. Our study reveals that applications of chlorantraniliprole made in May and July can persist long enough to protect turf from fall populations of invasive crane flies. Applied in late May, we recorded a residual effect of 66-100% reduction in the fall. Applied in early or late July, we recorded 89-100% control in the fall. While both imidacloprid and indoxacarb showed some residual activity, their promise for season long control is still ambiguous. More studies are required to define the length of season long control opportunities.

In practical terms, these results mean that pest management practitioners forced to intervene against white grubs in the summer may also experience protection against the fall generation of invasive crane flies if they use chlorantraniliprole. Moreover, those forced to intervene in May against invasive crane flies, may enjoy protection against them for the rest of the season, as well as against any other co-occurring insect pests for which those products have proven efficacy (e.g., white grubs).

In addition to long-residual control, chlorantraniliprole offers relatively good efficacy in spring when applied for the curative control of late instar crane flies. In our previous studies with this insecticide, the mean efficacy against late instars in spring was 43% (range 5.2-53.1%, n=7). Consistent with the idea that insecticide efficacy declines with increasing size of the immature target stage, mean efficacy was 63% (n=2) in late April, 47% (n=3) in early May and 16% (n=2) in late May. In our previous studies with imidacloprid and indoxacarb, the mean efficacy against late instar crane flies in spring was 62% (range 57-67%, n=4) and 42% (range 0-94%, n=11), respectively, for applications made between 2 May and 30 May. In order to fully validate a spring window for curative control opportunities with these insecticides, more data should be gathered on the efficacy of applications made from early April to late May. Moreover, the season-long efficacy of those timings should be confirmed against the fall populations of ECF.

The study will be repeated in 2010 to validate results. If proven successful, this new approach will mean that areas targeted for preventive white grub control will be protected from crane flies for the rest of the season. Conversely, areas targeted for curative crane fly control in the spring will be protected from white grubs for the rest of the growing season and even from crane flies through late fall. Benefits of this "two-for-one" should ultimately be experienced across the entire industry through one less insecticide application: one less visit for lawn care service providers, one less fairway application for golf course superintendents, and one new tactic to ensure a high quality (uninfested) product for sod producers. The overall impact will be to mitigate the impact and curb the spread of invasive crane flies across New York and the broader Northeast.

Dan Peck, Ph.D.
Cornell University

CUTT

In practical terms, these results mean that pest management practitioners forced to intervene against white grubs in the summer may also experience protection against the fall generation of invasive crane flies if they use chlorantraniliprole. Moreover, those forced to intervene in May against invasive crane flies, may enjoy protection against them for the rest of the season, as well as against any other co-occurring insect pests for which those products have proven efficacy (e.g., white grubs).

NYSTA 2010 Turfgrass Advocacy Day

The New York State Turfgrass Association's Turfgrass Advocacy Day, held on March 10 in Albany, proved to be one of our most successful lobby day events. All who attended were impressed by the detailed organization of the event and effective communication of NYSTA's issues. Fifty-eight attendees made 64 legislative visits to discuss a variety of issues including the New York Farm Viability Institute, the Turfgrass Environmental Stewardship Fund, pesticide regulations for schools, adoption of a state definition of IPM, The New York Golf Economy Report, using less than pesticide label rates, and water withdrawal permitting.

Senator Darrel Aubertine, Chair of the New York State Senate Agriculture Committee, addressed participants at NYSTA's 2010 Turfgrass Advocacy Day.

Senator Darrel Aubertine, Chair of the New York State Senate Agriculture Committee, was this year's luncheon speaker. He said that golf is an important industry that plays a major part of the Capital Region economy. Another highlight was the presentation by Joseph Steranka, World Golf Foundation Chairman and PGA of America CEO who said that given the fiscal crisis facing New York's budget, he was concerned that the game of golf could be indirectly affected by cutbacks. He summarized the results of "The New York Golf Economy Report" which was commissioned by Golf 20/20 for the New York Golf Task Force and prepared by SRI International. The report shows golf's financial impact was $5.3 billion in 2007 and supplied more than 56,000 jobs. We were honored to have him join us along with attendees representing the Central, Metropolitan, Northeastern, and Western New York PGA sections.

Joe Bertino, Executive Director of the Western New York PGA, thanked us for the experience and "allowing the PGA of America and its New York State section to share in your wonderful advocacy day in Albany. It was truly an honor to be part of the efforts, and I sincerely hope that you are successful in accomplishing the legislative goals your members so professionally presented to our regional politicians. We know that the efforts of your members are vital to the success of each and every golf facility and the resulting enjoyment of the game of golf by players statewide!"

The day started with a breakfast where participants listened to the opening remarks made by NYSTA President Greg Chorvas and Past President, Steve Griffen. This was followed by a presentation from Jeff Lane of The Vandervort Group, the lobbyist for the New York Alliance for Environmental Concerns. He spoke about the current legislative climate and budget issues.

Participants then had the opportunity to review issues and advocacy strategy. NYSTA past president, Steve Griffen,

CUTT

Co-owner of Saratoga Sod Farm, Inc., presented information on the New York Farm Viability Institute (NYFVI). NYFVI is dedicated to serving agricultural and horticultural producers by supporting applied research, education, information transfer, technology adoption and market analysis to reduce practical barriers to the success of agricultural and horticultural enterprises.

Funded turfgrass projects include $80,000 for "Developing Accelerated Sod Production Methods" and $40,000 for "Reducing Sod Losses from Annual Bluegrass." These studies were conducted by Dr. A. Martin Petrovic with Cornell University. Additional funding in the amount of $198,948 was awarded to Dr. Daniel Peck, Cornell University, for "Curbing the Economic and Environmental Impacts of Invasive Crane Fly Pests on Production Sod Farms." NYSTA recommends restoration in the New York State Budget of $4.5 million in cuts to NYFVI reappropriations for fiscal years 2006-07, 2007-08 and 2008-09. We also recommend $1.5 million in new funding for 2010-11, a 54% cut from previous years.

NYSTA President, Greg Chorvas, presented background information on the Turfgrass Environmental Stewardship Fund. The 2006-07, 2007-08 and 2008-09 New York State Budgets included a $175,000 appropriation. Restoration of this funding of $175,000 in the 2010-11 budget is needed so research to enhance environmental stewardship in New York State can continue.

The use of "Less than Label Rates" was once again on the agenda for this year's Advocacy Day. I had the opportunity to brief participants on this bill which permits commercial applicators to apply pesticides in a dosage, concentration or frequency less than that specified on the labeling. NYSTA's perspective is that turfgrass managers who are trained, licensed commercial pesticide applicators need the flexibility to apply less than label rates in order to aid their ability to reduce overall pesticide use and adopt a progressive turfgrass IPM program. We recommend asking the legislature to support bill number A7600 (Magee) that creates a new section in the Environmental Conservation Law that allows for using "less than label rates." The day after Advocacy Day, Senator Carl Marcellino introduced a Senate version of Magee's bill. This new bill number is S7087.

continued on page 8

Senator Darrel Aubertine, Chair of the New York State Senate Agriculture Committee, was this year's luncheon speaker. He said that golf is an important industry that plays a major part of the Capital Region economy.

(left to right) Larry Wilson, New York Alliance for Environmental Concerns Chairman; Tom Wright, NYSTA board member; Steve Griffen, NYSTA Past President; Greg Chorvas, NYSTA President; Joseph Potrikus, CSFM, NYSTA board member; Joseph Steranka, PGA of America CEO; Michael Maffei, CGCS, NYSTA Past President; Rick Holfoth, NYSTA Secretary/Treasurer.

CUTT

continued from page 7

I also presented information on "Water Withdrawal Permitting." The purpose of this bill is to authorize the Department of Environmental Conservation (DEC) to implement a water withdrawal permitting program to regulate the use of the State's water resources. Current New York State law requires entities with the capability of withdrawing 100,000 gallons per day to file an annual report of daily water usage and pay a $50 fee. This bill expands the existing water supply permit program that would require entities that have the capacity to withdraw a minimum of 100,000 gallons per day to obtain a permit from the DEC. The current reporting law would be repealed.

"Joseph Steranka, PGA of America CEO, summarized the results of "The New York Golf Economy Report" at NYSTA's 2010 Turfgrass Advocacy Day."

Following the review, participants had the opportunity to meet with their legislators and discuss the issues. After the appointments, attendees reconvened for lunch to hear addresses by Senator Darrel Aubertine and Joseph Steranka. With the increasing climate of frustration by constituents who feel that government is unresponsive to their concerns, many were relieved to have the opportunity to conduct rational, orderly discussions with their legislators that will have a positive impact on the turf industry. As Charles Robson, Executive Director of the Metropolitan PGA wrote, "I just wanted to say thank you to everyone for an incredible job in putting the meetings and sessions together. I know from our perspective, it was a special experience and one that we were proud to be a part of. I also want to say a special thank you to Joe Steranka and the PGA of America and their support team for lending some invaluable experience, credibility and passion to the New York State presentations. I hope our organizations will continue to work closely together. I thought this was a great example of a state-wide commitment to the game and the industry and how we are stronger when our associations are allied and communicating for mutual goals and benefits."

Even though you may not have been able to attend Advocacy Day, consider visiting your Assemblyman or Senator in their district offices or writing them discussing these issues. Either way, get involved and work towards protecting our industry. All of the information you need on the various issues can be accessed on NYSTA's web site at www.nysta.org.

I'd like to acknowledge the following sponsors who helped make this successful event possible: Helena Chemical, New York State Lawncare Association, Metropolitan Golf Association, Grassland Equipment & Irrigation Corp., RISE-Responsible Industry for a Sound Environment, Nassau Suffolk Landscape Gardeners Association, Dow Agro Sciences and The Sullivan County Challenge 10th Annual Golf Tournament.

Be sure to join us next year in Albany!

Michael Maffei, CGCS,
New York State Turfgrass Association

CORNELL Turfgrass ShortCUTT

Your Weekly Link to Turfgrass Information!

The latest research based turfgrass information delivered to you every week during the growing season via email.

Free to NYSTA members

Supply email to shortcutt@nysta.org

Support the 2010 season of ShortCUTT

Keep this great NYSTA member benefit free. Sponsor a week for only $150!

For more information (518) 783-1229 or www.nysta.org.

Save the Date for the Empire State Green Industry Show!

JANUARY 11-13, 2011

Rochester Riverside Convention Center, Rochester, New York

Plan to be a part of the biggest green industry show in New York State. The Empire State Green Industry Show, hosted by the New York State Turfgrass Association and New York State Arborists – ISA Chapter, Inc., features…

- One thousand attendees representing a wide range of green industry professions
- Over 100 exhibitors
- Networking opportunities
- Reach key industry decision-makers!

For more information, visit the show web site www.nysta.org.

"Smart Growth – Learn with the Pros"

Phone: (800) 873-8873, (518) 783-1229

CUTT

New York State Sod Industry At a Glance

TPI's 2010 Summer Convention & Field Days are being held in New York, a state with an impressive turfgrass production industry as Turf News found out in this interview with Elizabeth Seme, executive director of the New York State Turfgrass Association (NYSTA), and her NYSTA colleagues.

Turfgrass Producers International will meet in New York for its Summer Convention & Field Days. What would you like TPI members to know about New York's turfgrass industry?

Field Irrigation at Pine Island Turf Nursery, Inc. TPI President, Charles (Chip) Lain, Jr., is owner and host of this year's Field Days.

NYSTA: According to 2007 National Agricultural Statistics Service (NASS) statistics (the most recent data available), turfgrass sod farms in New York State generated $33.3 million in sales.

The New York Turfgrass Survey in 2003 indicated that the turfgrass industry employed 43,000 people and contributed $5 billion in turf maintenance expenses to the economy. Here are a few more survey findings:

- Turfgrass covers 3.43 million acres in New York
- 93 percent of the 3.4 million acres are private lawns, golf courses and acres managed by lawn care companies
- Over 843,000 new turf acres were established in 2003 at a cost of nearly $1.56 billion
- The value of turf equipment owned by all sectors surveyed totaled over $6.3 billion
- The total payroll for turf employees was nearly $467 million

(The New York Turfgrass Survey was sponsored by the NYSTA, which is comprised of 1,600 green industry professionals who share technology, promote environmental stewardship, support education, advance research and disseminate research findings.)

How many turfgrass sod farms are there in New York?

NYSTA: According to 2007 NASS statistics, there were 21 sod farms operating in the state.

How many acres are planted to commercial turfgrass sod?

NYSTA: The total area planted to sod was 7,508 acres, according to 2007 NASS statistics.

What other legislation could impact the state's turfgrass producers?

NYSTA: "Sod farmers should be concerned with S7787 (introduced by New York State Senator George Onorato) which would enact the Farmworkers' Fair Market Labor Practices Act, granting collective bargaining rights, workers' compensation and unemployment benefits to farm workers. This bill would bankrupt many farms across New York State," says Jeff Lane, government affairs lobbyist, Vandervort Group, LLC, which represents the New York Alliance for Environmental Concerns.

In addition, the New York State budget proposed by Governor Paterson does not contain any funding for the Turfgrass Environmental Stewardship Fund. An appropriation of $175,000 would help fund research in turfgrass management that strives to reduce the industry's reliance on pesticides.

Previous appropriations from 2006-2008 funded research at Cornell University, which studied turf's resistance to the annual bluegrass weevil, crane fly identification techniques and turf diagnostics.

The budget also does not fund the New York Farm Viability Institute, which fosters a vibrant agricultural/horticultural sector in the state by supporting applied research, education, information transfer, technology adoption and market analysis to reduce practical barriers to the success of farming enterprises.

Reprinted with permission from Turf News

Early morning harvesting at DeBuck's Sod Farms of NY, Inc. The expanded field days includes tours of DeBuck Sod Farms.

NYSTA past president, Steve Griffen, is co-owner of Saratoga Sod Farm, Inc.

CUTT

Green industry in the news shown winning awards, being recognized by various organizations and working hard.

Sanderson Wins National Spirit of Progress Award

NYSTA board member, Robert Sanderson, received the National Spirit of Progress award from Sodexho Campus Services. He was honored for his work refining used vegetable oil for use in diesel-powered equipment on the Nazareth College campus, where he is employed as the grounds and landscape manager. The award is given each year to a vendor partner that shows ability and initiative in helping the company grow its business, reduce costs and provide innovative products and services to customers.

Broyles Named Person of the Year

Joe Broyles, senior regional account manager for Plant Healthcare, was selected by the New York State Turf & Landscape Association as its person of the year. He accepted the honor at the association's spring meeting in March.

Schied Featured in TurfNorth

Long-time NYSTA member, Dan Schied, was recently recognized in the March issue of TurfNorth magazine. In 1995, he started a landscape networking group which has grown to become a popular list serve of more than 40 groundskeepers and turfgrass professionals. Members communicate through emails and meet two or three times each year to discuss issues, ask questions and give each other advice on how to solve turf and landscape problems. For grounds managers in the New York area interested in more information, email Dan Schied at dschied@facilities.rochester.edu.

2010 NYSTA Winning Fields Seminar in Niskayuna

⬅ *Tim Vanini, Ph.D., Education Coordinator for the Sport Turf Managers of New York (in foreground) gave a presentation with Ben McGraw, Ph.D., Assistant Professor in the Golf and Plant Sciences Department at SUNY Delhi, on aerification and topdressing.*

⬇ ➡ *Niskayuna High School grounds crew assists with drainage project demonstration.*

➡ *Dave Tiffany, (on left), Senior Groundsman for Niskayuna High School, was host to NYSTA's Winning Fields Seminar held on Tuesday, June 15, 2010. He and Joe Potrikus, (on right), Vice President of Greener World Landscape Maintenance, LLC, presented an overview of the facility and subsurface drainage project.*

⬅ *Frank Rossi, Ph.D., Associate Professor of Turfgrass Science at Cornell University and New York Extension Turfgrass Specialist discussed plant growth regulators and solving turfgrass problems.*

⬅ *Tom Holdrege, (left), Instructional Support Associate in the Golf and Plant Sciences Department at SUNY Delhi, and Ted Karnath, (right), Irrigation Specialist in upstate New York, discussed troubleshooting irrigation systems.*

⬅ *Dominic Morales, Professor and Dean of the Applied Sciences and Recreation Division at Delhi College, teamed up with* ➡ *Jim Catella, CFB, CTB, Director of Design and Construction at Clark Companies, to present basic athletic field drainage principles.*

CUTT

Healthy Ecosystem

continued from page 16

The use of irrigation after the application of fertilizers and pesticides reduced the concentrations of both nutrients and pesticides lost through runoff and leachate. This process helps to lightly wash chemicals and nutrients off of plant leaves and integrate them into the soil surface where they can bind to soil particles or enter soil solution, making them available for plant uptake or available for breakdown in the case of pesticides.

that were detected in runoff and often the highest levels of both nitrogen and phosphorus in runoff and leachate.

As plots matured, there was a strong reduction in the volume of leachate and runoff seen leaving all plots. This finding strongly correlated with lower concentrations of nutrients lost due to more vigorous plant growth and the apparent uptake of water and nutrients. The denser, more established canopies provided more mature plants that left smaller amounts of water available to leave the site and enter waterways. There was also a general trend of higher water loss in the winter and spring months when plants were either dormant or not fully growing due to cool temperatures that often led to saturated soil conditions.

There were differences on the plot scale of how management and species composition affected nutrient loss. The use of irrigation after the application of fertilizers and pesticides reduced the concentrations of both nutrients and pesticides lost through runoff and leachate. This process helps to lightly wash chemicals and nutrients off of plant leaves and integrate them into the soil surface where they can bind to soil particles or enter soil solution, making them available for plant uptake or available for breakdown in the case of pesticides. When not integrated, these products can be more susceptible to running off during intense rain storms that wash them off site following application.

Overall, plots that had the largest losses of runoff and leachate volume had the largest mass losses of nutrients. These losses were generally caused by decreased plant density of the plot either caused by the high composition of annual weedy species, or through poor fertility that led to thinning turfgrass cover. This ultimately, reduced the amount of water taken up from the soil by the plants which kept the soil moisture level higher. Increased soil moisture cause increase runoff due to saturation excess runoff, which means there is physically no way the precipitation can enter the soil profile because it has reached its maximum water holding capacity. Secondly, lack of lawn density decreases the waters resistant pathway that reduces flows down a slope, causing it to travel faster, allowing less time for the water to infiltrate into the soil. These two conditions led to the majority of runoff and leachate losses from the sites.

There were direct links to some nutrient loss that was tied to fertilizer applications. Ammonium in runoff was only seen in significant amounts from turfgrass plots that receive fertilizer containing some ammonium, but these values were low, and overall only accounted for less than 0.5% of total applied nitrogen for the course of the entire study. However, total ammonium losses for the entire study were as high or higher for plots consisting of weedy species that did not receive any supplemental fertilization compared to the turfgrass lawns. Nitrate loss in leachate contributed the largest overall source of nutrient loss from the landscape. Up to 20% of nitrogen applied was lost in leachate from the turfgrass plots that received fertilizer. However, substantial nitrate losses were seen from unfertilized

Table 1. Total nutrient loss in a 27 month period from leachate.

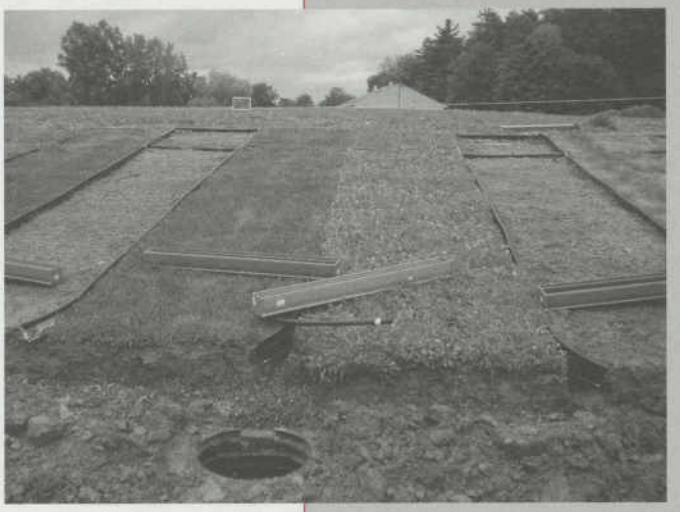
	Nutrient mass loss in leachate lbs acre-[1]					Total Leachate
Lawn Type*	NH4+	NO3-	Organic N	PO4-3	Total P	Inches
Turfgrass+F+P+I	0.79	49.69	1.48	0.15	0.15	15.92
Turfgrass+F+P	0.32	31.05	0.88	0.03	0.05	4.99
Turfgrass+F	0.45	56.18	2.38	0.24	0.25	9.94
Turfgrass	0.66	50.83	1.70	0.13	0.14	15.20
Broadleaf	0.47	5.79	1.16	0.07	0.08	9.69
Broadleaf+Turfgrass	1.21	37.53	1.53	0.11	0.14	14.92
Crabgrass	0.68	29.96	0.99	0.20	0.21	12.47
Crabgrass+Turfgrass	0.75	56.01	1.67	0.05	0.06	14.83

*With F=fertilizer, P=pesticide, I=irrigation

plots which provide evidence that not all nitrogen loss to waterways can be attributed to fertilizer alone, but natural processes in the landscape ecosystem can be a substantial source of nitrogen loss through leachate.

Landscape pesticides used in this study did not appear to be a major threat to waterways if used properly. During the establishment phase, losses of 2,4-D and mecoprop were the highest, but values dropped significantly as the plots aged. Both of these broadleaf herbicides appeared to be more mobile and found at significantly higher values than the insecticide (bifenthrin) and the pre-emergent herbicide (pendimethalin) used in this study. The use of supplemental irrigation to water in applications of pesticides appeared to minimize the potential loss of these pesticides to waterways as compared to not watering in.

It is our finding that turfgrass maintained for aesthetic purposes to maintain good density and color does not potentially impose adverse affects as a non-point source of pollution to waterways compared to other lawn cover types. The reduction or non-use of these products during establishment periods may be important because of the greatest loss into the environment due to low infiltration rates of the soil, and low uptake rates of the cover species. However, most new varieties of Kentucky bluegrass do not fare well with minimal or no supplemental fertilization, and care should be taken to provide adequate fertility to newly establishing sod so that it does not become thin and weed infested as observed here. If fertilizers and pesticides are applied properly at the rate given, they provide nutrients necessary to maintain a dense canopy that is not seen in unfertilized turfgrass plots. Unfertilized turfgrass plots became very thin and contained upwards of 30-40% weedy species after only a two year period following establishment through sod. This phenomenon allowed them to become one of the largest contributors to off-site nutrient loss over time of all the plots studied.



Not having large populations of annual weedy species in lawns such as crabgrass may be an important tool to combat sediment and runoff losses of nutrients due to inconsistent densities and cover types that lead to large volumes of runoff losses. From this study, it has become apparent that maintaining a dense perennial lawn cover at all times, regardless of species composition appears to be the most important component of combating non-point pollution of nutrients and pesticides to waterways from urban lawns. If allowed to become thin and sparse, there often is a large nutrient pool stored in the soil profile that becomes more available to off-site transport to sensitive waterways.

Table 2. Total nutrient loss in a 27 month period from runoff.

	Mass loss of nutrients in runoff lbs acre-[1]					Total Runoff
Lawn type	NH4+	NO3-	Total Nitrogen	PO4-3	Total Bioavailable Phosphorus	Inches
Turfgrass+F+P+I	3.13	1.05	5.47	0.30	0.56	3.83
Turfgrass+F+P	4.13	0.52	6.35	0.29	0.40	1.20
Turfgrass+F	2.17	0.23	2.81	0.11	0.25	0.93
Turfgrass	0.89	0.59	2.11	0.22	0.87	2.83
Broadleaf	0.47	0.41	1.34	0.08	0.11	1.56
Broadleaf+Turfgrass	0.71	0.52	1.77	0.14	0.36	1.94
Crabgrass	0.68	1.19	2.69	0.21	1.35	4.29
Crabgrass+Turfgrass	0.45	0.75	2.23	0.24	0.18	2.35

Mark Slavens and
A. Martin Petrovic, Ph.D.,
Cornell Univerity

CORNELL Turfgrass

Cornell University Turfgrass Times
New York Greengrass Association
P.O. Box 612
Latham, NY 12110

Nonprofit Org.
U.S. POSTAGE
PAID
Permit No. 30
Latham, NY 12110

Healthy Ecosystem

As plots matured, there was a strong reduction in the volume of leachate and runoff seen leaving all plots.

A Turfgrass Environmental Stewardship Funded Project

Cosmetic Applications of Fertilizers and Pesticides to Turfgrass

There is growing scrutiny on the use of fertilizers and pesticides in the landscape and the impact they may have on water quality. For many, the use of fertilizers and pesticides in the landscape appear to serve no greater function than providing a "cosmetic" benefit that improves the aesthetic appearance of the lawn. This raises the question: do the "cosmetic" applications of nutrients and pesticides actually serve a greater function to the landscape ecosystem above the aesthetic improvement. It is known that fertilizer and pesticide applications help to improve both canopy and rooting density of lawns and turfgrass which actually can reduce the impact of off-site nutrient and pesticide loss by reducing the amount of runoff. Now, obviously you will not have pesticide loss if you do not apply pesticides, but can the non-use of pesticides lead to a lawn that is more susceptible to canopy thinning through pest pressure? If so, this may ultimately promote higher runoff and leaching losses of nutrients and sediments due to lower uptake rates, and surface interception ability.

We looked to answer these questions by comparing various lawn management protocols common in the landscape that consist of irrigation, pesticides, and fertilizers similar to a conventional four step consumer lawn program and compared those to lawns of various mixtures of weedy species and even Kentucky bluegrass lawns to determine if there was any benefit to the "cosmetic" application of fertilizers and pesticides on the reduction of nutrient loading to waterways through leachate and runoff.

After two and a half years of consecutive monitoring both runoff and leaching from eight different lawn types that represent an array of those that exist in New York State, there were several trends and underlying principles seen important to urban watershed management. First and foremost is the importance of managing newly established sites carefully and with limited inputs of nutrients and pesticides. This finding is directly supported by other peer reviewed research and is of great importance due to the compacted soil surfaces formed through heavy equipment and the lack of rooting from plants that reduces nutrient and water uptake. The establishment period of this study led to the highest levels seen of all pesticides

continued on page 10