



# MTGF Clippings

OFFICIAL PUBLICATION OF THE MINNESOTA TURF AND GROUNDS FOUNDATION  
FALL / WINTER 2011

**2011 Field Day Summaries**

**As Trees Become Dormant,  
It's Time for Health Care**

**MASMS is in the Spotlight**



**MTGF PRESIDENT**  
SHAWN C. BERNICK

## PRESIDENT'S CORNER "A Rewarding Time"

It seems like just yesterday I conducted my first MTGF board meeting and began my two-year term as president. It truly has been a pleasure working with each of the board members to carry forth the mission of MTGF. I have found my time spent on the board to be extremely rewarding and enjoyable. It has been great having the opportunity to network and share experiences with many different people from a variety of different organizations and segments in the green industry. I have learned a great deal through these shared experiences and have forged a number of relationships that will undoubtedly continue into future endeavors.

**My fellow MTGF board members have volunteered and given generously of their time, knowledge and resources** during my time as president and I have personally benefited from their contribution and for this I am very grateful. Without the commitment and dedication of the board members, MTGF would not succeed or exist. THANK YOU to all Board members and to Turtinen Communications Inc. for their hard work and efforts. I would also like to thank Cassie Larson and Bob Fitch from the Minnesota Nursery and Landscape Association (MNLA) for their efforts and commitment to a strong and lasting partnership between MNLA and MTGF.



**I would like to extend a special thank you to Bob Mugaas** for his years of dedicated service to MTGF. Bob has been serving on the MTGF board as a University of Minnesota representative and has been a consistent face for MTGF dating back to its early years. Bob has been a constant link between MTGF and the University of Minnesota and has provided a tremendous amount of leadership and direction over the years for the Foundation. In addition, Bob has been a valuable asset to the University of Minnesota for his turf and ornamental outreach and education that he has provided over the years to our industry. Please thank Bob and congratulate him on his retirement from the University of Minnesota Extension Service!

**Finally, I encourage all readers of MTGF Clippings to make a commitment of volunteering in their respective allied associations** or green industry organizations. Not only will this pay dividends in the relationships that you create and the exchange of ideas, but you will also find the experience to be very rewarding as you serve and donate your time and services to the greater good of our industry.

Have a safe and productive end of the year and I look forward to seeing many of you at the 2012 Northern Green Expo in January.

Regards and Best Wishes,

Shawn Bernick  
President, Minnesota Turf and Grounds Foundation

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### ABOUT THE COVER

The Minnesota Educational Facilities Management Professionals (MASMS), is this issue's association spotlight featured on Page 18 of this issue. Cover photo is Andover High School. School grounds are made up of many components. Parking lots, drives, drainage ponds, athletic facilities, walkways, landscape and native areas, and building structures all work together to allow thousands of students, staff and the public access to schools in an efficient, functional and safe manner.



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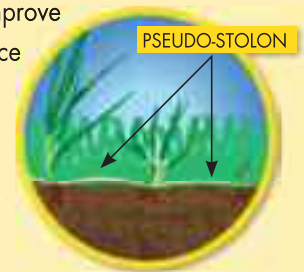
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# As Trees Become Dormant, Autumn is Time for Health Care

By **BRANDON GALLAGHER**  
*Rainbow Treecare*

As the trees are beginning their dormancy during this period, tree health care practitioners are often at their busiest application season since spring. A wide variety of issues can be treated during autumn and the application timing window is often much wider than it is during the spring months. This allows the fall application season to be extremely operationally efficient, which can result in higher profit margins than the same treatment performed other times of the year. Generally speaking, there are three tree health care application methods: tree injection, soil applications and sprays. Other types of tree health services performed in the fall include Air-spade and fertilizing. All of these services can be offered in the latter parts of the tree care season.

## **Tree Injection**

Treating certain tree species in the fall via intervacular injection, such as fungicide treatments on elms for Dutch elm disease or emerald ash borer treatments on ash trees, can be done in the fall up until the trees begin to show fall color. Research has shown that trees treated after the onset of fall color may not get complete and even distribution of the treatment throughout the entire canopy. Although there is much more to learn about the process, the conventional wisdom is that as tree begins to show fall color and shut down for the season they are no longer evenly pulling solutions through the canopy. This is thought to result in some portions of the tree becoming overdosed and other portions underdosed. For these treatments it is important the injection season end when the leaves turn.

There are certain tree injection treatments that can be performed up to, during and even slightly past the leaves turning color for the season. Micronutrient treatments for deficiencies of iron and manganese have been successfully injected into trees later in the season and resulted in a significant reduction of chlorotic symptoms the following season.

## **Soil Application**

Applying tree health care products to



Photo courtesy Rainbow Treecare

## **AIR SPADING**

*Air spading a ring around the base of the tree is a common practice to aerate the soil and incorporate organic matter.*

the soil, either through soil injection or a simple basal drench application has the widest timing window of the three treatment methods. Fall applications of soil applied treatments can be performed up until the ground freezes for efficacy the following spring. This allows crew scheduling to be flexible and has many advantages over other fall treatment methods. Soil-applied insecticides, such as imidacloprid, and tree growth regulators, such as paclobutrazol, can be applied to a broad spectrum of tree health problems on a wide variety of tree species with the same mix tank. Products that offer control for a full 12 months allow applications to be done any time in the fall, from September into December and have the same level of coverage throughout the following growing season. Soil applications can be performed on cool days, warm days, windy days and even wet days - so long as it is not too wet as to risk run-off. Many tree health companies have moved all of their soil applications to the fall time as the practicality of wide timing windows and broad treatment uses made better busi-

ness sense than trying to schedule them in the busier parts of the season.

Most soil applied tree health products are formulated to adsorb to the cation exchange capacity (CEC) of the soil. Negatively charged tree health products bind to the positively charged CEC and are released (or 'exchanged') over time into solution as the soil moisture allows. Once in solution, these products can enter the root system where transpiration pulls them up into the canopy. Depending on when in the fall season the soil treatment is applied, the product may partially translocate into the tree that year or may simply reside in the soil until the tree begins to pull solutions up from their roots in spring. The advantage of fall treatments over spring treatments is many soil applied products can take several weeks to fully move into the upper canopy, especially on larger, mature trees. Applying in the fall ensures the treatment is available to the tree as soon as it begins the annual

*(Continued on Page 6)*

## Dormant Tree Health Care-

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sap rise without needing to concern your scheduling with early or late spring seasons. In addition to products applied for the subsequent growing season, fall can also be a time to apply soil treatments for fall season pests such as cool season mites on conifer trees or fall webworm on hardwoods.

### Spray Applications

Spray applications are mostly thought of as spring treatments for foliar fungal diseases and growing season applications of insecticides, but sprays during the later parts of the season can be an effective management option as well. Dormant sprays, as the name implies, are performed after the trees have lost their leaves or, for conifers, after temperatures have cooled. Horticultural oils are among the most common dormant spray season treatments. Hort oils are a highly refined petroleum product, similar to baby oil, which are sprayed on the trunk and branches of trees to control overwintering pest on the tree such as spider mites and scale insects. Dormant season sprays are frequently used to control egg masses from destructive caterpillars like gypsy moth. Hort oil can also be tank-mixed with many common miticides for added control on cool season mites during the fall. Be sure to read and understand all chemical label directions before mixing any products.

### Air Spade Work

Pneumatic soil excavation is generally referred to as 'air-spad-

ing' after the popular brand 'AIR-SPADE' but the term is often used to encompass all air tool work regardless of the brand used. Interestingly, our company receives more questions related to the business aspects of air tools and how the value of these services can be marketed to clients versus technical questions related to how pneumatic tools can be used, when they should be employed, or if they will damage tree roots.

Let's go back to the early 1990s, before air tools became a widely accepted method of removing and mitigating soil. Any type of root collar excavation required hand digging which could be a challenge if you were dealing with a tree-planted several feet too deep. Hand digging often resulted in minor trunk and root damage from shovels and trowels inevitably striking the bark surface. Root collar exams were laborious, time consuming and often revealed a limited picture of the issue due to the labor intensive process involved in uncovering the collar. If a soil was compacted there was very little that could be done. Vertical mulching – the process of drilling a series of holes within the drip line of the tree with an auger and back filling with organic matter – was about the only option arborists had to combat compaction. This method only impacted a small percentage of the total root zone and, as with the hand-digging methods, was very labor intensive. The augers required two people to operate which added to the labor cost of vertical mulching. Root flare excavations to prepare trees for macro-infusion treatments with fungicides or micro-nutrients were also labor intensive and required careful digging at the base of the tree.

In short, prior to the advent of air tool uses for arboriculture, practices performed on soils were done by tree health practitioners at great effort and marginal effectiveness. Air spades have been around for awhile in other applications such as construction and the underground utility industry. It is unclear who first figured out they could be used to remove soil around trees without damaging sensitive root systems, but within the last decade these tools have become more commonly used in the tree care industry. In addition to the uses for root collar examinations, root flare excavations and soil compaction alleviation mentioned above, arborists have found an endless number of uses for air spades. They can be used to integrate organic matter or mycorrhizal inoculants into the soil, aerate the area around trees, and discover where roots are growing for the purpose of establishing adequate tree protection zones prior to construction. Chuck Lippi of Advanced Tree Care in Florida even used an air spade to completely excavate a trench to replace a section of sewer pipe – all without severing the roots of a nearby mature live oak. The air spade, combined with a skilled backhoe operator, allowed this pipe to be replaced at less cost to the client than directional boring and certainly in a manner less destructive to the tree than simply cutting off half of its root system. As you can see, the use of air spades in arboriculture can open up entirely new management options that would never have been possible before.

The uses for arborists are established and the benefits to trees have been documented in research publications and in field practice, but can they be profitable too? Many companies have developed flat rates for air spade services like root collar excavations and soil aeration. Often pricing for soil aeration is based on the area that will be excavated around the tree, which can range from a few feet beyond the trunk to beyond the drip line. In these cases, turf is removed around the tree using shovels or a sod kicker. An air spade is then used to mix and churn 4-8 inches deep. At this point additions such as organic matter or mycorrhizae can be incorporated, and then the surface is topped with an organic mulch layer. For more ala carte air spade work the pricing can follow the same per-man-hour schedule that some companies use

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## Dormant Tree Health Care-

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for bidding pruning work. If the area to be excavated is known you can estimate the time required by using the formula of 1 cubic foot of soil per minute. For example, a 5-foot diameter ring aerated to 6" deep contains a volume of just less than 10 cubic feet. At the rate of 1 cubic foot per minute it should take about 10 minutes with the air tool to aerate the 5' ring. Allowing 10 minutes for sod removal, 10 minutes for setup, and 20 minutes for mulching and clean up, it is easy to see how this small project could be accomplished in an hour from start to finish.

Air spade work for the purpose of root enhancement, soil decompaction, or soil excavation can be done any time of year when the soil is not frozen. By opting to do majority of the work during the slower times of the fall season you can utilize air tools to help extend the profitable length of the season. Scheduling several air spade jobs on the same day can also help with operational efficiency, especially if you are renting an air compressor to get the job done. Renting air compressors for about \$100 per day is a cost-effective way to get started with air spade work. As new compressors cost around \$13-15,000 you can always rent to start off and buy one later with the profits from your air tool work.

### *Fall is the time to get it done*

Taking advantage of a slower season for tree care by performing many of your plant health care applications in the fall is a



Photo courtesy Chuck Lippi, BMCA, RCA

### **EXCAVATING TRENCH**

An air spade was used in conjunction with a backhoe to replace a drain pipe without damaging the roots of a mature live oak.

great way to extend your service season, free up scheduling conflicts of springtime, and offer new and valuable services to your clients. It is important that the products and application methods you choose to employ during this time be backed by scientific research and sound arboricultural practices, the same as any other service you offer throughout the year. Going back to the question we began with, you can see how even though the trees are beginning to bed down for winter, fall time can be a productive season from both a biological perspective and an operational perspective as well.



**David J. Oberle**  
**SALES**  
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# Around the MTGF

By **JEFF TURPINEN**  
*MTGF Executive Director*

## MPSTMA COMMUNITY SERVICE PROJECT

Each year, Minnesota sports turf managers pick out a field to renovate and spruce up as a Community Service Project.

This year's project for the Minnesota Park and Sports Turf Managers Association (MPSTMA) took place at Christian Life School in Farmington, Minn.

Project coordinators, Mike McDonald, a certified sports field manager (CSFM) from TCF Bank Stadium at the University of Minnesota, and Paul Griffin, sports turf manager from the City of Woodbury, led a group of volunteers on October 19.

Commercial vendors were instrumental in the success of the project. The Tessman Company donated over 40 bags of starter fertilizer; the Minnesota Vikings Football Club donated bags of grass seed and fertilizer;

Reinders Inc. helped with five acres of fertilizer with pre-emergent; The City of Prior Lake brought truckloads of ag lime and, for the pitching mound and Ervasti Sales donated three pallets of Hilltopper Clay. Patrick Schoen, Tri-State Bobcat, brought a skid-loader with forks and knives. Ken Rost, Frost Services, and Mike Peschel, Property Props, both volunteered their time all day.

Mike Brunelle, Town & Country Landscape, and his son, Eric Brunelle, were poetry in motion as they spread the ag lime across the infields of the baseball field and softball field.

A little over a year ago, Christian Life Schools had five acres of land that was not being used in the back of the school. They cleared the land and the corn that was growing on it, grew grass last year and had the basics ready for a baseball field, softball field and a soccer field running between it. Bob Nurnberger, athletic director at Christian Life Schools, heard from Bob Frank, MTI Distributing Inc., that the MPSTMA annually renovates one field a year as a Community Service Project and encouraged Nurnberger to apply. The MPSTMA Community Service Project committee visits all entrants' fields. Christian Life School was the winning entrant.

*(Editor's Note: Contact the MPSTMA office or visit [www.mpstma.org](http://www.mpstma.org) if you would like to enter a field for 2012.)*



### MGCSA WEE ONE FUNDRAISING EVENT

The 2nd Annual MGCSA Wee One Fundraising golf event was held at North Oaks Golf Club on October 3. The MGCSA has committed to host this event each fall. In 2010, a member of the

MGCSA, Tom Fuller benefitted from this event. The Wee One Foundation assists golf course management professionals (or dependents) who incur overwhelming expenses due to medical hardship without comprehensive insurance or adequate financial resources. The Wee One Foundation has raised over \$500,000 and gifted over \$450,000 to date. As the Wee One Foundation grows,

[www.MTGF.org](http://www.MTGF.org)



*Josh Graham, left, a sports turf manager at TCF Bank Stadium at the University of Minnesota, and Chad Maata, City of Prior Lake, volunteered their time to help renovate a baseball field in Farmington, Minn.*

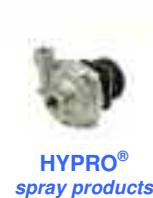
so does the number of individuals and families that it is able to help.

Through the support of individuals and companies, the Wee One Foundation is able to assist those who incur overwhelming expenses due to medical hardship without comprehensive insurance or adequate financial resources. The organization is dedicated to helping others in the green industry.

*(Editor's Note: Contact the MGCSA office at 952-473-2582 if you would like to get on the mailing list for the event scheduled for the fall of 2012. Wee One memberships are available at [www.weeone.org](http://www.weeone.org).)*

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# JANUARY 3, 2012

## WEEDS, TREES AND TURF DISEASE

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Host: MTGF Sponsors: Gertens, John Deere Landscape and Professional Wireless Communications

### Schedule of Events

8:00 am -10:30 am

#### Impact of Cultural Practices on Turf Diseases

Dr. Bruce Clarke, Rutgers

This session will cover the following topics: impact of management practice on turfgrass diseases: are you using all the tools in your toolbox?; current BMPs for control of anthracnose; and current strategies for dollar spot management on golf courses.

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**Bruce Clarke**, is the vice chair of the department of plant biology and pathology at Rutgers. The principal focus of Dr. Clarke's research deals with the identification and control of abiotic and biotic diseases associated with cool-season turfgrasses. To date, research findings have been utilized by turf managers to reduce pesticide usage through improved management strategies. Research also has been initiated to develop disease forecasting and detection systems and to identify genetic resistance to diseases in new and existing turfgrass cultivars.

10:45 am -11:45 am

#### Grassy Weed and Broadleaf Herbicide Research Update, Part I

Dr. David Gardner, The Ohio State University

Several important new herbicides have come onto the market in the past few years for the control of broadleaf weeds, including mesotrione and aminocyclopyrachlor. The uses, advantages, and disadvantages of these products will be discussed, as well as how these products might fit into your weed management program.

12:45 pm - 1:30 pm

#### Grassy Weed and Broadleaf Herbicide Research Update, Part II

Dr. David Gardner, The Ohio State University

Some new products have been developed that can help with control of grassy weeds. However, many other products have appeared on the market that are novel combinations of existing herbicides. The uses, advantages, and disadvantages of these products will be discussed.

**Dave Gardner** is an associate professor of turfgrass science at The Ohio State University. His research interests are in the areas of pesticide/nutrient fate and shade stress physiology. He also conducts a large number of herbicide trials each year. Dr. Gardner teaches undergraduate courses in the areas of turfgrass management, statistics, and landscape horticulture.

#### 1:30 pm -3:30 pm: Managing Trees in Urban Soils, James Urban, Urban Trees & Soils

Plant root health is dependent on both soil conditions and root conditions that exist when the tree is planted. In urban areas, soil conditions are significantly degraded and modifications to soil or

(Continued on Page 11)

## Super Tuesday-

(Continued from Page 10)

even complete replacement of soils will be necessary. Once the tree is in the ground there is often little that can be done to improve large scale soil issues such as compaction or poor drainage or these modifications become quite expensive. This presentation will discuss soil solutions appropriate to projects in urban soils ranging from dense urban core sites to suburban development.

**James Urban**, FASLA specializes in the design of trees and soils in urban spaces. He has written and lectured extensively on the subject of urban tree planting and has been responsible for the introduction of many innovations including most of the current standards relating to urban tree plantings. His 2008 book, *'Up By Roots: Healthy Trees and Soils in the Built Environment'*, is becoming one of the principle tree and soil references. James Urban was instrumental in the development of structural cells and structural planting soils for use under sidewalk pavements, and is credited with helping to re-awaken the profession of landscape architecture to the skills required to successfully plant trees in difficult urban soils.



**ERIC WATKINS**, Associate Professor, Department of Horticultural Science at the University of Minnesota, addresses a Field Day audience on September 15 at TROE Center and spoke about his perennial ryegrass cultivar evaluation and other research taking place in 2011.

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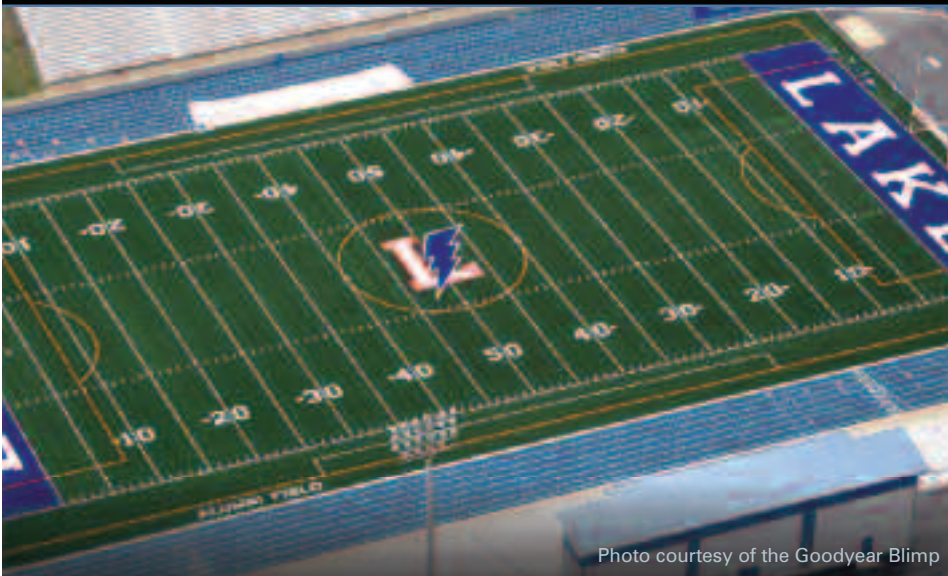


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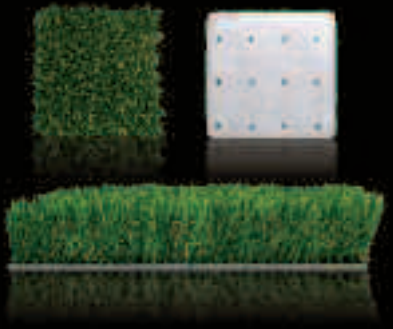
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# Research Summaries from the 2011 MTGF / UM Field Day at TROE Center

On September 15, the University of Minnesota and the MTGF held its annual Field Day for members of all MTGF organizations.

Here are summaries of the topics U of M researchers talked about at Field Days:

## Update on Imprelis (aminocyclopyrachlor)

### Herbicide Injury of White Spruce, White Pine and Various Other Conifer and Deciduous Plant Materials in Minnesota

Jeff Gunsolus, Professor, Agronomy/Weed Science  
Bob Mugaas, Turfgrass Extension Professor  
Kathy Zuzek, Woody Plants Assistant Extension Professor

Aminocyclopyrachlor is a new class of herbicide chemistry known as the pyrimidine carboxylic acids. It is the active ingredient in several non-crop products registered by EPA in 2010, including the turf grass product Imprelis™. Aminocyclopyrachlor is similar to another group of carboxylic acids that include herbicides such as picloram (Tordon™), clopyralid (Confront™) and aminopyralid (Milestone™). All of these herbicides are classified as plant growth regulators due to their disruption of normal plant



growth and development and are also noted for their slow decomposition rates in compost.

Aminocyclopyrachlor is absorbed by roots and leaves and moves via the xylem and phloem to the regions of the plant where new growth is occurring. Aminocyclopyrachlor's beneficial features include a low mammalian and aquatic ecosystem toxicity

and applicators benefit from herbicidal activity, at low rates, to some very difficult to control weeds commonly found in turf grass and other non-crop areas.

Although Imprelis is used at low rates (3 to 6 fl oz product/A, or 0.047 to 0.094 lb ai/A) it is persistent in soils and plants. Based on injury symptomology, several coniferous species are highly sensitive to low levels of Imprelis and some other plant species appear to exhibit lesser sensitivity.

Currently there is a limited understanding of the behavior of Imprelis in soils but recent research indicates that Imprelis is water soluble and should be very mobile in soils based on its sorption properties, with the lowest sorption found in soils with low organic matter and high amounts of sand. Imprelis has a half-life ranging from 22 to 126 days in terrestrial field dissipation studies. The primary route of Imprelis degradation is via exposure to sunlight under aqueous conditions. Once Imprelis moves into the soil the primary means of dissipation is runoff and leaching. In aerobic soil environments Imprelis half-life ranged from 114 to 315 days.

Imprelis herbicide has several beneficial features of interest to the turf grass industry. However, due to the diversity of plants adjacent to areas treated with Imprelis and the uneven terrain often associated with landscaped areas, the persistence and mobility of Imprelis in the soil increases the risk of unintended plant injury.

Imprelis injury has been widespread across the eastern United States and the Upper Midwest. It has also been reported as far south as Georgia. Much of the reported injury in more eastern parts of the country has been on Norway spruce and white pine. However, in the Upper Midwest a majority of the impacted conifers have been white spruce and its variety Black Hills spruce and white pine with a scattering of reports on other conifers such as Colorado spruce, Norway spruce, arborvitae, bald cypress (*Taxodium distichum*) and yews (*Taxus* spp.) along with a variety of other herbaceous broadleaf plant materials. This section of the presentation will discuss important identification traits of Norway spruce, white spruce and white pine such that damage investigation and follow-up reports can be done accurately.

As described earlier, aminocyclopyrachlor, the a.i. in Imprelis, is a WSSA Class 4 herbicide meaning its mode of action is consistent with other types of plant growth regulator types of herbicides. Where this damage occurs in conifers, it is most commonly seen as a twisted, distorted and often drooping new growth. New growth showing these symptoms can remain green and alive in mildly affected trees to nearly brown, dry and most likely dead in severely affected trees. Needles can also range from nearly completely green or only slight browning on the tips to completely brown and falling off on severely affected trees. This section of the presentation will focus on the range of symptoms commonly seen in this area and how to generally assess the level of damage and prospects for survival and/or recovery.

(Continued on Page 13)

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## Field Day Summaries-

(Continued from Page 12)

### UM Grounds Management Research Update Tour

Jeff Gillman, Associate Professor, Department of Horticultural Science

This tour focused on a variety of new landscape projects including an investigation into how to treat potbound container grown plants at planting, new Dutch elm disease-resistant elms for Minnesota, new pruning techniques and the Missouri Gravel Bed growing system.

### Six Steps to Diagnose Pest Problems in the Landscape

Michelle Grabowski, Assistant Extension Professor - Plant Pathology  
Jeff Hahn, Assistant Extension Entomologist, Dep't of Entomology

A wide variety of pest problems commonly occur in landscapes, including insect, disease, wildlife and abiotic problems. In order for an appropriate management strategy to be chosen and implemented, the identity of the pest must be known. Diagnosis therefore is a valuable skill for any landscape professional. Like any new skill, your ability to diagnose plant problems will improve with practice and experience. Proper diagnosis is not about memorizing a list of problems. Rather it is a series of steps taken to identify the cause of the problem. Often it is a process of elimination. Below are a series of questions to guide you through the diagnostic process.

#### Identify the Plant

- What are common problems on that plant?
- What does a healthy plant look like?

#### Examine the Whole Plant for Symptoms

• Symptoms are a change in the plant's normal growth or appearance (e.g. leaf spots, twisted leaves, stunted plants, wilted shoots) Examine: Upper & lower surface of leaves; branches; trunk, fruit and flowers

- What plant parts are affected?
- What types of symptoms are present?
- What is the pattern of the problem?

#### Look for Signs of the Pest

- Signs are a visible part of the pest or pathogen
  - Fungal signs include cottony or cobweb like fungal growth, powdery spores, mushrooms, conks or a variety of other spore-producing structures.
  - Bacterial diseases can result in a sticky liquid oozing from infected plant parts during warm wet weather.
  - Insect signs include the insect, frass, webbing, droppings, eggs and cast skins.
  - Wildlife signs include droppings, fur or feathers.
- Consider tools to better see signs: magnifying glasses or microscope.
- Cut open plant when necessary

#### Consider Timing and Progression of the Problem

- When were the symptoms first seen?
- Is the problem spreading?
- Consider recent and past events.

- Ask about pesticide/fertilizer applications
- Planting date or age of the plant
- Construction
- Weather events

#### Examine the Surrounding Area

- What is the pattern of the problem?
- Is more than one kind of plant affected?
- Consider effects from location of the plant
- Soil type / pH
- Drainage / moisture
- Shade / sun
- Exposure
- Nearby buildings, structures, or other objects

#### Match the Information Gathered to Reference Material

- Narrow down the list of possible problems by focusing on pests that attack the type of plant you are examining.
  - Focus your search on the signs and symptoms observed. (fungal diseases, galls, chewing damage etc.)
- Read the description of all pest problems that match your observations. Do not rely solely on photos.

#### Recommended Resources

- What's wrong with my plant? online diagnostic tool.  
<http://www.extension.umn.edu/gardeninfo/diagnostics>

#### Reference books:

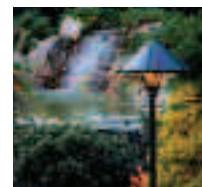
- Diseases of Herbaceous Perennials - Gleason, Dauhtrey, Chase, Moorman, and Mueller
- Diseases of Trees and Shrubs - Sinclair and Lyon
- Insects that Feed on Trees and Shrubs - Johnson and Lyon
- Garden Insects of North America - Cranshaw
- Other landscape professionals
- UMN Plant Disease Clinic <http://pdc.umn.edu>

(Continued on Page 14)

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## Field Day Summaries-

(Continued from Page 13)

### NTEP Drought Tolerance Trial

Josh Friell, Graduate Student, Department of Horticultural Science  
 Brian Horgan, Associate Professor, Department of Horticultural Science  
 Eric Watkins, Associate Professor, Department of Horticultural Science  
 Andy Hollman, Turfgrass Scientist, Department of Horticultural Science

As reduced irrigation practices become more ubiquitous across the U.S. due to increasing water restrictions and drought, new information is needed on the drought tolerance of grasses. Specifically, information is needed on their ability to both remain green under reduced irrigation levels and recover after drought conditions have ended.

The objective of this research is to evaluate tolerance of acute drought stress of several cool-season species and cultivars based on digital image analysis data collected during 2010 and 2011. In spring 2010, 36 entries were established as 1 m x 1 m plots.

During summer 2010 and 2011, plots were subjected to 60-75 days of simulated acute drought treatment using a removable rainout shelter. Throughout the drought period, digital images are being collected for post-processing using a camera and light-box apparatus.

Following the period of simulated drought the plots were irrigated once with 5 cm of water initially and 2.5 cm of irrigation each week thereafter. Digital image collection will continue throughout the period of drought recovery until all entries are 100% recovered.

Evaluation of drought tolerance for each entry will be based on characteristics such as color and ground cover, as determined from the digital images. The 2011 drought period will have just concluded for Field Day. Data collected from 2010 and 2011 will be discussed in detail.

### Fungicides for Dollar Spot Control During Summer

Andy Hollman, Turfgrass Scientist, Department of Horticultural Science

The use of DMI fungicides during the heat of summer can often have unwanted phototoxic effects on turfgrass. Reserve 4.8SC is reported to have a high degree of turf safety with limited reports of PGR effects, and in general, to be safer than other DMI fungicides during high temperatures on cool season turf. The objective of this trial was to evaluate the effectiveness of preven-

tative fungicide applications for dollar spot control on bentgrass putting greens and to determine their effect on turfgrass quality.

The trial is conducted on a native green planted with L-93 creeping bentgrass in the fall of 2003. Plots are maintained at 0.110 inches. Plots were fertilized once at 0.25 lbs. of N/1000 ft<sup>2</sup> during the spring. Plots are topdressed weekly and rolled daily. Irrigation is applied as needed to maintain acceptable turf quality. Plots are 4 by 9 feet with 4 replications. There are nine different treatments including one untreated plot. Treatments began on July 11 and were repeated on a 14-day interval. Plots are sprayed using a CO<sub>2</sub> powered backpack sprayer equipped with TeeJeet XR 8010 nozzles and calibrated to deliver 79 gallons/acre. Plots were inoculated with dollar spot cultured on rye seed on July 12, August 17 and September 6. Plots are rated for quality and Dollar Spot incidence.

### Perennial Ryegrass Cultivar Evaluation

Eric Watkins, Associate Professor, Department of Horticultural Science

Perennial ryegrass is a popular grass in the Upper Midwest due to its quick rate of establishment, superior traffic tolerance and excellent turfgrass quality when maintained under high input levels. Unfortunately, the species lacks adequate winterhardiness and therefore many cultivars of the species are not well-suited for use in turf in colder climates. The University of Minnesota turfgrass breeding program is attempting to increase the winterhardiness of perennial ryegrass germplasm so that the positive attributes of this species can be utilized without the negatives associated with poor winter performance.

The 2010 NTEP Perennial Ryegrass trial consists of 88 cultivars and selections; there are also two entries in the trial from the University of Minnesota breeding program (MSP and Arctic Green). The trial was seeded September 9, 2009, is maintained at a 2.0 mowing height and receives approximately 2 lb of nitrogen/1000 ft<sup>2</sup> /yr applied in two applications of 1 lb N each. The plots will only be irrigated to prevent severe drought damage. During the first year of this trial (2011), data is being collected on turf quality, steaminess, snow mold damage and color. Data will be available in early December at [www.turf.umn.edu](http://www.turf.umn.edu).

In addition, a separate trial was established in a similar manner that included germplasm from the University of Minnesota turfgrass breeding program that has been selected for winterhardiness traits such as snow mold resistance and freezing tolerance. The majority of this germplasm displayed excellent snow mold resistance in spring 2011 when compared with named cultivars

and other germplasm from private breeding companies. This material also exhibits reduced steaminess from reproductive culms. The primary concern with this germplasm is a lack of the dark green color that is common in many newer perennial ryegrass cultivars. This trial will be evaluated for turfgrass quality, disease resistance, summer stress performance, winter hardiness, and other important traits during the next several years and top-performing germplasm will be advanced in the breeding program for use in cultivar development.

(Continued on Page 15)

Treatment	Rate	Application Date
1 UNTREATED		
2 RESERVE 4.8 SC	2.5 FL OZ/1000 FT <sup>2</sup>	BD
2 INTERFACE	3.0 FL OZ/1000 FT <sup>2</sup>	ACE
3 RESERVE 4.8 SC	3.5 FL OZ/1000 FT <sup>2</sup>	ABCDE
4 CONCERT	5.5 FL OZ/1000 FT <sup>2</sup>	ABCDE
5 INTERFACE	3.0 FL OZ/1000 FT <sup>2</sup>	ABCDE
6 INTERFACE	4.0 FL OZ/1000 FT <sup>2</sup>	ABCDE
7 IPRODIONE PRO 2SE	4.0 FL OZ/1000 FT <sup>2</sup>	ABCDE
8 TARTAN	1.5 FL OZ/1000 FT <sup>2</sup>	ABCDE
9 KESTREL MEX	1.0 FL OZ/1000 FT <sup>2</sup>	ABCDE

# Field Day Summaries-

(Continued from Page 14)

## Bee Friendly Lawns

Marla Spivak, Professor, Department of Entomology

Bee populations are in decline in Minnesota and throughout the nation. As bees are vital pollinators of our fruits, vegetables, flowers and seed crops, it is critical that we support their health and diversity. Fortunately, there are two easy steps to take: Plant bee-friendly flowers and reduce pesticide use.

All bees – honey bees and native bees – need flowers for their nutrition. To stay healthy, bees need a wide diversity of flowering plants that produce pollen (their sole source of protein) and nectar (carbohydrates) over the entire growing season. Honey bee colonies are dying from a combination of pesticide exposure, nutritional stress, diseases and parasites. Native bees are threatened by a lack of uncontaminated flowers and a lack of undisturbed nesting sites in the ground.

In Minnesota, honey bees gain the most nutrition and make delicious honey from clovers, alfalfa and basswood trees. Bees also collect pollen and nectar from a wide variety of native and introduced flowering species. Honey bees forage two miles on average from their colony (an 8,000 acre area), so the more flowering plants available to them, the more honey they produce, the more pollen they obtain, and the healthier they are.

**Native bees prefer native plants**, although they do forage on clovers, alfalfa and flowers also used by honey bees. Native bees and honey bees live well together, particularly when they have access to an abundance of flowers.

One creative way to increase forage for all bees is to grow bee friendly lawns by seeding low growing clover, alfalfa and other low growing flowering plants into grassy areas that are not used for human recreation. The legumes fix nitrogen into the soil, reducing the need for fertilizers. Flowering lawns would add beauty to our landscapes and would benefit our pollinators. Tired of high-input lawns? Consider growing a bee friendly lawn!

# Evaluation of Drought Tolerance in Species Mixtures for Sustainable Roadsides

Josh Friell, Graduate Student, Department of Horticultural Science

Several species of turfgrass have been successfully used to create high quality, sustainable roadside vegetation. However, roadsides often present significant challenges to growing turfgrass due to stressful conditions that can be unique in both form and magnitude. Perhaps the most extreme stresses are salt damage and drought due to the prolonged and often times unpredictable nature of the conditions. As such, a mix that is capable of taking advantage of the unique tolerances of each species is likely to produce the best chance for survival. Recent research conducted by the University of Minnesota, in conjunction with MnDOT, has identified cultivars that represent the greatest level of roadside salt tolerance within each of nine cool-season turfgrass species. Therefore, the objectives of this research are to evaluate the drought tolerance of the selected cultivars and to determine the proportions of each needed within a mix in order to both maintain optimal ground cover for erosion control under acute drought conditions as well as recovery after drought conditions have ended.

The trial was planned as a constrained mixture experiment composed of 50 mixes determined using an optimized extreme vertices design. Entries were planted in 1m x 1m plots, replicated three times, and established in fall 2011 using conventional irrigation and establishment procedures. No fertility treatments will be applied after establishment and plots are maintained at a 2.25 inch height of cut. Simulated drought conditions are controlled using a rainout shelter which is removed from the plot area during dry periods. During summer 2012, drought will be imposed for 60 consecutive days after which an irrigation treatment of 5 cm will be applied to all plots and continue with 2.5 cm of water being applied weekly to evaluate drought recovery. Visual ratings and digital images will be collected weekly throughout the simulated drought and drought recovery stages until all entries are 100% recovered. Images collected will be post-processed for comparison of drought performance based on information such as color and ground cover.

(Continued on Page 16)

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 <p><b>2011 Ram 3500 STD</b> Cab &amp; Chassis, 4x4, HD Package, Hemi, Auto Trans, A/C, PW Crysteel Tipper &amp; Tool Box, Boss 9' Straight Plow, Stk# L0000</p> <p><b>MSRP w/Plow \$47,800</b> <b>MSRP w/out Plow \$42,819</b></p> <p style="background-color: blue; color: white; text-align: center; padding: 2px;"><b>Savings Sale w/Plow \$38,688</b> <b>w/out Plow \$33,797</b></p>	 <p><b>2011 Ram 4500 STD</b> Cab &amp; Chassis, 4x4, H/O Cummins, MAXTON, Auto Trans, PTO, PW, PL, T/C, A/C, Rugby Aluminum Body &amp; Toolbox, Hinerker 9' Plow, Stk# LO205</p> <p><b>MSRP w/Plow \$62,585</b> <b>MSRP w/out Plow \$57,199</b></p> <p style="background-color: blue; color: white; text-align: center; padding: 2px;"><b>Savings Sale w/Plow \$51,899</b> <b>w/out Plow \$46,699</b></p>	 <p><b>2011 Ram 2500 HD STD</b> Cab &amp; Chassis, 4x4 Hemi, T-Tow, Auto Trans, A/C, Plow Pkg. Long Box, Anti Spin, HD Pkg. Hinerker Plow, Stk# L1601</p> <p><b>MSRP w/Plow \$39,575</b> <b>MSRP w/out Plow \$34,080</b></p> <p style="background-color: blue; color: white; text-align: center; padding: 2px;"><b>Savings Sale w/Plow \$31,499</b> <b>w/out Plow \$26,299</b></p>
 <p><b>2011 Ram 3500</b> Crew Cab &amp; Chassis 4x4, H/O Cummins, Auto Trans, PTO, PW PL TK A/C, Keyless, Much More, All Wheels Aluminum, Hauler &amp; 2 5/16 Ball Hitch &amp; Class 5 Hitch, Stk# L0002</p> <p><b>MSRP \$60,750</b></p> <p style="background-color: blue; color: white; text-align: center; padding: 2px;"><b>Savings Sale \$47,999</b></p>	 <p><b>2012 Ram 2500 HD</b> Crew 4x4, Hemi, HD PKG. PW, PL, T/C A/C Auto Trans, Anti Spin, Plow Pkg., Stk# N0059</p> <p><b>MSRP \$39,395</b></p> <p style="background-color: blue; color: white; text-align: center; padding: 2px;"><b>Savings Sale \$32,599</b></p>	 <p><b>2012 Ram 2500 Laramie</b> Crew 4x4, Leather, Max Tow, H/O Cummins, Snow Plow Pkg. "No Urea", Stk# N0161</p> <p><b>MSRP \$56,482</b></p> <p style="background-color: blue; color: white; text-align: center; padding: 2px;"><b>Savings Sale \$47,149</b></p>

## Field Day Summaries-

(Continued from Page 15)

**Table 1. Cool season cultivars and species in mixture drought trials**

<u>SPECIES</u>	<u>CULTIVAR</u>
creeping bentgrass	Mariner
Kentucky bluegrass	Moonlight SLT
alkaligrass	Salty
strong creeping red fescue	Navigator
slender creeping red fescue	Shoreline
hard fescue	Beacon
sheep fescue	Marco Polo
tall fescue	Grande II'
Chewings fescue	Radar

### Marketing and Economics of Low Input Turfgrasses

*Kari Hugie, Graduate Student,  
Department of Horticultural Science*

Several alternative turfgrass species have shown potential to perform better than Kentucky bluegrass and perennial ryegrass in the North Central Region

under low maintenance conditions. These species are not as abundant or readily available on the market, and this lack of availability is most apparent in the residential turfgrass market. There is a substantial group of environmentally conscious consumers, and consequently there may be a niche market for low-input turfgrasses. Introducing these species to the residential turfgrass market could prove both economically and environmentally beneficial, but first marketing research must be conducted.

To investigate the economic potential of low-input grasses, we conducted a survey at the Turfgrass Research Outreach and Education Center in St. Paul, in which homeowners were asked to make a purchasing decision in several turfgrass choice scenarios. There were two choices in each scenario which varied in certain factors such as price, aesthetic characteristics (color, texture, weed encroachment), maintenance requirements (irrigation, mowing and fertility requirements) and origin (U.S. native, non-native). From the information collected, we were able to determine price premiums that consumers were willing to pay for several low-input attributes, identify the relative importance consumers place on both aesthetic and

maintenance attributes and also to identify potential market segments.

Water use and mowing requirements had the strongest influence on consumer choice, but weed encroachment also significantly affected consumer behavior. When making purchasing decisions, participants placed a high relative importance on reduced irrigation requirements, reduced mowing requirements and lack of weed encroachment. Participants were also willing to pay high price premiums for these characteristics. Overall the results suggest that there is significant consumer demand for low-input turfgrasses and, with the proper marketing strategy, their introduction to the market could be a viable strategy for reducing residential maintenance inputs.



## Highlights from the Northern Green Expo 2012 Seminar Schedule

Below is a selected list of topics geared toward golf course superintendents that will be highlighted at the Northern Green Expo in January 2012!

### Management

- Keynote: Radical Engagement for Greater Results
- Golf: Managing your Manager, Committee and Boards
- Time Management Techniques for the Green Industry

- Developing a Sustainable Golf Course Model
- Pesticides, Perception and Society
- Should Henry Be Out There?
- Most Common Problems Encountered During Golf Course Site Visits

- Uncovering the Architectural History of Your Golf Course
- Golf Course Design, Renovation, and Maintenance & Local Case Studies
- Human Resource Management: In Focus

### Turf

- Waitea Patch Management Strategies
- Turfgrass Research Update
- Identifying and Troubleshooting Turf After Cut Appearance Issues
- Biorational Control of Dollar Spot
- Turf Weed Control: New Products
- Calibration Calculations, Equipment and Applications
- Golf Course: Growing Great Turf in the Shade
- Pesticide Recertification (A & E)

### Grounds

- Stormwater Management: Reclamation & Re-Use - Target Field Case Study
- Back to the Basics: Asphalt & Concrete
- Raingarden Maintenance
- Creation and Protection of Wetlands
- Small Engine Repair
- Maintaining Natives

### Water

- Irrigation Basics - The Occasional Repair
- Wire Locating/Tracking
- Irrigation Troubleshooting: 2 Wire
- Weather Based Controls
- Water Conservation/Efficiency
- Aquatics Recertification (F)

A complete schedule-at-a-glance can be found online at [www.NorthernGreenExpo.org](http://www.NorthernGreenExpo.org).



## Field Day is Always a Great Day to Network

Bob Mugaas, right, chats with Spring Hill Golf Club Superintendent Tim Johnson, left, and Jeff Gunsolus, University of Minnesota. Mugaas is retiring from the University of Minnesota in December. Serving on the MTGF Board since its inception, Mugaas has been very instrumental in the success of the MTGF. He is looking forward to his anticipated change in lifestyle.

Johnson attended Field Day, in part, to learn more about the Imprelis herbicide issue. Spring Hill has over 50 trees detected as damaged due to the herbicide. Gunsolus enlightened attendees on the Impelias issue as the opening speaker at Field Day.

Twenty companies sponsored the event with booth displays. Researchers were on hand to talk to attendees about what has been going on at TROE Center and the University of Minnesota.

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# ASSOCIATION SPOTLIGHT



By RUTH BIELEJESKI-KRAEMER  
MASMS Executive Administrator

The Minnesota Turf and Grounds Foundation (MTGF) is made up of seven affiliated groups that deal with the maintenance and planning of turf and grounds. One of these associations is the Minnesota Educational Facilities Management Professionals, also known as MASMS.

MASMS is a group of over 300 individuals in the area of facilities, grounds, health and safety operations for Minnesota K-12 and higher education. MASMS is committed to promoting excellence in the operation and care of educational facilities.

The purpose of MASMS is to develop and maintain high standards in total care, operation and development of buildings and grounds used by public and non-public educational facilities.

MASMS provides a means by which active members can meet for discussion and continuing education. MASMS aids and cooperates with federal, state and local educational agencies in promoting



*The life of a school requires upgrades and replacements to landscape features that have failed or have served their useful life. Above, a timber retaining wall is being replaced with a concrete segmental retaining wall system.*

professional ideals and standards while engaging in other activities that promote the objectives of the association.

A MASMS membership offers professional development and learning opportunities: Chapter and State Meetings feature educational sessions on important topics. MASMS also offers AFE Certification Programs in these areas of expertise: Certified Plant Engineer (CPE), Certified Plant Supervisor (CPS), and Certified Plant Maintenance Manager (CPMM).

Membership in the association shall



*Asphalt surfaces are common on school grounds for drives, parking lot, and trails. Here the base course for a high school running track is being laid. The finished surface will eventually be a crumb rubber bonded together with either a latex or polyurethane binder. The finished marking are applied following very exacting dimensions and specifications.*

consist of active, associate and life members.

Active membership is restricted to persons employed in the operation and/or maintenance administration services of schools or colleges. Active members have the right to vote and hold office.

Associate membership consists of exhibitors and other persons directly associated with or concerned in the aims and objectives of the organization. Associate membership may be individuals or companies.

Members benefit from the knowledge and experience of each other by sharing information via our list serve. Our monthly meetings provide a forum for ongoing discussion and support. There are also several experienced managers that are

available to mentor school districts in the areas of facility assessments and planning, budget assessments and planning, construction, health and safety and facility maintenance standards.

Each September, MASMS members can participate in our annual Conference and Trade Show with numerous educational opportunities, and can see the latest products and services at our huge trade show. Custodial/ Maintenance/ Grounds Appreciation Days includes numerous educational and hands-on training sessions targeted especially for staff members involved with custodial, maintenance and grounds care.

*(Editor's Note: More information is available at [www.masms.org](http://www.masms.org))*



*Playgrounds are a standard at elementary schools. They should promote physical development, challenge the student, be accessible and offer a variety of experiences. Regular inspection for worn or broken parts is a must as well as general maintenance to keep the area safe and free of hazards.*



*Creating the opportunity to study nature, a deck is built bordering a wetland at an elementary school. Students experience and observe the sights, sounds, wildlife and vegetation found in wetlands as well as learning of the important benefits they provide.*

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