



have mainlines and metal fittings that are 60 to 70 years old. They flake and rusty particles plug up the heads, especially in the short range nozzles. Even plastic particles show up. The crew was spending too much time cleaning out the nozzles, along with hand watering the donuts. It was a no-win situation.”

Kachmarek heard about Profile nozzles several years ago and finally decided to run a test.

“We ordered 12 Profile nozzles last year and saw results within days. The Profile nozzles improved distribution uniformity practically overnight. The soggy soft spots disappear and the donuts greened up. The clogging nightmare was over too – uninterrupted streams of water now irrigate the turf evenly and consistently.

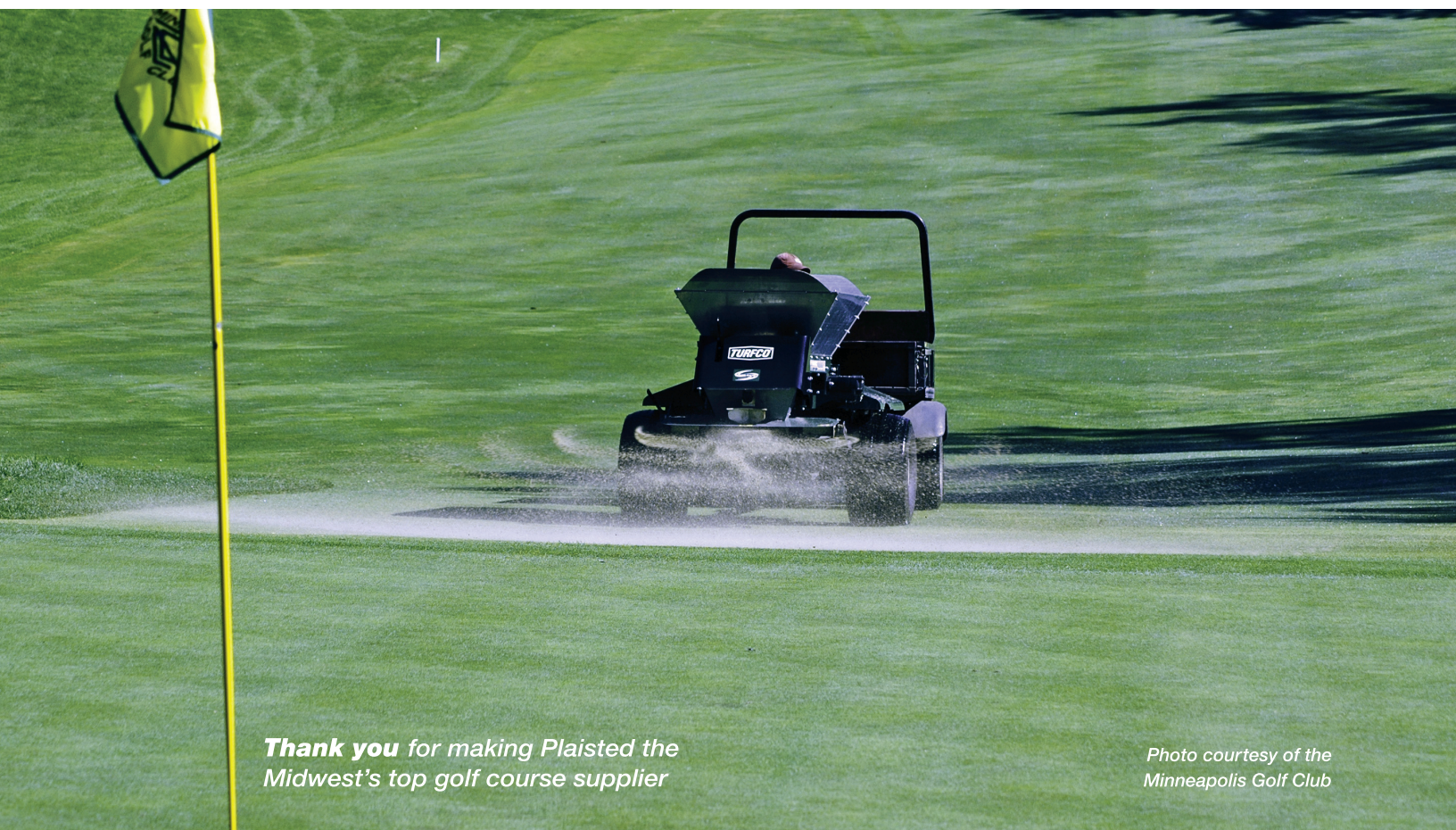
“By the end of the first week, we decided to switch over the entire course,” he said.

“With the Underhill nozzle operating at the correct pressure, 70 psi, we have excellent distribution which translates into better playability, consistency, and minimal hand watering.”

### Extending The Life of The Sprinkler

Manufactured from solid brass and stainless steel, Profile nozzles have become the new industry standard for improved distribution uniformity and for extending the life of the sprinkler.

The nozzles’ heavy-duty construction and unique shape are the result of years of technical innovation and performance evaluations. They recently underwent two years of on-site and laboratory tests



**Thank you** for making Plaisted the Midwest's top golf course supplier

Photo courtesy of the Minneapolis Golf Club

# Precisely Blended Topdressings meet USGA guidelines

Topdressing Sands  
Bunker Sands  
Green Colored Topdressing  
Black Dirt  
Horticultural Mixes

As the Midwest's leading golf course supplier, Plaisted Companies has set the bar high. We carry a full line of topdressing sands and mixes containing top-grade Minnesota peat. For special needs such as increasing CEC ratio, we custom blend topdressing with fertilizer or humates using our computerized *Accublender*™.

Landscape Rock & Mulch  
Retaining Walls & Pavers  
Field Stone Boulders  
Construction Sand  
Cart Path & Road Base

Call our technical service team for soil testing or soil mix recommendations. Visit our website to view the full product offering.



THE SOIL EXPERTS.



**Plaisted  
Companies**  
INCORPORATED

Elk River, MN • [plaistedcompanies.com](http://plaistedcompanies.com) • 763.441.1100

conducted by Dr. David Zoldoske at the Center for Irrigation Technology (CIT) at California State University, Fresno, where they were shown to improve irrigation efficiency and distribution uniformity on six test courses.

DU rate is typically a barometer of turf condition and indicates whether a sprinkler is delivering uniform irrigation coverage. A low DU rate of 0.55 or less indicates that coverage is inconsistent, resulting in dry spots, donuts or over-watered, saturated areas. A high DU rate of 0.80 or better shows that irrigation is uniform, resulting in healthier turf and improved appearance. With a higher DU rate, sprinklers can be programmed for shorter run times, saving water and energy.

### **More Efficient Irrigation**

With improved DU, superintendents are able to water less often and reduce run times. CIT concluded that Profile metal nozzles retrofitted to Rain Bird or Toro golf rotors performed with consistently higher distribution uniformity. Each course in the study saved approximately 6,000,000 gallons annually with the Profile nozzles.

The nozzles are designed to retrofit Rain Bird sprinklers with 1 ¼” and 1 ½” inlets, including Eagle 700 and 900 Series; and Toro golf nozzles with 1” and 1 ½” inlets, including Toro 670, 690, 730, 750, 760, 780 and 830 Series. They offer full-circle, mid-range and close-in

coverage.

Switching out the plastic nozzles is a relatively easy procedure and the Profile nozzles will typically deliver eight to 10 years of performance. Often, the solid metal nozzles outlast the original rotors.

### **Not Just a Regional Solution**

“Improving uniformity by retrofitting sprinklers with metal nozzles is not only for arid West Coast courses,” says Kurt Thompson, an irrigation consultant and trainer with offices in Huntersville, NC and Pace, FL.

“There is a significant opportunity for golf courses east of the Mississippi to benefit by using these nozzles to solve coverage problems on greens and throughout a fairway.

“A key economic advantage of this solution is that it can be done in-house by the irrigation staff in phases, as directed by the superintendent, to meet the scheduling and budgetary needs of a course,” he said.

Thompson says that the most effective results come from completing a system evaluation first in order to evaluate all the circumstances and conditions affecting the system’s uniformity.

“That way the superintendent and course management are aware of all the options available to them to increase uniformity and conserve resources,” he said.

Kevin Hutchins, former

superintendent at Mission Viejo Country Club in southern California, retrofitted his entire new Rain Bird irrigation system with solid metal nozzles:

“We found that FCI Profile nozzles apply water more efficiently and eliminate turf stress.

“Our course has sandy soil conditions and the original plastic nozzles were plugging up. The new full-metal nozzles are more sand-tolerant and have improved course appearance and eliminated unsightly dry spots,” he said.

At the Los Angeles Country Club, former Superintendent Bruce Williams had several issues. The irrigation was uneven and the course had noticeable donuts and patchy dry spots. When more water was applied to compensate, over-saturation was the result.

“We heard about solid metal nozzles and replaced the plastic nozzles on 2,200 heads. This eliminated donuts while also improving irrigation uniformity...while saving water. We have been very pleased with the results.”

### Custom Made For Rain Bird and Toro Heads

With popularity comes scrutiny and one of the keenest observers of golf irrigation practices is Brian Vinchesi, nationally-known irrigation educator and president of Irrigation Consulting, Inc. of Pepperell, MA, and Huntersville, NC.

Vinchesi became acquainted with Profile nozzles through both the CIT study and cross-country business travel, talking with superintendents who had installed the solid metal nozzles.

## 2012 Gun Raffle for Research ARE YOU GAME???



**MGCSA Gun Raffle for Research**  
**\$5 per chance or \$10 for three chances**



Weatherby Orion Grade 3 over/under 12 gauge shotgun  
\$2,500 retail value  
jack@mgcsa.org for more information

# STRENGTHEN AND PROTECT YOUR TURF

Add Vision Pro™ Application Aid and VigaROOT® Turf Conditioner to your turf management program for professional results.

VigaROOT biostimulant blend helps reduce stress and stimulate root growth through enhanced water and nutrient uptake for stronger roots and healthier turf.

Vision Pro spray application aid helps professional turf managers achieve uniform applications of plant protection products with the added feature of a long-lasting, natural-looking turf color.

Contact Superior Turf Services, Inc. today to find out how to strengthen and protect your turf.



## Superior Turf Services, Inc.

952-949-3889 • [www.superiorturfservices.com](http://www.superiorturfservices.com)  
17525 Lorence Way, Eden Prairie, MN 55346

**Larry Thornton**   **Matt Schmid**   **Doug Zobel**  
612-804-1692   612-366-4128   952-201-9499

**Warehouse address:**  
Superior Turf Services  
7675 Washington Ave. So.  
Edina, MN 55439

Manufactured by

**BECKER**   
**UNDERWOOD**  
*Inventing the Future*

®.™ Trademarks, registered or applied for, of Becker Underwood, Inc., Ames, IA.

“What sets Profile nozzles apart is they are essentially ‘custom made’ for the industry’s most popular golf heads,” said Vinchesi.

“They’re not a product that can be mass produced and still perform at the same level of consistency. The precision required for uniform coverage is better accomplished by a smaller manufacturer with good quality control,” he said.

In surveying irrigation systems at hundreds of courses in the U.S., Vinchesi has concluded that older sprinklers deliver very poor distribution uniformity, which can only be minimally improved with maintenance.

Sprinkler heads manufactured in the 1980s and 1990s were, in fact, never

designed to deliver optimum DU, he says, as water use was not an issue.

The options for superintendents have been limited up to now. Typically, courses either replaced the internal mechanisms or the entire head, or resorted to daily hand-watering of dry patches during the summer.

“However, in this current economic climate, Profile metal nozzles have become a practical and relatively inexpensive solution to improving distribution uniformity without the expense of replacing a golf sprinkler or its internal mechanism,” Vinchesi says.

# What's Challenging You Now?

*Research In Turf Management You can Use Today*

## **2011 Wetting Solution Study and Analysis**

By: Aaron Johnsen & Kevin Leeper (WinField Solutions, LLC) and Dr. Brian Horgan (University of Minnesota)

A lack of water or the existence of excess water can lead to poor turf quality. Wetting agents or surfactants are used to combat localized dry spots, retain water in the soil, and move water through the soil. Wetting agents are composed of a polar head and non-polar tail. The non-polar tails are greatly attracted to water repelling surfaces, such as soil particles. The polar heads attract water. This action allows water to be held by the soil and ultimately be taken up by the plant (Karnok et al, 2004). Wetting agents can be classified into four primary groups; anionic, cationic, nonionic, and amphoteric. Anionic and cationic surfactants generally treat just the water. Most wetting agent products on the market are nonionic surfactants (Karnok et al, 2004). Block polymer nonionic surfactants treat both the water and the soil; therefore, these are the most common wetting agents used on golf courses. The strengths of block polymer nonionic surfactants include adhesion to soil particles, excellent re-wetting capabilities, and plant safety in a wide range of weather conditions. The downside of block polymer nonionic surfactants is they do not reduce the surface tension of water as well as anionic and cationic surfactants (Kostka, 2005).

Research has demonstrated increased soil moisture and soil moisture uniformity from the application of wetting agents (Karcher et al, 2010). Other work on soil columns has shown that two wetting agents influenced soil moisture content differently (Leinauer et al, 2001). This work and most other wetting agent research have been conducted on research putting greens. Little work has been done to see if greens on the same course respond similarly to a wetting agent application and if a wetting agent causes similar results on multiple courses. The objectives of this research were to (1) evaluate soil moisture response to wetting agent applications and (2) determine if a reduction in localized dry spot occurred following wetting agent applications.



Participating Sites and Superintendent

Minnesota Valley Country Club, Mike Brower  
 North Oaks Golf Club, Jack MacKenzie  
 Somerby Golf Club, Eric Counselman  
 Somerset Country Club, James Bade  
 Southview Country Club, Jeramie Gossman  
 The Minikahda Club, Jeff Johnson  
 University of Minnesota Golf Course, Brent Belanger  
 Bracketts Crossings, Tom Proshek  
 Burl Oaks Golf Club, Tom Natzel  
 Dacotah Ridge Golf Course, Aaron Johnson  
 Keller Golf Course, Paul Diegnau  
 La Crosse Country Club, Jack Tripp  
 Medina Golf and Country Club, Erin McManus  
 Midland Hills Country Club, Mike Manthey

Table 1: 2010 Products tested

	Tricure™	Tournament Ready®	Immerse GT	APSA-80®	Dispatch®	
	Mitchell Products	Kalo, Inc.	AmegA Sciences	Amway	Aquatrols	Aquatrols
# of Courses	2	1	1	2	1	5
Rate per 1000 sq ft	1 & 2 fl oz	6 fl oz	3 fl oz	2 fl oz	.37 fl oz	6 fl oz
Active Ingredient	100% Block Polymer	100% Gluco Ether, Block Polymer Blend	100% Active Ingredient	80% Non-ionic Surfactant	51% Gluco Ether, Block Polymer Blend	100% Modified Block Polymer



Table 2: 2011 Products tested

	Tricure™	Performa Gold	Magnus™	APSA-80®	H30™	
	Mitchell Products	WinField Solutions	Precision	Amway	Spindler Enterprises, Inc.	Aquatrols
# of Courses	3	1	1	1	1	4
Rate per 1000 sq ft	1 & 2 fl oz	4 fl oz	4 fl oz	2 fl oz	6.25 fl oz	6 fl oz
Active Ingredient	100% Block Polymer	100% Gluco Ether, Block Polymer Blend	100% Block Polymer	80% Non-ionic Surfactant	50% Humectants 0.4% Surfactants	100% Modified Block Polymer

### Methods and Materials

Soil moisture and GPS data were collected on three greens at each golf course prior to and after wetting agent application during July and August in 2010 and June, July, and August in 2011. In total, 70 greens were tested. Approximately 100 soil moisture ratings were taken per green. Data was collected with a Spectrum Technologies FieldScout TDR 300 outfitted with three inch probes and a Garmin 72H GPS unit. Data was collected at a maximum of three days prior to and within five days after a wetting agent application. Data was processed using Dplot and Microsoft Excel.

### What did the data look like?

Figure 1 demonstrates a Revolution® application. There was a distinct dry spot on the top left side of the green that was reduced after wetting agent application. The wet areas were not eliminated by the wetting agent application. Figure 2 demonstrates a Magnus™ application. The back half of this green was dry pre-wetting agent. After the wetting, the back half of the green had significantly more moisture.





Figure 1: Soil moisture distribution prior to a Revolution® application and after a Revolution® application.

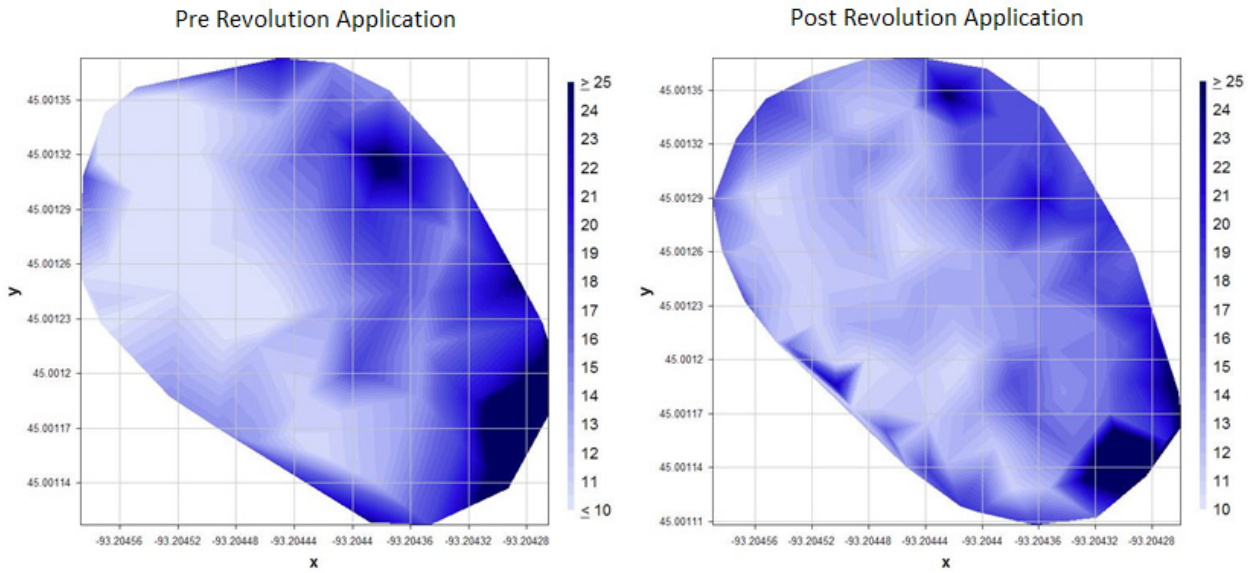
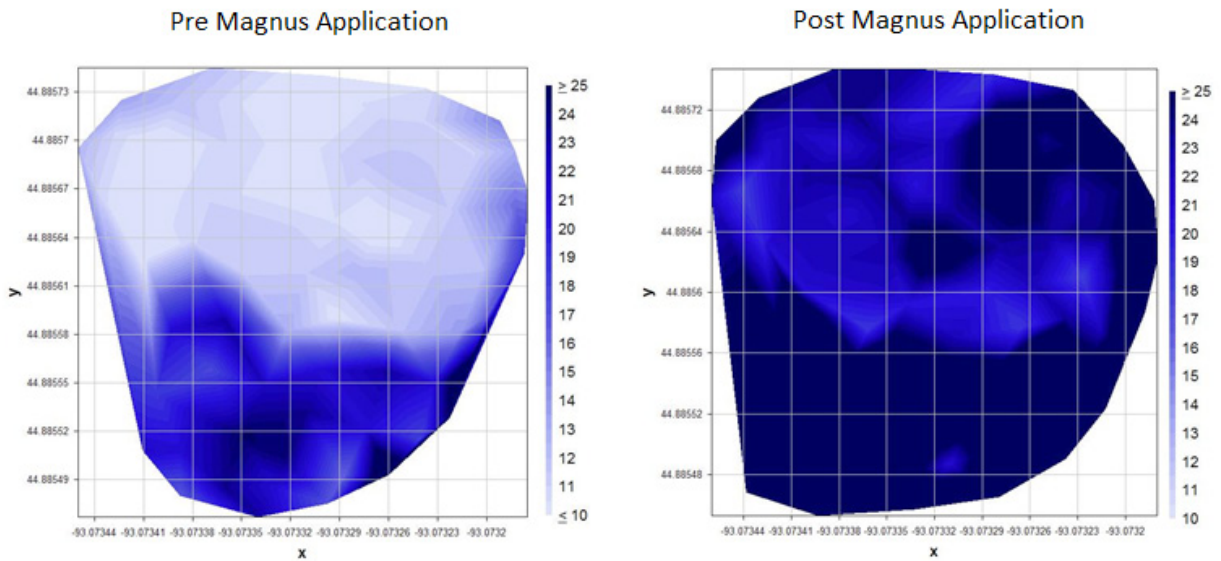


Figure 2: Soil moisture distribution prior to a Magnus™ application and after a Magnus™ application.



**ASSUME**  
**TOTAL CONTROL**  
**OVER EVERY INCH OF YOUR TURF**

You'll find Toro® Groundsmasters on most golf courses. You'll see consistent, clean cuts and breathtaking views. You'll see what customers are saying. Visit [toro.com](http://toro.com) to

**The Leader in Golf.**

*Groundsmaster 3500-D*



*Groundsmaster 4300-D*



**MTI Distributing, Inc.**  
**4830 Azelia Avenue N.**  
**Brooklyn Center, MN 55429**  
**800-362-3665**  
**763-592-5600**  
**Fax: 763-592-5700**