



use that begins in May and goes through October. If all fields are not needed on a particular weekend a rotation is set in place giving the needed fields as much rest as possible. Before each season begins we shorten the fields to provide goal mouth areas time to recover; when the first major event of the year takes place (generally June) we lengthen to optimum sizes.

Fertility plays an important role as well. Since the complex opened in 2011 the soccer fields receive an average of 5.5 lbs/N/1000 per year. Soil samples are collected twice a year and any tweaks to the schedule are made. Granular applications are made every 4 weeks using a 50% slow release nitrogen ranging from .5/N/1000 to .75/N/1000. We supplement these granular applications with a foliar application at .10/N/1000 (25% SRN). Before major events micronutrients and amino acids are applied to help with recovery and stress from the anticipated increased traffic. It also helps aesthetically before play.

Herbicides and other pesticides continue to get evaluated on a year by year basis. Landscape and common areas receive spring and fall applications for general weed control. The soccer fields tend to be more challenging as we are consistently overseeding. Additionally *Poa annua* control measures have been attempted. Imprelis, Tenacity, Progress, and Xonerate have all been applied either as a weed or *Poa* control. The Sentinel Irrigation Central Control System, using three gateway field satellites and including 863 heads and 198 valves, is also part of maintenance responsibilities. ET rates are generated by an on-site weather station.

To enhance irrigation, improve drainage, and minimize localized dry spots, wetting agents are applied once a month for five applications

per year. There is also one synthetic field lined for football and soccer. Maintenance includes sweeping and grooming the field monthly.

Our complex has 15 acres of Native Plantings which are along the perimeter and between parking lots creating no-mow zones. A Rain Garden catches storm water from the maintenance facility and bioswales manage storm water runoff from the parking lots. Some contractual services are used to help properly maintain these natural areas. These services include invasive and weed control efforts. If time permits, staff is used to assist with contractual services to reduce overall costs.

Our success would not exist without the dedicated staff. Our 2014 staff includes full-time employee Tony Diaz and seasonal staff members: Miguel Gonzalez, Joe Ayala, Tomas Medina, Fernando Fernandez, Paul Fish, Jr., Rich Krapf, Billy Biang, and Scott Gordon. Also, interning this year is Drew Fleagle, Purdue University student in the Turf Science and Management program. These are the guys that make it happen, and having a staff that buys into the big picture of what you are working to accomplish is extremely important.

Trial and error are proving to be priceless as we have learned, and continue to learn, what it takes to maintain the SportsPark soccer complex and to achieve all goals above and beyond expectations. Our “working for the weekend” attitude assists us in accomplishing this. ■

*Noel Brusius, CSFM, is Maintenance Worker III – SportsPark/ Athletic Fields (Parks Division) for the Waukegan (IL) Park District; Mike Trigg, CSFM, is Superintendent of Parks for the District.*

# PROTECT YOUR OUTDOOR POWER EQUIPMENT WITH PROPER FUELING & SAFETY

*Editor's note:* This article was written by Suzanne E. Henry, President, Four Leaf Public Relations LLC, which works with the Outdoor Power Equipment Institute.



**S**ports turf managers, coaches and athletic support organizations use outdoor power equipment regularly. You might use lawn mowers on your fields, a string trimmer to keep vegetation in check, a chain saw to clear downed trees, a generator to power on-site electrical needs by the field, or a utility type vehicle (UTV) to haul debris and trash.

But did you know that the gas you put in your car or truck may no longer be safe for use in your outdoor power equipment or small engines?

If you said no, you are not alone. Nearly two-thirds (64%) of Americans say they assume that any gas sold at the gas station is safe for all of their cars, as well as boats, mowers, chain saws, snowmobiles, generators and other engine products, according to a survey by Harris Interactive with the Outdoor Power Equipment Institute (OPEI) in 2013.

As higher ethanol blended fuels become more common in the marketplace, it is increasingly important for consumers to know what types of fuel can be used in outdoor power equipment. New fuel blends containing greater than ten percent ethanol—such as E15, E30 and E85—are becoming available at gas stations throughout the country and may be lower in price than other blends. Fuel containing greater than 10 percent ethanol can be harmful and cause damage to small engines. In fact, it's illegal to use more than 10 percent ethanol gasoline blends in outdoor power equipment.

To help educate consumers on proper fueling, OPEI, an international trade association representing 100 small engine, utility vehicle and outdoor power equipment manufacturers and suppliers, created the “Look Before You Pump” campaign to mitigate the risk of consumers inadvertently misfueling equipment investments.

Known by its emblematic prominent, red warning hand symbol indicating “OK” for 10 percent ethanol and “No” for mid-level ethanol blends (such as E15, E30, E85), the campaign is spreading nationwide and now appears in major retailer outlets and among independent equipment dealers.

Fueling your outdoor power equipment properly and maintaining it well can ensure your equipment is reliable and lasts longer. It's also important to use outdoor power equipment safely, so you and the people around you are not hurt. Here are some tips to help.

**Drain gasoline from the tank and replace it before starting equipment that has been sitting for a while.** Gasoline that is untreated and left sitting in a fuel tank for more than 30 days can deteriorate and destabilize. This can cause problems when you want to start or run your equipment. Before starting any equipment that has been sitting for a while, be sure to drain the old fuel from the tank. You may want to use a fuel stabilizer.

**Turn off the fuel valve.** After you are finished with using your equipment, switch the fuel valve off until it's time to use the equipment again.

**Avoid using greater-than-10 percent ethanol gasoline blends in any outdoor power equipment or small engine.** Never use greater-than-10 percent ethanol gasoline blends, which are now commonly available at gas stations throughout the country and may be lower in price than other blends. It is illegal to use

Fuel containing **greater than 10 percent ethanol can be harmful and cause damage to small engines.** In fact, it's illegal to use more than 10 percent ethanol gasoline blends in outdoor power equipment.



higher-ethanol gasoline blends in outdoor power equipment or small engines. What's more, such fuels can be harmful and cause damage to small engines.

**Exercise caution when fueling.** Fill your gasoline tank only when the engine is cold. If you need to refuel before completing a job, turn off the machine and allow the engine to cool. Don't spill when you fill. Never light a match or smoke around gasoline.

**Be careful when starting your engine.** Move your chain saw or other outdoor power equipment at least 10 feet (3m) from the fueling point before starting the engine.

**Store fuel properly.** Store gasoline in a clean, sealed plastic container that's specifically intended and designed for fuel storage, and store it away from direct sunlight.

**Use the right type of fuel for your equipment.** When it's time to refuel your equipment, be aware of the type of gasoline it needs and look before you pump.

**Read your outdoor power equipment operating manual.** Make sure you know how to properly use and maintain your outdoor power equipment. If you have lost your manual, search online for a replacement (remember to check the model number) or request one from the manufacturer.

## MAINTAINING YOUR EQUIPMENT

**Read and understand your owner's manual.** Your manual contains the manufacturer's instructions for taking care of your small engine, including fueling instructions. If you have lost your manual, look online to find a replacement (remember to match the manufacturer and model number to your equipment) or request a new manual from the manufacturer.

**Inspect your equipment for any problems.** Make sure belts and hoses are not loose. Check for loose bolts and screws on machines that experience a lot of vibration during use. Accumulations of grass, leaves or excessive grease can cause a fire hazard. Check the line regularly on your trimmer and have replacement line or a new spool ready when you need it. Check the O-rings and hose connections on your pressure washer before its first seasonal use.

**Sharpen those blades.** Start each cutting season with a new or newly-sharpened chain saw blade. For a clean look and to promote healthy grass, sharpen the blades on push and riding mowers prior to mowing season.

**Keep the spark alive and the oil flowing.** Change your spark plug regularly as directed by the product manufacturer. See your owner's manual for a recommendation. Check oil level before each use in all small engines. This simple step can save you a lot of money and distress.

**Ensure air flow is happening.** Clean or replace air filters in outdoor power equipment prior to first use and throughout the season as needed.

**Don't be afraid to seek out the professional advice or the service of a qualified servicing dealer.** Take your riding mower or tractor to an experienced servicing dealer every year for a safety and maintenance inspection. If your equipment is experiencing problems, take it to a dealer.

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The screenshot displays the SportsTurf website with a navigation bar at the top containing links for Facebook, Twitter, YouTube, Email Newsletters, Article Archives, and Go Digital. The main content area features a sidebar with categories like Home, Deals, Equipment, Advertise, Green Media, Arbor Age, Landscaping and Irrigation, and Outdoor Power Equipment. A central article titled "The Price is right: Chad's certifications make him an industry leader" is highlighted, along with a "Find the products and services YOU NEED" section. A sidebar on the right promotes audio podcasts and a call to action: "Put your article in the hands of your audience to gain a competitive edge."

**THINK SAFETY FIRST**

**Be careful when starting your equipment.** When operating a lawn mower, inspect the mower for loose belts or hoses before you start it. Be sure no one else is nearby as you prepare to start the mower. If you use a riding mower, start it while sitting in the driver's seat, never while standing beside the mower.

**Know safety procedures for every piece of equipment you use.** Know how to stop the machine quickly. Do not remove or disable guards or other safety devices. Always slow down when operating any mower on a slope or difficult curve.

**Commonsense is key when using a chain saw.** Never carry a running chain saw when it is not being used, and be sure your work area is clear of debris that could trip you. If you are cutting down a tree, plan a retreat route for when the tree falls. Be aware of "kickback," which can happen when the nose or tip of the guide bar touches an object, or when the wood you're cutting pinches the saw chain in the cut.

**Give portable electric generators lots of ventilation.** Generators should not be used in an enclosed area, even if the windows or doors are open. The muffler on a generator can get extremely hot, so any combustible materials (leaves, grass, brush, etc.) should be cleared away before operating. Generators produce carbon monoxide, an odorless, colorless and poisonous gas.

**Think safety when using your edger or trimmer.** Wear protec-

tive gear. Ensure that your work area is clear of any stones or debris that could fly up. Never put your hands or feet near the cutting area. Stop the motor when moving from location to location with your trimmer.

**Drive UTVs and lawn mowers with care.** Always mow up and down slopes, never across. Avoid sudden starts, stops or turns. When a vehicle is loaded, the center of gravity is higher, and so is the risk of overturning. To keep the vehicle stable and avoid overturning, drive slowly and do not turn the vehicle in mid-slope or while on a hill.

**Be aware of others in your work area.** Pay attention to other people who might venture into your work area. Turn off your power equipment if it is not safe. If needed, block off the area with temporary signage or rope.

**Dress for the job.** Wear the proper attire for the work you are doing, including substantial shoes (no sandals or flip-flops), long pants and snug-fitting clothes. Protective glasses, chaps, eye or hearing protection, reflective clothing, head gear or gloves may be needed when operating certain types of outdoor power equipment.

Taking precautions to ensure your outdoor power equipment is fueled, maintained properly, and used safely, will help to keep you safe and your equipment in good shape throughout all seasons. For more safety tips for outdoor power equipment visit <http://www.opei.org/education/safety/tips/> ■

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# John Mascaro's Photo Quiz

John Mascaro is President of Turf-Tec International

*Can you identify this sports turf problem?*

**Problem:** Geese on field

**Turfgrass area:** Private boarding high school

**Location:** Dedham, Massachusetts

**Grass Variety:** 50% bluegrass/50% ryegrass

**Answer to John Mascaro's Photo Quiz on Page 23**



Background illustration courtesy of istockphoto.com



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# TOURING THE NEW HOME OF USA FIELD HOCKEY

**S**ome dads build their kid a treehouse or a fort in the backyard.

Former Auntie Anne's Pretzel giant Sam Beiler built his daughter the largest and most spectacularly diverse, sports, entertainment and events complex in North America—Spooky Nook Sports.

Beiler originally wanted to build a few volleyball courts as a nod to his daughter's competitive passion, but when big dreams meet big dollars, big things happen and Spooky Nook is, if nothing else, big.

The massive, 50-plus acre complex lies in the rural heart of Pennsylvania's Amish country in East Hempfield Twp., minutes from downtown Lancaster. Despite its middle-of-nowhere feel amid farmland, Spooky Nook now appears on the international sporting map as it is the new home for

the US Women's Field Hockey program, formerly based in Southern California.

Moreover, the Nook is a veritable Ellis Island of amateur athletics welcoming sweat-soaked masses yearning to play from Pennsylvania and beyond. A July basketball tournament drew more than 350 teams. A national field hockey tournament in February drew 161 teams.

The air dome, the facility's signature landmark, resembles a giant bed pillow and is easily visible from the nearby highway. The Astroturf field beneath it must be watered regularly in order to comply with international field hockey safety standards.

Adjacent to the pillow is the sprawling, metal exterior of a massive, former distribution warehouse for Armstrong Flooring. The 700,000 square feet beneath that roof is where the Nook's legend is being forged.

▼ **Some of the 60,000 square-feet** of Connor Hardwood, the largest single expanse of Connor Hardwood in the world.



For 10 years before its rebirth, that facility was a dank, dark and dirty, man-made home for raccoons, mice, and creatures that climbed, but the basic structure was sound. Beiler bought the property for \$11 million, raccoons and all.

“When we walked the property in November of 2011 we both had a vision for what it could be,” said Steve Goris, Spooky Nooks Chief Operating Officer. “We literally sat down with a piece of graph paper and cut out all these little courts in different sizes and kind of laid out where things could line up...we handed that to some architects.”

Before the first mouse had been evicted, Goris’ calculator began whirring. “We wanted to figure out ways we could program so that we could get a return on investment,” he said. “We didn’t take a ‘build it and they will come’ attitude,” Goris said. “We did a lot of research. When you’re investing your money you need to diversify your portfolio. Well this business is kind of the same.”

On June 3, 2013, just 8 months after renovation work began on the \$25 million project, Spooky Nook opened its doors.

Now, the only creatures climbing inside arrive in cars, wear athletic gear, and pay to scale the 30-foot-high walls, synthetic rock arches, and other challenging features in the facility’s climbing center.

A separate “Clip N’Climb” area, the first of its kind in the United States, invites all levels of climber, young and old, to ascend walls and towers knobby protrusions.

Just inside the entrance is a food court with smoothies and other

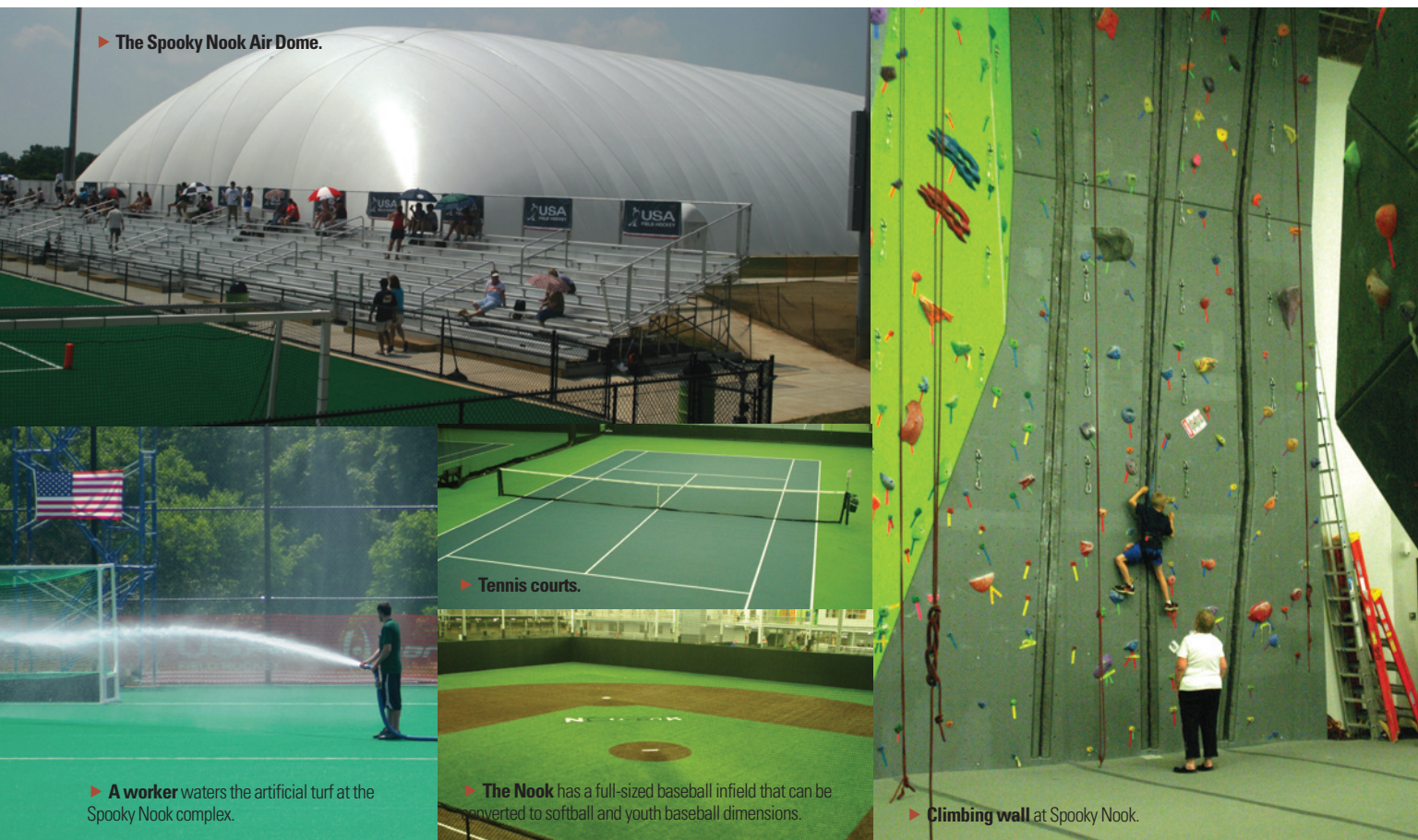
healthy foods, and an arcade whose primary function is to occupy the bored siblings of competing athletes or even competitors who are in between games.

A 100,000 square foot, elevated mezzanine concourse overlooks all of the indoor courts and fields. It also houses the general membership gymnasium as well as a special training area for competitive amateur and pro athletes. All the gym floors were installed by Ecore Commercial Flooring of Lancaster.

The 10 NBA-quality, Connor Sports hardwood courts total 60,000 square-feet, the largest single concentration of Connor Hardwood anywhere on the planet according to Spooky Nook’s Director of Business Development, Patrick Grant.

There are 28,000 square feet of modular Connor Sport Court distinguished by its blue color and used for multiple sports including basketball, volleyball, field hockey, and Futsal, a popular indoor, 5-on-5 version of soccer. There are six premium quality tennis courts. “We needed it to be able to do multiple sports. If you have a basketball game you need to be able to dribble on it and at the same time it needs to be able to take the pounding that indoor field hockey puts on it with sticks striking on it all the time. You can’t really do that on hardwood,” Goris said.

There are three 60-by-120 foot enclosed Astroturf fields as well as a full-sized, adult baseball infield that can be altered in size to accommodate softball and youth baseball. There are 13 baseball/softball batting



► The Spooky Nook Air Dome.

► A worker waters the artificial turf at the Spooky Nook complex.

► Tennis courts.

► The Nook has a full-sized baseball infield that can be converted to softball and youth baseball dimensions.

► Climbing wall at Spooky Nook.

and pitching tunnels with nets that can be raised to the ceiling. That corner of the building is popular with local colleges and high schools looking for winter workouts.

Jumping, running and sweating is not a prerequisite of facility use. There are more than 100,000 square feet of exhibit space, and smaller meeting rooms, for everything from birthday parties and banquets to reunions, conventions, proms and holiday parties.

Orthopedic Associates of Lancaster, a partner in the facility, has offices near the front of the building. It offers on-site physical therapy offices and sports injury urgent care for Nook participants.

The other half of the giant former warehouse is known as the field house. It is home to 110,000 square feet of flooring divided into two, 55,000 square-foot sections. The area can accommodate 10 full-sized indoor field hockey pitches, 30 volleyball courts, or 16 basketball courts. A 15-worker conversion crew is responsible for rolling out the Astroturf, or taking it off depending on the event being held.

Behind the facility is a full-sized, multi-use synthetic turf field. Water cannons and hoses keep the turf to international specifications. Nearly all of the water used is collected from rainfall via a complex system of rain gutters on the facility's 14-acre roof. One inch of rain yields a half million gallons of water which is stored in holding tanks.

The turf under the air dome is a water-based synthetic over a rubberized form of asphalt, a design that helps the field retain moisture. There

are two fields like it in the world, the other being Manheim, Germany, according to Grant.

Sensors detect moisture, temperature and wind speed. Two giant, tractor-trailer sized air rotations units process that information and maintain perfect conditions.

Three brand new, sand volleyball courts, covered with special volleyball sand, were recently completed. In typical Spooky Nook fashion, the courts can be converted for use in sand soccer, sand field hockey, and sand training for sports performance.

The only major hiccup in the for the Nook was a transportation and parking nightmare that occurred in late February when a 3-day national field hockey tournament and a 2-day state volleyball tournament overlapped. "It was all part of the learning curve," Grant said. "We felt like we've actually improved since then. We've expanded some of our lots, added additional parking, added additional staff, and we feel like it's behind us."

There's more growth on the horizon. The Nook will open a 132-room hotel in the spring of 2015, Goris said.

"We want it to feel like you are getting away from maybe from the sports environment to a place where you can kind of "Zen out" a little bit." ■

*Jeff McGaw is a free lance writer in Harrisburg, PA.*

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## SALT SOURCES IN IRRIGATION WATER

Many of the waters available from levels of salt, which doesn't even have a trace of mineral leaching in the soil surface. In addition, water runoff from salt and mineral leaching causes soil degradation and salinization. The salinity of water sources can vary from 100 to 10,000 ppm. The salinity of water sources can vary from 100 to 10,000 ppm. The salinity of water sources can vary from 100 to 10,000 ppm.

### Storm surge related flooding could directly induce salinity problems if land previously free of such issues via storm water runoff.

The total salinity of water sources is a combination of water and ground. Common sources include rainwater, surface water, and groundwater. Common sources include rainwater, surface water, and groundwater.

Common sources include rainwater, surface water, and groundwater.

Source	ppm	ppm (range)	Water potential	Water potential, dsm
Blue water	< 1	< 1000	100-2000	0.1-0.2
Brackish water	1-30	1000-3000	3000-9000	0.3-0.9
Sea water	35	3500	3500	3.5
Groundwater	1-1000	1000-10000	1000-10000	0.1-1.0
Surface water	1-1000	1000-10000	1000-10000	0.1-1.0
Storm water	1-1000	1000-10000	1000-10000	0.1-1.0
Runoff	1-1000	1000-10000	1000-10000	0.1-1.0
Drainage	1-1000	1000-10000	1000-10000	0.1-1.0
Other	1-1000	1000-10000	1000-10000	0.1-1.0

## ESSENTIAL NUTRIENTS

Essential nutrients are those that plants cannot synthesize on their own. They are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, zinc, copper, boron, molybdenum, and silicon.

### ESSENTIAL NUTRIENTS

Essential nutrients are those that plants cannot synthesize on their own.

Essential nutrients are those that plants cannot synthesize on their own.

Nutrient	# of samples	Range	Average
Nitrogen	10	1.0-10.0	2.5
Phosphorus	10	0.1-1.0	0.5
Potassium	10	1.0-10.0	5.0
Calcium	10	1.0-10.0	5.0
Magnesium	10	1.0-10.0	5.0
Sulfur	10	1.0-10.0	5.0
Iron	10	1.0-10.0	5.0
Manganese	10	1.0-10.0	5.0
Zinc	10	1.0-10.0	5.0
Copper	10	1.0-10.0	5.0
Boron	10	1.0-10.0	5.0
Molybdenum	10	1.0-10.0	5.0
Silicon	10	1.0-10.0	5.0

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# GREEN SPORTS FIELDS USING TURF COLORANTS

▲ Digital images of colorant treated plots on a Miniverde putting green.

**M**ost athletic fields require an established, growing turfgrass during the winter season in order to accommodate sports play. If it is a warm-season grass some people may overseed it with ryegrass for green color, particularly if the field is to be used for late winter and early spring sports. But that is not the only way of having a green athletic field. A relatively new option is to “paint the turf green.” For many years, overseeding has been the standard for providing green color over winter months. With the number of new and improved turf colorants on the market today, colorant manufacturers have given turf managers another option.

It has been called “instant overseeding”—the practice of applying a green turf colorant to dormant grass. Spring transition from overseeded grasses to bermuda-

grass is often problematic due to drought resistant cool-season grass varieties and extended cool and wet conditions in late spring, similar to what was experienced earlier this year in the transition zone. Applying colorant to semi-dormant to dormant bermudagrass fields provides an alternative to overseeding. But painting is not just for bermudagrass. I used bermudagrass in the above example since it is the most commonly overseeded grass. You can paint any grass; some even like to paint cool-season grasses such as tall fescue or bluegrass in order to mask unsightly blemishes.

## FACTORS TO CONSIDER

One of the first questions asked is, “How much does one of these paint products cost?” A gallon of turf colorant