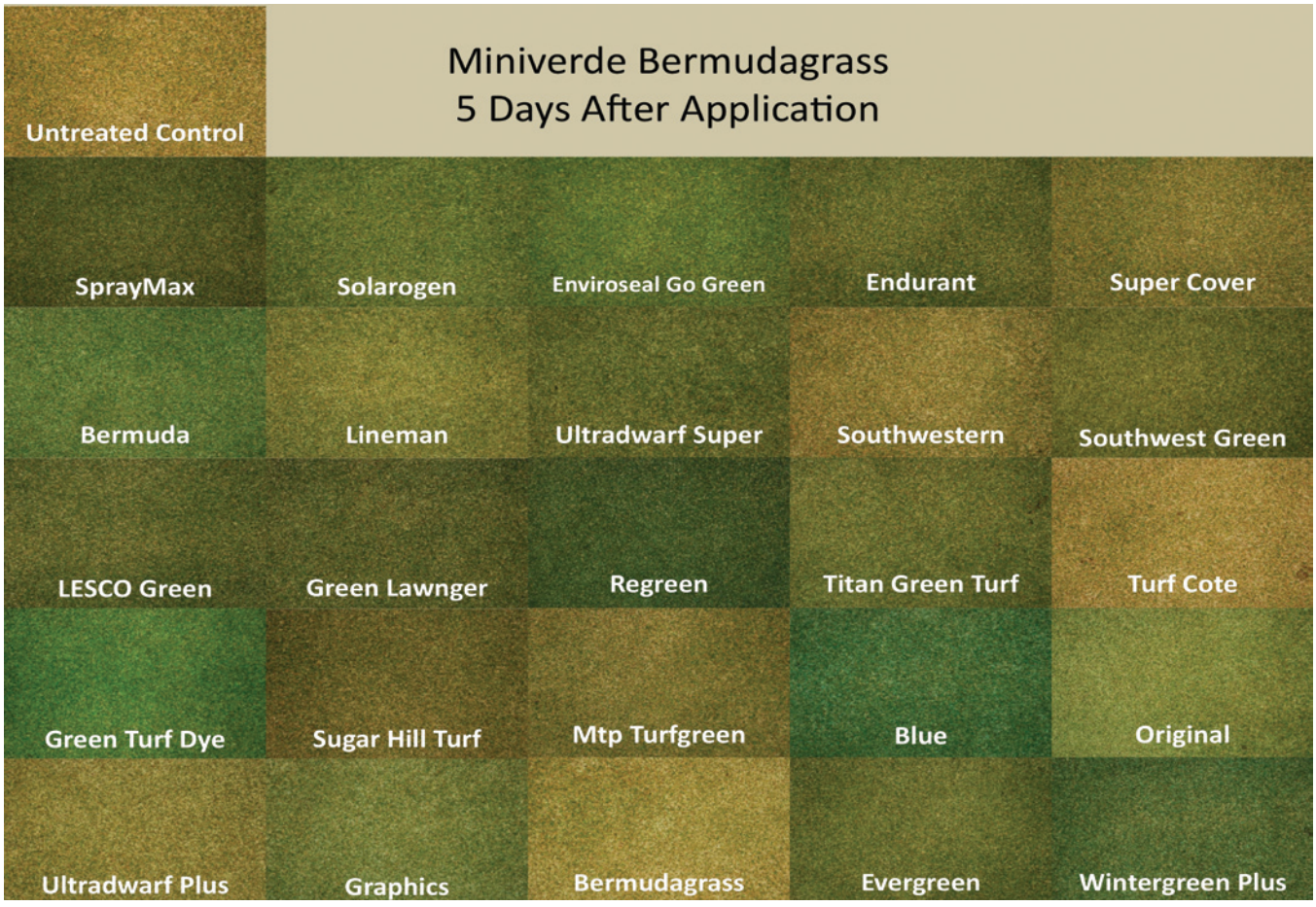

GREEN SPORTS FIELDS USING TURF COLORANTS

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

Most 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 bermudagrass 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

will run from $30 to $75, with most distributors giving volume discounts. These are concentrated products that are then further diluted before application. A typical dilution rate is one part colorant to seven parts water, although some manufacturers suggest their products can be diluted one part colorant to 15 parts water. So, carefully read the label to get an idea of how much area one can cover with the product of choice. The cost of colorant needed for per acre of athletic field using the higher recommended application rates would range from $200 to $500 an application, depending on colorant brand.

With seed prices currently a bit higher the past few years, using one of these products could save a field manager a bit of money when compared to overseeding. Overseeding also has added maintenance costs. Considering that overseeding will require ground preparation, seeding, watering, fertilizing, mowing, pest control, spring transitioning, etc.; colorants may be a significant labor saving alternative as well.

The painting process can be boiled down to pick/purchase a colorant, add water plus colorant to your sprayer, and begin spraying. Any type of sprayer will work, although a boom-sprayer would be much more efficient to apply. If the color is not even or dark enough, you can make additional passes to accommodate aesthetic needs. There is some clean-up, but no season-long care like with overseeding. Speaking of clean-up, be very careful to not get this product on anything you do not want green. Fences, goal posts, benches, protective padding, etc. will all absorb the colorant and may be permanently stained. Be sure to wear "old clothes and shoes" and I would recommend rubber gloves. Always use good judgment and wear personal protection equipment when using sprayers.

Depending on your field's use, there are a few other potential drawbacks to using a colorant. It does not provide a wearable playing surface like an overseeded grass. Once the dormant tissue is worn away, there is no regeneration until spring. So, the "wear factor" must be considered if you have a bunch of games or other events take place on your field during the winter.

THE RESEARCH

Over the past few years, we have conducted numerous studies at North Carolina State University to evaluate various colorant products. Our first detailed studies were applied to putting greens in fall 2008. Subsequent trials have included evaluations on bermudagrass and zoysiagrass at a great assortment of mowing heights. In total, we have evaluated more than 30 products. These products are from manufacturers/distributers such as BASF, Burnett Athletics, D. Ervasti Sales, Enviroseal, Geoponics, Harrell's, J.C. Whitlam Manufacturing, John Deere Landscapes, Milliken, Missouri Turf Colorant, Pioneer Athletics, Poulenger USA, Precision Laboratories, Solarfast, US Specialty Coatings, and World Class Athletic Surfaces. There has been a rapid increase in new products in the past 5 years in response to the growing interest in using colorants.

In the earlier studies we applied colorant treatments to completely dormant turfgrass in late October to early November using a boom sprayer at rates ranging from 40 to 160 gallons per acre (gpa). Applied to bermudagrass, colorant increased turf color from 38 to 67 percent

Table 1. Visual colorant quality ratings following the application of turf colorant on bermudagrass in fall 2012.

Colorant Name	Colorant Quality Rating			Initial Color
	Week 1	Week 5	Week 10	
Bermudagrass	3.4	1.0	1.0	Not Categorized
Endurant	7.9	7.0	1.8	Dark Green
Enviroseal Go Green	7.0	7.0	6.8	Yellow Green
Evergreen	8.0	6.8	3.9	Green
Green Dye Turf Colorant	7.0	7.0	7.0	Yellow Green
Green Lawnger	8.8	8.3	7.0	Green
Green Lawnger-Graphics	7.0	6.0	2.4	Blue-Gray Green
Green Lawnger-Lineman	7.8	6.6	4.1	Green
Kameelyan-Bermuda	7.0	7.0	6.1	Green Blue
Kameelyan-Blue	7.0	7.0	7.0	Blue
Lesco Green	8.4	8.0	5.4	Green
Mtp Turfgreen	7.0	4.3	1.3	Blue-Gray Green
Original	7.3	6.9	5.3	Yellow Green
Regreen	7.3	7.0	6.5	Green Blue
Solarogen	7.8	7.4	4.8	Blue-Gray Green
Southwest Green	7.8	7.6	1.8	Black Green
Southwestern	3.0	1.1	1.0	Dark Green
SprayMax	8.1	6.0	3.9	Dark Green
Sugar Hill	8.0	6.0	1.8	Black Green
Super Cover	4.3	1.6	1.0	Blue-Gray Green
Titan Green Turf	7.9	7.0	5.8	Green
Turf Cote	1.8	1.0	1.0	Not Categorized
Ultradwarf Plus	8.0	6.0	1.6	Dark Green
Ultradwarf Super	8.1	7.5	2.8	Dark Green
Wintergreen	7.0	7.0	7.0	Green Blue

Quality ratings are based on the color of the colorant on a scale of 1-9 with 1=straw brown to 9=dark green. Products categorized as Blue and Yellow Green had a maximum rating of 7.

▲ **Colorants applied** to Tifway bermudagrass (left) maintained beside next to tall fescue area (right).

relative to the control at the time of painting. Of course there was some variation in how the color was judged over time. But remember the saying, "beauty is in the eye of the beholder." Most of these products will have a date in which they will need to be re-applied to get season-long green color. Over the 6 years we have tested these products, some years the color lasted the full winter and some years it did not. On average the best products will have good color for about 75 days.

GOOD RESULTS ON SEMI-DORMANT GRASS

In another study when the products were applied to semi-dormant turfgrass, the products performed much better due to the greater background color at the time of application. This is a very important point. Subsequent tests have proven that some background color goes a long way. Applied to semi-dormant turfgrass, the color will look better and may last longer. For optimum results, do not wait until the turfgrass is straw brown.

Some of the colorant-treated turf took a bluish tint over time (some quicker than others). While this may sound like a negative attribute, in one survey many people did not mind the bluish color. Why blue? Well, often green is produced by mixing blue and yellow pigments. The yellow pigments are generally not as stable as the blue pigments so as the products age, the blue tends to be the more dominant color. We also found that most of the darker, more bluish products held their color longer than the products that started out a more natural green color. The more natural green products tend to fade to a grayish color as they age.

Applying the colorants at 160 gpa provided turf color increases up to 44 percent greater than the 80 gpa treatments. Applying colorants at rates above 80 gpa also resulted in increased color longevity over the winter season. We did not expect to see such a significant rate response in longevity of the products. More research is needed in this area to fully understand how to best use this information.

I often get asked, "What is the best colorant?" In fairness, no one turf colorant was clearly superior on both grasses in terms of natural green color at the time of application and at the end of the winter season. Results from our earlier studies generally indicated that the colorants with the best natural green color did not generally last as long as some of the others. This suggests that to have a natural green color for the duration of the study, reapplication will be necessary. A longer-lasting color, although it may have a blue-ish hue, can be achieved with minimum to no reapplication. ■

Grady Miller, PhD, is professor of crop science at North Carolina State University. Drew Pinnix, MS, is a graduate research assistant in the Crop Science Department at NC State.