



Pre-emergence weed control

Editor's note: For an overview of pre-emergence weed control, SportsTurf recently interviewed Laurence Mudge, technical services coordinator for Bayer Environmental Science.

Q: What are the benefits of a pre-emergence program versus post-emergence weed control?

A: There are several benefits to a pre-emergent program. First of all, pre-emergents are more cost effective, so you can spend less money on pesticides and labor costs. If you depend on post-emergent products, then you will be out there spraying whenever the weeds pop up. There's a lot less hassle and a lot more weed control [with pre-emergents].

Q: What recommendations, in general, do you have for turf managers when selecting a pre-emergence herbicide?

A: Check the type of turf that you are treating, and then find out what types of

weeds you are trying to control. For example, many treat for *Poa Annua* and broadleaf weed control in the fall. Before choosing a pre-emergent herbicide, make sure you know if the product is labeled for the turf you are treating.

Q: What advice do you have for turf managers who are faced with budgetary and/or time constraints when it comes to developing a weed control plan or program?

A: Turf managers need to look at the overall costs. Many turf managers think it is cheaper to only use the post-emergent product and they will skip using a pre-emergent. They don't count in the labor costs, repeat applications and overall hassle

of treating weeds post-emergent. You need to plan and look at the overall costs of controlling the weeds.

Q: What factors have the biggest impact on pre-emergence herbicide effectiveness?

A: The turf grass health can play a role. If you have a well-established turf, and it is in good condition, that can assist the pre-emergent herbicides. That is one of the most important things about weed control—the health of the turf. When you have healthy turf, you are asking a whole lot less of your pre-emergent herbicide. Other factors include rainfall, soil texture, soil moisture, and the competitiveness of the turf.

Q: What are your recommendations regarding timing of applications of pre-emergence products?

A: Pre-emergent herbicides need to be applied before weed seed germination. You have to know when your weeds germinate. This depends on where you are in the country, but generally the application should be between February and April. The further south, the earlier the pre-emergent herbicides should be applied.

Q: What problems on turf lead to the most weed problems?

A: Anything that is injuring or damaging the turf: poor drainage, shade, areas where you may have winter kill or disease. Anything that is affecting the turf and opening up the canopy leads to weed growth. Healthy turf is an important factor in weed control. Weeds pop up in areas where the turf isn't healthy. In wetter years, there is more weed pressure as opposed to dryer years when weeds don't germinate as much.

Q: What resources do you recommend for developing a weed control program?

A: One of the best places to go when developing a weed control program is to contact your local state university's turf weed specialist. They will be able to assist you with the weeds that are relevant in your region. If you have questions that are more product specific, reach out to the company and ask for their recommendations. ■

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— Laurence Mudge

New herbicides for 2011

AS THE CALENDAR TURNS each year, new herbicides are introduced into the marketplace. Many of these herbicides may benefit individuals managing cool- and warm-season athletic fields. Some of the new herbicides that will be available in 2011 are outlined below.

Specticle (active ingredient- indaziflam) is a new preemergence herbicide from Bayer Environmental Science labeled for use on warm-season turf at rates of 2.5 to 5 oz/A. Research at the University of Tennessee has found that Specticle provides effective preemergence control of crabgrass (*Digitaria* spp.) and annual bluegrass (*Poa annua*) at lower use rates than other preemergence herbicides. This herbicide is also labeled preemergence control of goosegrass (*Eleusine indica*).

Individuals should use caution when applying Specticle to athletic field turf. This herbicide has a longer residual than other preemergence herbicides; thus, there are label restrictions pertaining to not only overseeding but establishing new warm-season turfgrass from stolons/sprigs or sod. Depending on application rate, turfgrass managers cannot overseed for 8 to 12 months after treatment with Specticle. Furthermore, the product label currently states that turfgrass managers must delay sprigging or sodding for 2 and 4 months after application, respectively.

Imprelis (active ingredient- aminocyclopyrachlor) is a new postemergence herbicide from DuPont labeled for broadleaf weed control in cool-season turfgrasses, as well as zoysiagrass (*Zoysia japonica*) and centipedegrass (*Eremochloaophiuroides*). Application rates for cool-season turfgrass range from 3 to 4.5 fl oz/A. On warm-season turfgrass, application rates cannot exceed 3 fl oz/A, mowing heights must be greater than ½ inch, and some temporary turfgrass injury must be tolerated. Similar to Specticle, this herbicide will provide effective weed control at a lower application rate than has been used with similar chemistries (i.e., mix-

tures of 2,4-D + MCPP + dicamba). Imprelis is labeled for use on golf courses, athletic fields, sod farms, as well as residential and commercial turf.

In research trials conducted at the University of Tennessee, seedling tall fescue and perennial ryegrass have shown tolerance to Imprelis applications for weed control. Applications of Imprelis at labeled rates have not affected perennial ryegrass or tall fescue establishment. Similarly, application of Imprelis at labeled rates 1 to 2 weeks after seeding has not been injurious either. Many athletic field managers may benefit from these attributes. Other commonly used broadleaf weed control herbicides (e.g., mixtures of 2,4-D + MCPP + dicamba) require individuals to delay seeding for 3 to 4 weeks after application and restrict applications to newly seeded stands until the second or third mowing.

Additionally, research conducted at the University of Tennessee has demonstrated that Imprelis can be tank-mixed with Acclaim Extra (from Bayer—active ingredient is fenoxaprop) to provide cool-season turfgrass managers with an option for postemergence broadleaf weed and smooth crabgrass control.

SquareOne (active ingredients- carfentrazone + quinclorac) is a new postemergence herbicide mixture from FMC labeled for control of certain grassy and broadleaf weeds in warm- and cool-season turfgrass as soon as 7 to 14 days after seeding. SquareOne is labeled for use on golf courses, athletic fields, sod farms, as well as residential and commercial turf. Application rates of SquareOne range from 8 to 18 oz/A.

Celsius (active ingredients- thiencarbazon + iodosulfuron + dicamba) is a new postemergence herbicide mixture from Bayer labeled for use on select warm-season turfgrasses at rates of 2.5 to 4.9 oz/A; however, turfgrass managers cannot exceed 7.4 oz/A in a single year. Celsius is not labeled for use on seashore paspalum (*Paspalum vaginatum*); thus, turfgrass managers with seashore paspalum athletic fields (or bermudagrass fields heavily infested with

seashore paspalum) should select an alternative herbicide for broadleaf weed control.

Celsius is labeled for the control of a wide range of broadleaf and grassy weeds. Preliminary research at the University of Tennessee and the University of Georgia has also observed postemergence activity on dallisgrass (*Paspalum dilatatum*) following applications of Celsius in mixtures with Revolver (active ingredient foramsulfuron); however, it is not clear at this time whether these treatments will provide effective, long-term control.

Blindside (active ingredients- sulfentrazone + metsulfuron) is a postemergence herbicide mixture FMC labeled for broadleaf weed control on certain cool- and warm-season turfgrasses at rates of 3.25 to 10 oz/A. Avoid applying Blindside to any cool-season turfgrasses under stress, as temporary injury can occur after application.

Blindside is labeled for use on golf courses, athletic fields, sod farms, as well as residential and commercial turf. Research at the University of Tennessee has reported that applications of Blindside can increase the speed of ground ivy (*Glechoma hederacea*) and Virginia buttonweed (*Diodia virginiana*) control compared to Manor (active ingredient metsulfuron) alone.

Many of these herbicides will provide athletic field managers with new options for broadleaf and grassy weed control in 2011. Always refer to the product label for specific information on proper use, tank-mixing compatibility and turfgrass tolerance.

Mention of trade names or commercial products in this publication is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the University of Tennessee Institute of Agriculture. For more information on turfgrass weed control, visit the University of Tennessee's turfgrass weed science web site at www.tennesseeturfgrass-weeds.org. ■

Dr. Jim Brosnan is assistant professor-turfgrass weed science and Greg Breeden is weed science extension assistant at the University of Tennessee.



We brought in a lot of soil and ran soil tests and we were focused on organic matter content and were hoping for at least 2.5-3% which we were able to find, the pH was where we wanted it but the core chemistry needed some help.



The soil profile: Lindbergh High School

Editor's note: This is the newest installment of a series that is accompanied by soil test audits of a selected field. Our goal is to evaluate the soil and water tests from a selected sports field and build a fertility program based on the soil profile. We encourage all sports field managers who would like to be interviewed for this piece to contact the magazine. Logan Labs and author Joel Simmons will provide free soil test work and consulting to the selected site.

WHAT DOES IT TAKE to build a premium high school sports field? It takes a good plan, a lot of soil, and many pieces of heavy equipment. There is grass, miles of irrigation piping and drainage lines. Fertilizers, soil amendments, time and hard work are in the recipe, but perhaps the most important aspect to building a quality field, one designed for longevity, is the vision and leadership of a large group of people. This is exactly what happened when Lindbergh High School in St. Louis

set out to reconstruct their original football field, one that dated back to the 1940's.

A project to add an Early Childhood Learning Center on campus forced them to undertake the responsibility of constructing a large stormwater retention basin. The location of the stormwater basin facilitated the need to rebuild their original football field. As anyone who has worked in a public school setting knows a project of this size involves many people and too often this means conflicts, confusion and a lot of finger pointing.

That didn't happen here; the school board hired Rich Moffitt of Moffitt and Associates to oversee the project. Moffitt is a former STMA President and has many years experience in the management and construction of sports fields including a long stint as the Director of Grounds at St. Louis University. Moffitt had a lot of ideas as to how he wanted to build this field. "I really wanted the field to be natural grass and when the district discovered the cost of a synthetic field they made the decision to allow to us to go forward with a 90/10 turf type

tall fescue and bluegrass field." Anyone who has grown cool-season grass in St. Louis knows that it is a challenge to keep it alive through the heat of the summer. "The field was going to be used primarily for soccer so I thought the best choice was to go with cool season grasses knowing that the opportunities for easier maintenance and recovery would be better," Moffitt said.

Moffitt described the process they went through to get the field built and commented on how the school really understood that quality was an investment, not a cost. "To get a group this size in a public school system, with all the political ramifications, to create the vision and to complete a project like this was magnificent," Moffitt said.

Construction of the field began in the summer of 2010; the track that circled the field was dug down to 3 inches and rebuilt with a new rubber running surface. "The native soil in

Soil Report

| | | | |
|--------------------------------|-----------------------------------|---|-------|
| <i>pH of Soil Sample</i> | | | 7.30 |
| <i>Organic Matter, Percent</i> | | | 4.56 |
| ANIONS | SULFUR: | p.p.m. | 121 |
| | Mehlich III Phosphorus: | as (P ₂ O ₅) lbs / acre | 437 |
| EXCHANGEABLE CATIONS | CALCIUM: | Desired Value | 4388 |
| | | Value Found | 4568 |
| | | Deficit | |
| | MAGNESIUM: | Desired Value | 464 |
| | | Value Found | 786 |
| | | Deficit | |
| | POTASSIUM: | Desired Value | 503 |
| Value Found | | 498 | |
| Deficit | | -5 | |
| SODIUM: | lbs / acre | 64 | |
| BASE SATURATION % | Calcium (60 to 70%) | | 70.79 |
| | Magnesium (10 to 20%) | | 20.30 |
| | Potassium (2 to 5%) | | 3.96 |
| | Sodium (.5 to 3%) | | 0.87 |
| | Other Bases (Variable) | | 4.10 |
| | Exchangeable Hydrogen (10 to 15%) | | 0.00 |

Saturated Paste Report

| | | | |
|--------------------------------------|-------------------|-------|-------|
| <i>Bicarbonate (HCO₃)</i> | | ppm | 273 |
| ANIONS | SULFUR | ppm | 41.62 |
| | PHOSPHORUS | ppm | < 0.1 |
| SOLUBLE CATIONS | CALCIUM | ppm | 76.12 |
| | | meq/l | 3.81 |
| | MAGNESIUM | ppm | 22.16 |
| | | meq/l | 1.85 |
| | POTASSIUM: | ppm | 18.16 |
| | | meq/l | 0.47 |
| | SODIUM | ppm | 31.66 |
| | | meq/l | 1.38 |
| PERCENT | Calcium | | 50.74 |
| | Magnesium | | 24.62 |
| | Potassium | | 6.29 |
| | Sodium | | 18.35 |

In evaluating the current soil tests it is clear Moffitt was right about the native soil and as can be seen by the soil profile the magnesium level on the standard soil test is very high and is driving the pH upward. It becomes difficult to manage a soil profile where all three major nutrient levels, calcium, magnesium and potassium, are high because we can't effectively apply one to knock the other off the soil colloid.

the area is not always great for sports, nor is the water, and the old field was tight and over-used making maintenance hard and costly,” Moffitt said. “We brought in a lot of soil and ran soil tests and we were focused on organic matter content and were hoping for at least 2.5-3%, which we were able to find; the pH was where we wanted it but the soil was a little tight and the core chemistry needed some help.”

The field was amended with EarthWorks Renovate Plus, a construction amendment that contains dry kelp meal, compost and humic acids to aid the digestion of carbon in the soil. This product also uses rock minerals to provide sustainable phosphorus, potassium and trace elements, and provides porosity to allow air and water to move through the profile.

“We didn’t do a lot of pre-plant work, we used Renovate Plus and a good starter fertilizer, we could have gone at this with a little less expense but the school district saw the value in the pre-plant program and we had a great establishment,” Moffitt said. The field was sodded with big rolls of a fescue/bluegrass seed blend from a local sod producer in the fall of 2010 and will be ready for play by this spring.

In evaluating the current soil tests it is clear Moffitt was right about the native soil and as can be seen by the soil profile the magnesium level on the standard soil test is very high and is driving the pH upward. It becomes difficult to manage a soil profile where all three major nutrient levels, calcium, magnesium and potassium, are high because we can’t effectively apply one to knock the other off the soil colloid. Often when magnesium is high it is at the expense of calcium and limestone can be used to knock off the excess Mg and bring the soil into balance. What can be seen on these soil tests is that both sulfur and sodium are high (ideal levels of both are in the low 20 ppm’s for sulfur and low 20 lbs/acre for sodium) which is an indication of the potential for a tight, compacted soil profile.

When reviewing the water soluble

paste extract a few “red flags” show up specifically the very low phosphorous readings, high bicarbonates and the very high sodium to potassium percentage. The phosphorous was addressed at pre-plant with the sustainable rock phosphate but will need to be a focus from a soluble standpoint when the maintenance program is established. High sodium levels, especially when percentages of sodium

are higher than the percentage of potassium can lead to sodium induced wilt and root dysfunctions. Bicarbonates can seal the soil surface leading toward localized dry spots and poor air movement through the root zone.

A maintenance strategy using a flushing program of a high quality liquid humic acid product, 10 lbs per 1000 square feet of gypsum along with a good penetrating soil surfac-



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Monitoring the soil testing data will allow for the appropriate adjustments to be made to maintain the high quality standards expected here at Lindbergh High School.

tant as often as monthly, will be a big help in keeping the sodium and bicarbonates at bay and keeping this exceptional field where they want it to be. Retesting a new field at least a few times per season is very important because there are so many changes happening as the pre-plant works through and the grass continues to establish. Monitoring the soil testing data will allow for the appropriate adjustments to be made to maintain the high quality standards expected at Lindbergh High School.

"We had originally designed it to be a sand-based field but the cost was restrictive. The soil we brought in was good but a little tight and we knew with a little amending we could build a product that will provide the school district what they wanted for the long term," Moffitt said. "I am a believer in the use organic-based fertilizers along with some synthetics when needed, this has been the approach we've taken on most of our projects and it has provided great results. We try to make a fertility program that simply lasts and doesn't run out all at once." ■

Joel Simmons is the president of EarthWorks Natural Organic Products and Soil First consulting and teaches the Soil First Academy all across North America. He holds a Masters Degree from Penn State University and is a former Penn State county extension agent and instructor of soils at Rutgers University. He may be reached at joel@soilfirst.com.