

PESTICIDES

Herbicide failure? It's probably *your* fault

PRE-EMERGENTS

The most common reason why pre-emergence herbicides for grassy weeds fail is that they are applied too late in the growing season. Doug Davis, a research assistant at the University of Maryland, notes that few, if any, pre-emergence herbicides will knock out weeds after their germination. Also, not watering in chemicals within 72 hours of application can keep the herbicide from the germinating seed.

Light and microbial action also will break down the active ingredient, Davis told landscape managers at Turfgrass '88 in Baltimore. Often, a necessary second application is not made, especially with Balan, Dacthal and Team, he adds.

Weather conditions also affect success. A dry spring followed by a moist June and July will delay germination past the pre-emergent's efficacy period. Improper calibration and a disruption of the soil surface, such as from divots, also can work against control.

Davis, therefore, recommends taking these steps toward successful pre-emergence control:

- Apply at recommended rates. This includes proper calibration and measuring of chemical. He suggests applying granular at half rates in two



directions.

- Apply about one to two weeks prior to weed seed germination. In the north, he says, this is generally between May 1 and May 20; in the transition zone March 15 to April 15.

- Water in; do not disturb surface.

- Finally, Davis recommends re-application about six to eight weeks following initial application.

POST-EMERGENTS

Any number of outside influences can decrease the effectiveness of post-emergence broadleaf herbicides, says Tony Koski, Ph.D. at Ohio State.

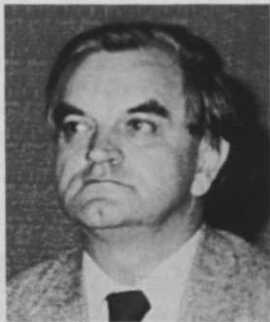
First, is the weed susceptible or tolerant to the herbicide? Key influences on this, Koski says, are:

- herbicide placement;
- herbicide dosage or proper application rate;
- herbicide formulation (either granular or liquid);
- growth stage of the plant (the younger the better);
- degree of absorption and translocation and metabolism of the chemical by the plant;
- pesticide interaction in tank mixing;
- synergistic effects of tank mixing; are combinations better?; and
- enhancement: should an additive such as a wetting agent be mixed in to induce a response?

With tank mixing, antagonism is a possibility, Koski notes. Mixing sometimes reduces efficacy, as in the case of Acclaim! in combination with phenoxys. Physical incompatibilities can result in a chemical settling out of the mix. Chemical incompatibility can reduce efficacy or even form new chemicals. Poor water quality will also affect chemical potential.

The amount of herbicide absorbed also is related to the weather. Hot dry conditions thicken cuticles and close stomata, openings through which herbicides are absorbed. Often, irrigating turf can help if weeds are growing actively. In general, Koski says, moist conditions of spring and fall are best for application timing. Rain and runoff, however, will decrease efficacy.

Koski made these observations at the Ohio Turfgrass Conference.



Jackson



Smiley



Couch

DISEASES

Cause of summer patch finally identified

Researchers at Rhode Island University have identified the causal agent of summer patch disease in Kentucky bluegrass turf.

Previously identified as *Phialophora graminicola* by Richard Smiley, Ph.D., the pathogen is now known to be a species of *Magnaporthe*. *P. graminicola* is a common inhabitant of Kentucky bluegrass

roots, but it is not an aggressive pathogen.

Research on this topic was headed by Noel Jackson, Ph.D., and Peter Landschoot. Smiley, now working at the Columbia Basin Agricultural Research Center in Pendleton, Ore., agrees with Jackson and Landschoot. "It's a remarkable piece of work," says Smiley. "It's a further clarification. I

had identified the existence of a fungus."

This is the latest in a series of theories expounded in the last 20 years on the causes of a group of turf diseases known as fusarium blight (or fusarium blight syndrome). Turf pathologists have long debated the causal agents of the diseases. The de

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TURFGRASS

Visualizing yourself as a turfgrass root



To get the proper perspective on dealing with the below-ground influences on turfgrass plants, Bob Carrow, Ph.D. at the University of Georgia, says you have to "visualize yourself as a root."

Getting "down and dirty" about roots, Carrow outlined their functions at Turfgrass '88 in Baltimore: to anchor the plant, absorb and translocate nutrients and water, synthesize and transport certain growth-regulating hormones, and help store carbohydrates.

To further understand roots, he advised familiarization with characteristics such as growth cycle, rate of extension, depth and density and genetic limitations: "We have to work within the genetic potential of the plants."

Root strength can be limited by physical and chemical properties of the soil, he noted. Compaction, oxygen level, water content and soil temperature limit roots physically. Chemically, pH, nu-

trient levels and balances and salt levels all affect root potential. Influences from other organisms also play a part.

So what does the turfgrass manager do to improve rooting? For starters, Carrow suggests selecting species and cultivars with genetically better rooting systems, information which USGA Green Section can provide.

Secondly, promote maximum net carbohydrate production with greater leaf area from higher cutting heights, provide sufficient nutrition and light and avoid consistent drought stress.

Also, avoid depleting carbohydrate reserves from excessive nitrogen feeding, over-watering and close mowing.

Physical and chemical soil conditions not conducive to strong root growth should be corrected, along with poor biological soil conditions such as the presence of diseases, insects and excessive thatch.

EQUIPMENT

Utility tractors great for landscape chores

Because of its versatility, the compact utility tractor is becoming more important to the landscape/golf course market.

"If mowing is the only thing this guy does, I'll sell him a mower," says Martin LaRue of Brooklyn Tractor and Mower, Cleveland, Ohio. "But if he's going to do more than mowing, I sell him a utility tractor. They're virtually the same price."

The compact utility tractor falls between riding lawn mowers and large (20 to 80 hp) tractors, making it useful for large mowing jobs and/or small landscaping chores.

Most compact utility tractors are made overseas. They come with a variety of accessories ranging from post-hole diggers to loaders, backhoes, plows and mower decks.

Landscapers use them for a variety of tasks while golf course superintendents usually pull reel mowers in gangs behind them.

Probably the most important factor in selecting a compact utility tractor is the amount of power in the power take-off (PTO). Fifteen to 20 hp is usually enough for light landscaping jobs, but golf course superintendents who have larger (seven gangs or more) mowers need at least 30 hp, according



Utility tractors like this one can double as grass mowers.

to LaRue. And for production mowing, a machine with cruise control eventually pays financial dividends.

Ground speed should be one of the

least important factors in selecting a compact utility tractor. Most compact tractors don't top 12 mph for safety reasons.

bate is significant because both the identity and the cause of a disease are crucial to its control.

"This explains many of the peculiarities we are obtaining with standard control recommendations," Jackson explains.

Houston Couch, Ph.D. of VPI-SU, who did most of the initial work on fusarium, says that there as many as 17 different diseases with similar symptoms. He has asked some fungicide manufacturers to specify which of the diseases their products control, and to change labels accordingly.

LEGISLATION

Judge approves use of diazinon

An EPA administrative law judge ruled in favor of diazinon manufacturers, but placed tighter restrictions on the insecticide's use.

Last year, the EPA proposed cancellation of diazinon's use on golf courses and sod farms stemming from reported bird kills. The decision was handed down Jan. 25 by Judge Gerald Harwood. It states that golf course and

sod farm registrations for all products containing diazinon not be cancelled but placed under the "restricted use" classification. Harwood also ordered a change in diazinon product labels to include application restrictions proposed by Ciba-Geigy to reduce the risks diazinon application on golf courses and sod farms may pose to birds.

The decision is good news for golf superintendents, according to Bill Liles, director of the Turf & Ornamental Department at Ciba-Geigy, the major supplier of diazinon. "We are especially happy with the strong support we got from the GCSAA. The superintendents provided expert testimony at the hearings about how diazinon is an important tool for insect control in their operations."

ATHLETIC TURF

Musser Foundation breaks off NSTC

The Musser Foundation has told the National Sports Turf Council (NSTC) that it will have to stand on its own. The decision, made at the board of directors meeting in Houston last month, was unanimous, according to Musser president Frank Dobie, superintendent of Sharon Golf Club in Sharon, Ohio.

"It was time the council be launched on its own," Dobie says. NSTC began two years ago as part of the Musser Foundation. Last year, it moved its headquarters to the USDA office in Beltsville, Md.

NSTC had used about \$6,000 of Musser Foundation funds, which Dobie says won't have to be paid back. But Jack Murray, first vice president of the Musser Foundation and NSTC co-chair, says the council has raised enough money to pay back the foundation.

The future of NSTC has not been determined. Murray called being separated from the Musser Foundation, "very disappointing." "We don't have a firm foundation," he says. "I thought we had it as an arm of the Musser Foundation."

But he still has high hopes for NSTC's future. Murray says he would still like to hire a full-time person or staff to run the NSTC and even lobby in Washington. "We need to get more input at the grass-roots level and to work with states, different leagues and high school athletic directors," Murray says. "Our best bet is to work through extension agents."

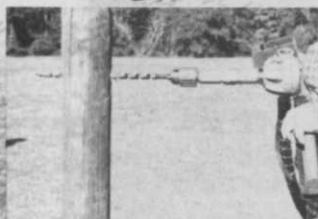
For the time being, NSTC will continue to work out of the USDA office in Beltsville, Md.

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Athletic field care re-evaluated by Harper

Recent research is re-evaluating the way we look at caring for athletic fields.

Penn State's Jack Harper, Ph.D., notes that a good natural grass field will reduce injury, but that a bad natural field is just as dangerous as an artificial turf field.

He points out certain requisites for a good grass field. Coring, he notes, has become a major concern on natural grass fields because it causes too much compaction near the surface. This same problem also plagues golf courses.

The problem stems from tines penetrating to their appointed range, two to four inches, but packing soil down to that depth while penetrating.

But Harper emphasizes that coring is still a necessity and it should be done as frequently as possible—a minimum of three times a year. "You need more than one pass in one direction once a year," he states.

For cool-season grasses he suggests a heavy coring in early spring just after the turf has ended its dormancy. Also a light coring in late August before football season, each time using a dragging instrument to break up the cores.

His third recommended coring would be a heavy one at the end of the season without dragging, letting the elements break up the cores.

Harper also recommends overseeding annually, some between the hashes on a football field and near the goals on a soccer or field hockey field. He found over the last 10 years that early spring overseeding recommendations are changing from the too slow tall fescues and bluegrasses to the rapid turf-type perennial ryes.

The new turf types are the best, he says, but not perfect. The current recommended rate is 5 to 7 lbs./1000 sq. ft. For broadcast seeding, aerate, put down the seed and then drag so that the seed will fall into the holes and be covered. For slit seeding, aerate, slit seed in at least two directions then broadcast some also. Fertilizer should be added according to soil tests.

Penn State publishes a guide to athletic field construction and maintenance. The booklets are available from Dr. Harper at the College of Agriculture Extension Service, University Park, PA 16802.

Harper spoke on athletic fields at the Ohio Turfgrass Conference.

New to LANDSCAPE MANAGEMENT

Gloria Cosby, shown below, has joined LANDSCAPE



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