

# TECH CENTER

## Knowing lifecycle vital to control white grubs

■ Skunks feasted on the grubs buried in the roots of the turfgrass surrounding the corporate office building in suburban Cleveland.

The damage, mostly in the low, moist areas of the property, reaffirmed the adage: to control a pest, first learn its lifecycle. This is particularly true of white grubs since they're below the soil surface. This also complicates their control.

Typically, beetles that develop into white grubs—Japanese beetle, masked chafers, European chafer—lay their eggs in the soil in June or July. The eggs absorb moisture from the soil otherwise they won't grow and develop. The tiny first instar larvae needs sufficient moisture, too.

In fact, research in recent years suggests it's difficult to over-estimate the importance of soil moisture in the lifecycle of white grubs. That's why poor control usually occurs when chemical controls are applied on drought-stressed turf in mid-summer. The white grubs have moved deeper into the soil, in effect, out of reach of the control.

**Tasty summer meal**—But by mid-summer 1991, the grubs at this showcase of a 10-acre corporate office site had grown large and juicy enough—and remained close enough to the soil surface—to attract

skunks. The night-feeding skunks devastated about six patches of turfgrass, really ripping up a 10-by-30-yard oval patch of turfgrass in a depression adjoining a 3-acre marsh. This ribbon of turfgrass separates the natural, marshy area from a patio where company employees lunch if the weather is nice. Everyone in the building watched as the turfgrass damage, worsened by dryness, grew.

The skunks also dug up turfgrass in a scattering of smaller areas, although they did no scavenging in the less intensively maintained, non-irrigated turfgrass fringing of the property.

The on-site turfgrass manager removed the dead grass *and* thatch, and treated the grub-infested areas of the property with diazinon. After the application, he watered the product into the soil. He said the treatment was successful. Skunk predation tapered off. He reseeded the devastated areas. After a mild winter and wet spring and early summer, his grounds are green and healthy.

**They're back**—However, he discovered white grubs began feeding on turfgrass roots earlier this spring than usual. (1991 was one of the warmest years recorded in much of the United States.) Adequate rain-

fall in late spring and early summer is another reason why he began checking the roots of his turfgrass for evidence of white grubs earlier than he normally would.

He, like other turfgrass managers, establishes a threshold to determine if they'll apply an insecticide or not. Healthy turfgrass will sustain a certain population of white grubs before damage becomes visible.

However, if and when a manager determines that a control is needed, he or she must make a decision about control product, the method of application and the timing of application.

For typical weather (when is weather ever typical?), the best time to treat for white grubs is just after small larvae grubs emerge. This could be any time from mid-July through late summer. The tiny grubs are closest to the soil surface then. They're feeding.

As fall approaches, the larvae molt. Falling soil temperatures cause the grubs to burrow deeper into the soil to spend the winter. When the temperature rises again in the spring, they work their way upward again and feed for several weeks, just a couple of inches below the soil surface.

In late spring or early summer, the grubs, in the pupal stage, quit feeding for several weeks. Then mid-June through July they change into adult beetles, emerge and burrow into the soil to lay eggs.

Check with your local extension agent for optimal grub control times.

—Ron Hall

## GRUB CONTROL STRATEGIES

### Spring April-May

If treatment of overwintered grubs is needed, apply when all grubs are in the first two inches of surface soil. General or spot treat Triumph<sup>1</sup> (2 lbs. ai/A); Oftanol, Sevin-Sevimol or Mocap (5 lbs. ai/A) or Turcam (2-4 lbs. ai/A) may be used. Crusade<sup>2</sup> (4 lbs. ai/A). Irrigate as soon as possible after application. Green June beetle larvae are difficult to control at this time. Sevimol (2-4 lbs. ai/A) may be effective.

### Summer June-August

Existing grubs found in July or August may be treated with Triumph<sup>1</sup>, Dylox, Proxol, Turcam, Oftanol, Sevin-Sevimol or Mocap. Apply at label rates. Crusade<sup>2</sup> (4 lbs. ai/A). If soil and/or thatch is dry, irrigate thoroughly before and as soon as possible after app. Treat green June beetle with Sevin (2-4 lbs. ai/A).

### Fall-early winter Sept.-December

Treatment can be made as late as mid-late Sept. as long as grubs stay in first inch of surface soil. Triumph<sup>1</sup>, Mocap, Dylox-Proxol at label rates may be effective

1 For use only by commercial lawn pest control personnel, and only on golf course tees, greens and aprons, and on sod farms. See soil restrictions.  
2 For use in professional turf areas such as golf courses and commercial sod.

Source: Dr. Harry Niemczyk

# Is your turfgrass sulfur-deficient?

■ Turfgrass response to sulfur is more common today than just a few years ago, according to the Potash & Phosphate Institute (PPI).

The reasons might be traced to more effective clean air programs, less sulfur in high analysis specialty fertilizers or plant protection chemicals, differences in variety of species requirements, and improved technology for measuring nutrient shortages. Whatever the reason, each turf plant still needs a certain amount of sulfur to develop properly.

Here is what a lack of sulfur can do to turfgrass:

● **Off-color turf:** The leaf mid-vein remains dark green while the remainder of the leaf becomes light green. Symptoms first show on new growth, since sulfur is slowly translocated within the plant. With more severe cases, the entire plant turns

light green. Some die-back can develop from the leaf tip.

● **Slow growth:** Sulfur and nitrogen are both essential parts of amino acids, the building blocks of proteins. A sulfur deficiency can result in an inadequate amount of one or more of the sulfur-containing amino acids. Sulfur and potassium also serve the plant in similar ways: both are needed to help activate enzymes essential for driving major plant growth activities.

● **Low plant sulfur content:** Early stages of sulfur deficiency might not be visible to the naked eye or noticeable in plant development. But it can be detected through soil and plant analysis.

● **Poor response to nitrogen:** Sulfur helps plants use nitrogen efficiently. Research shows that growth response to nitrogen by bentgrass improves by nearly

70 percent when sulfur is also provided. Grass color also improves when sulfur is in balance with nitrogen.

● **Weed encroachment:** Turfgrasses become less competitive with weeds when nutrient shortages or imbalances develop.

Sulfur can be provided to turf from several sources. A small amount comes from rainwater, which captures sulfur released into the air from burning coal, oil or other materials. Plants obtain a part of their sulfur needs from the breakdown of soil organic matter.

The remainder must be provided through a balanced fertilization program, the PPI says. A few sources include:

- ✓ potassium sulfate,
- ✓ sulfate of potash-magnesia,
- ✓ ammonium sulfate,
- ✓ ammonium thiosulfate and
- ✓ elemental sulfur.

## Colorants, mulch in the landscape

by Gary L. Wade, Ph.D.  
University of Georgia

■ The fall months are typically the time when landscape professionals replenish mulch in plantings. This is done primarily:

- to help insulate the roots from winter freezes; and
- to freshen the mulch's appearance.

In the southern states, pine straw is the most widely used mulch. But it dries rapidly, becomes brittle and fades to gray.

Today, however, landscapers are looking at mulch colorants as a possible alternative to re-mulching. A wide variety of earth tones are available, and the landscaper can literally paint the landscape any color he or his client likes.

Becker-Underwood's Mulch Magic comes in light brown for pine straw and cypress mulch and dark brown for pine bark and other darker wood mulches.

Standard Tar's Bark Renewer comes in three colors: honey, California redwood and walnut brown.

Lesco's Nu-Mulch is apparently being formulated for them by Becker Underwood and is either similar or identical to Mulch Magic.

Applicators should use them cautiously; they can cause skin and eye irritation.

In the accompanying table, please note that the costs listed are suggested prices

### RE-STRAWING VS. APPLYING COLORANTS TO MULCH

Product name	Avg. dealer price/gal.	Cost per oz.	Rate of application	Coverage/ gal. or bale	Est. Cost/ 1000 sq.ft.	Longevity in months
Mulch Magic	\$65.00	\$0.51	4 oz./gal.	200 sq.ft.	\$10.20	4-6
Bark Renewer	\$95.95	\$0.75	12 oz./gal.	200 sq.ft.	\$45.00	12-24
Nu-Mulch	\$59.00	\$0.46	4 oz./gal.	200 sq.ft.	\$9.20	4-6.
Pine straw (per bale)	\$2.50	—	—	150 sq. ft. (to 1" depth)	\$16.65	6-12

Source: Dr. Wade

provided by the manufacturers in 1991 and may vary by locale and distributor. If labor costs were also considered, the cost of re-strawing would be proportionally higher than spraying because it is a more labor-intensive task.

The data provided are intended for

information purposes only and do not imply endorsement of any one product, nor are they intended to exclude similar products that may also be available.

—Dr. Wade is extension horticulturist in landscape management for the University of Georgia, Athens, Ga.

## Corrections

■ A misnomer appeared in a chart on page 43 of our April issue, according to José Milan of Ciba-Geigy.

In the chart, Dr. Don Short of the University of Florida suggested using "Logic" bait for fire ant control. Milan says "Logic" is labelled specifically for agricultural uses such as pastures and farmlands.

Ciba-Geigy's product for fire ant control of turfgrass areas is "Award" fire ant bait.

■ Our March cool-season weed control article listed incorrect treatment for creeping speedwell. Creeping speedwell (*Veronica filiformis*) is controlled by Dacthal DCPA as a post-emergent. Corn

speedwell (*Veronica arvensis*) or parslan speedwell (*Veronica peregrina*) may be controlled by Turflon D, Dacthal, DCPA or Trimec.

■ In the May disease control article, Rohm and Haas products were not correctly represented, according to Robert F. Gordon, manager of Turf & Ornamental Products.

● Rohm and Haas no longer sells maneb (Dithane) in the U.S.

● Dithane and Fore are the trade names for the fungicide mancozeb.

LM regrets any inconvenience these errors may have caused readers.