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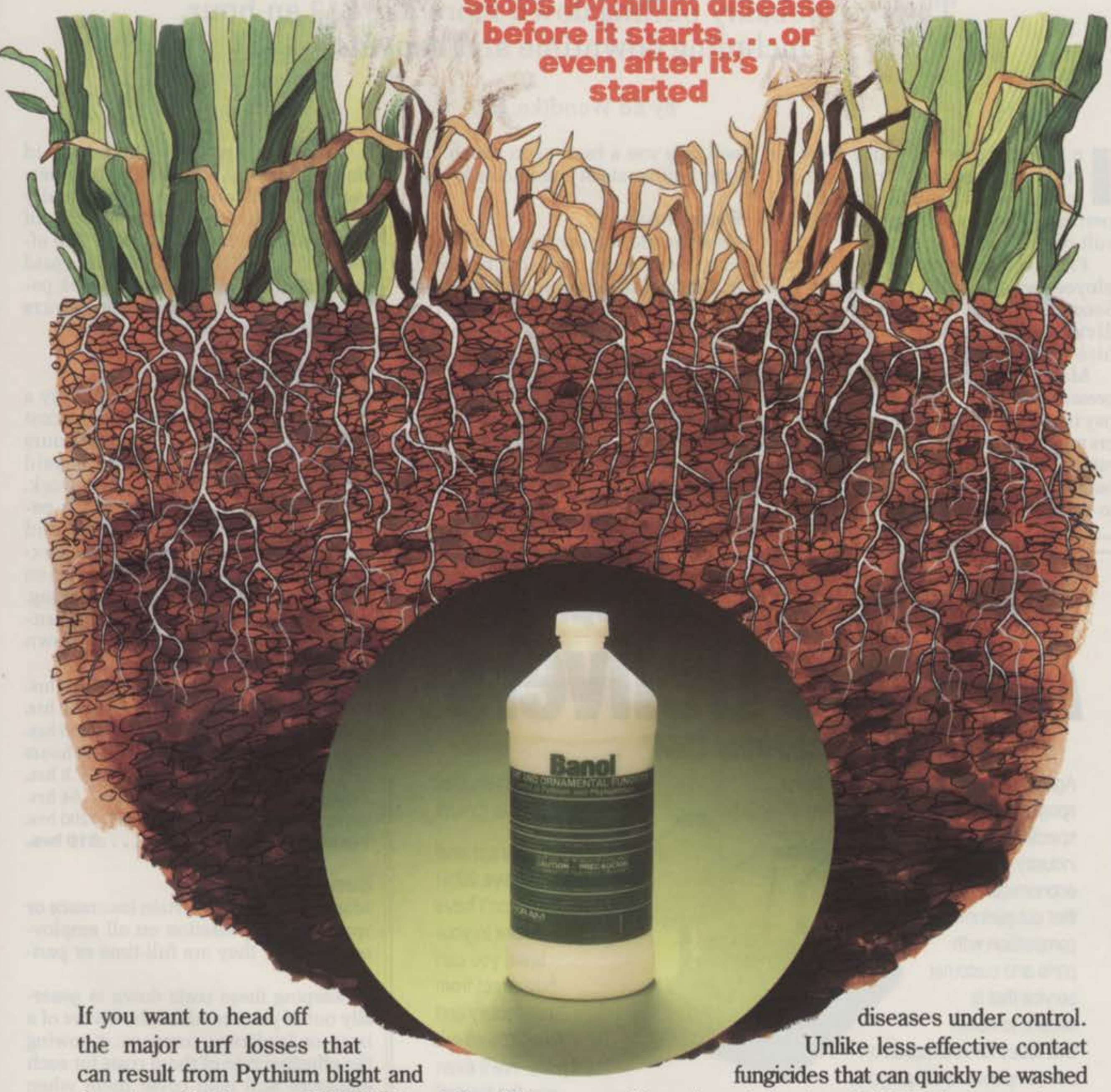

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THE PRICE OF LABOR

If you think your employees are making $8 an hour, you're wrong. They're probably pulling down more like $13 an hour, including downtime and benefits!

by Ed Wandtke, CPA

In the past five years, pay rates for labor in the industry have increased at an annual rate of 8 to 10 percent. These increases are the result of two trends.

First, there are fewer quality employees available on the job market. Secondly, production efficiency of individuals has increased, once they are hired and trained.

Many companies are now seeing pressure on their profit margins due to pay rates becoming so high that customers might not be willing to pay the billing rate. This column will discuss the true benefits cost for an employee, and how to calculate it for your company. This will give you a basis upon which to set your billing rate at a profitable level.

Rate of pay

When rendering services at an hourly rate, most green industry companies find it hard to determine what a profitable billing should be. Service companies are also concerned with justifying to the customer the billing rate.

To determine the effective cost of an employee, you need to answer some basic questions about the amount of the costs you are experiencing for various tax, insurance, and other benefits.

Whether an individual is paid hourly, weekly, monthly or as a percent of production, you eventually will need to know the effective rate of pay the individual is earning. The effective rate (ER) is the total wages paid an individual for a 13- or 26-week period, divided by the total hours worked during the same period.

Other paid time

One area most often overlooked by a company in determining the true cost of an employee is the number of hours during which the employee is paid but doesn't really perform any work. Break time each day, paid lunch period, holiday pay, sick day pay, and other time-off programs are some examples of compensated time when the individual is not really working.

For most companies, the unworked time per year breaks down into the following table:

Break time (30 min./day, 200 days)	100 hrs.
Paid lunch (45 min./day, 200 days)	150 hrs.
Holiday (6 days/year)	48 hrs.
Sick pay (5 days/year)	40 hours
Left early or arrived late	8 hrs.
Training (8 days)	64 hrs.
Drive time (1 hr./day, 200 days)	200 hrs.
Total unworked	**610 hrs.**

Benefit costs

Most states require certain insurance or worker's compensation on all employees whether they are full-time or part-time.

Keeping these costs down is generally out of your hands as the owner of a lawn or landscape company. Knowing the effective rate of these costs for each employee will help cover them when you bill the individual employee's time.

Voluntary benefits

Voluntary benefit costs are life insurance, health coverage, dental, eyeware coverage, disability insurance, life insurance, retirement, etc.

Some of these costs have been increasing at such a fast rate that many companies ask the employee to pay a percentage. Other companies are limiting eligibility until an employee has been working at a company for a longer period of time.

Statutory benefits

Statutory benefits are payroll-related costs set by the federal, state and local governments.

The most common of these expenses are FICA worker's compensation, disability insurance, unemployment insurance (federal and state) and licensing fees. Of the group, worker's compensation and unemployment insurance have been escalating at an unusually high rate.

These fees are a result of your company's experience and the ratings scale for your business's location. Knowing your rates for these costs and their pattern for the increase over the past threee years will provide you with some insight as to the costs you should anticipate changing to determine the billing rate for an employee.

Cost model

As related earlier, you are paying for 610 hours of unproductive time per employee per year. Based on a typical employee's wages of $8 per hour, that's $4880 per employee per year.

Costs for mandatory benefits, based on $8 per hour or $16,640 per year, could be calculated as such:

FICA (7.5% of $16,640) $1268
Fed. unemployment (.8% of $16,640) . . 135
State unemployment (3.5% of $16,640) 609
Worker's comp. (2.8% of $16,640) 473
Total statutory costs $2486

Voluntary payroll costs are benefits which you can elect to pay. In many markets, employers see most of these benefits as necessary costs in order to retain or attract employees. The types of these costs and the amounts might be, for the same employee:

Long term pay (1.843% of $16,640) . . .$312
Short term pay (.483% of $16,640) 82
Life insurance (1.78% of $16,640) 301
Medical single ($68.55 x 12 mos.) 823
Retirement (4.66% of $16,640) 788
Uniform services ($25/mo. x 12) 300
Outside educational program 100
Total typical voluntary costs $2705

Summary

As you evaluate whether you can afford to pay any additional benefits for your employee, you need to focus on how much more efficient your employees can become. For most individuals, maximum productivity or efficiency occurs when they are billing or productive for 65 percent of the total time they are compensated. How is the efficiency factor for your employees? Should you be providing better benefits to retain and attract a higher caliber of individual to your company? **LM**

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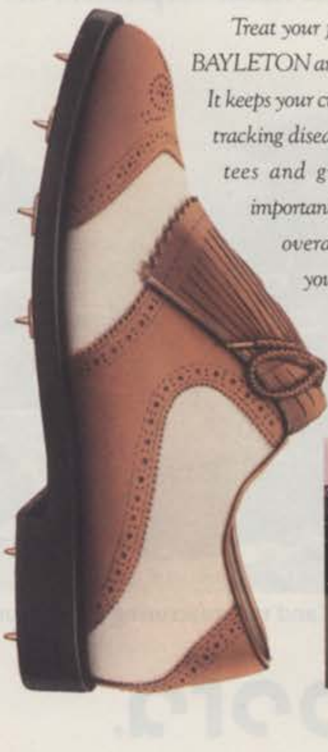

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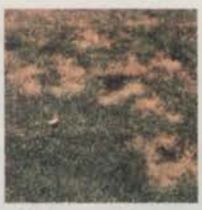

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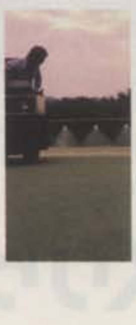

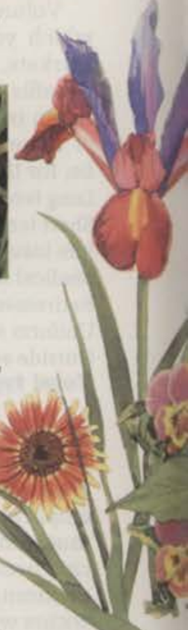

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COOL SEASON DISEASE CONTROL

When confronted with disease in turfgrass, landscape managers must contend with diagnosing, treating and avoiding resistance to fungicides.

by Peter Landschoot, Ph.D., Penn State University

Of all the pests of turf, disease presents perhaps the most challenging problems.

Symptoms are helpful in disease diagnosis but are often unreliable if they are not observed during the early stages of development. Another difficulty in disease management is obtaining adequate control before the problem gets out of hand.

Root and crown disease

The major root and crown diseases that affect cool-season turf in the United States include take-all patch, summer patch, necrotic ring spot, and pythium root rot. Take-all patch, necrotic ring spot and summer patch are generally referred to as the patch diseases, although a distinction should be made between patch diseases caused by root pathogens and those caused by foliar pathogens (i.e. brown patch, fusarium patch, yellow patch and pink patch).

The first indication of patch disease is the presence of dark brown mycelium (sometimes called ectotrophic mycelium or tunner mycelium) on the root surface that cause root discoloration. Unfortunately, this is virtually impossible to detect without a microscope and special preparation of the root tissue. By the time the patches are visible, extensive root damage has occurred and curative treatment is ineffective. This is the main reason why root and crown diseases are so difficult to manage.

Stripe smut appears in Kentucky bluegrass and bentgrass as black streaks along the length of leaf blades.

Golf courses a target

Take-all patch is almost exclusively a disease of bentgrass golf course greens and fairways.

Symptoms of take-all patch typically appear as circular patches of dead or dying turf ranging from a few inches to several feet in diameter. Under conditions favorable for disease development, patches may coalesce and destroy large areas of turf. Since the roots and crowns of affected plants are usually destroyed, recovery of the turf is slow. Undesirable plants such as annual bluegrass or broadleaf weeds often colonize the patches.

Take-all patch occurs more frequently on sandy soils, soils low in phosphorus and potassium, and in soils of high pH (7.0 or greater).

Take-all patch is one of the most difficult diseases to control on golf course turf. Most fungicides that control other turf diseases do not consistently control take-all patch.

Manipulating cultural practices is usually the most effective means of managing this disease.

Previous studies have shown that reducing the soil pH by adding acidifying fertilizers (such as ammonium sulfate and ammonium chloride) or sulfur can reduce the its severity. Correspondingly, applications of lime are not recommended on turf affected with take-all patch.

Making certain that soil phosphorus and potassium levels are not deficient will help to increase turfgrass resistance to this disease.

Bane of bluegrass

Summer patch is one of the most destructive diseases of Kentucky bluegrass and annual bluegrass in the Northeast and Midwest. It has also become a problem on fine fescues in some areas.

Once established, summer patch destroys the roots and crowns of affected plants, causing death of the turf. Summer patch usually occurs during extended periods of high temperatures (83-95°F) and high humidity.

Recent studies at the University of Maryland have shown that the disease is more likely to occur in moist soils than under drought-stress conditions. The peak disease period occurs following heavy rains during warm, hot days in the summer. Summer patch is frequently observed in heavily-trafficked turf and in areas with poor soil drainage and reduced air circulation.

Since summer patch is a root and crown disease, cultural practices that promote good root growth will help reduce disease severity. Increased aeration and improved drainage on compacted and poorly-drained soils will alleviate some root inhibition. It will also enable the turf to better resist infection by the causal fungus.

Because low mowing heights are conducive to plant stress and shallow rooting, raising the height of cut may result in less summer patch injury. Reducing populations of susceptible species and encouraging more resistant species such as perennial ryegrass or creeping bentgrass is another means of reducing summer patch injury.

Summer patch can be controlled with fungicides, provided that: (1) applications are properly timed, (2) the most effective products are used at the correct rates, and (3) the fungicides reach the roots and crowns before the tissues are extensively invaded.

The best response has been achieved by applying the fungicides on a preventive basis, usually three to four weeks before symptoms are likely to appear.

Fungicides must reach roots and crowns to prevent or stop the infection. Since most systemic fungicides do not move efficiently from foliar portions of the plant to the root tissue, the fungicides should be applied so they can reach the roots.

One means of distributing fungicides into the root zone is by applying large amounts of water (5 to 10 gallons/1000 sq. ft.). Similar results can be obtained by irrigating immediately after fungicides are applied. It is important that the fungicide not be allowed to dry on the foliage before watering.

Ring spot hard to stop

Necrotic ring spot is primarily a disease of Kentucky bluegrass lawns in the Northeast, Midwest, and Northwest.

This fungus is also the causal agent of a disease of bermudagrass known as spring dead spot. Necrotic ring spot can affect most cool-season grasses; however, the grasses most often damaged by this disease are Kentucky bluegrass and fine fescues. Sometimes, this disease has been found on annual bluegrass golf course greens in New Jersey and Pennsylvania.

Necrotic ring spot usually occurs in late spring and/or early fall. The disease can also appear in the summer on drought-stressed turf. Research has begun to determine other factors responsible for disease development.

One of the most effective management practices for reducing the severity of necrotic ring spot is overseeding with perennial ryegrass.

Pythium root rot is characterized by thinning of the turf in small, tan-colored patches. It may progress to destroy large areas of grass. This disease is caused by several pythium species that can infect roots under cool (45-60 °F), moist conditions. This disease typically occurs in early spring or late fall.

The severity of pythium root rot can be reduced by using management practices that promote root development and reduce excessive soil moisture. However, fungicide applications may be justified when conditions are favorable for disease development.

Although more research needs to be conducted on the control of pythium root rot with fungicides, trials in Upstate New York have shown that Aliette (fosetyl) and Subdue (metalaxyl) reduce populations of the causal fungi when watered in immediately following application.

New resistance strategies

Fungicide resistance results from the repeated, continuous use of fungicides with the same or similar modes of action. This has been a particular problem of systemic fungicides because they tend to have a narrower mode of action than most contact fungicides.

Dollar spot can infect all cool-season turfgrasses. Lesions are white, often with brown borders. Look for white mycelium in early morning.

One type of resistance occurs when the initial pathogen population consists of members that are either very sensitive to the toxic effects of a particular fungicide or are very resistant. Loss of control is sudden and dramatic.

Another type of resistance occurs when the population consists of members that are very sensitive, slight or intermediate in sensitivity, slight or intermediate in resistance, or very resistant to a particular fungicide. Following continuous repeated use of the fungicide, loss of control is gradual.

Should a fungicide program be necessary, it is important to design a strategy to delay or prevent the onset of resistance. Two conventional approaches to preventing resistance have been to alternate fungicides with dissimilar modes of action.

A combined approach

A recommendation often made by plant pathologists is to mix a contact with a systemic fungicide. Whereas this approach appears logical (since systemics and contacts have distinct modes of action), there is some evidence that suggests that this is not the best resistance prevention strategy available.

A more logical approach is to combine two or more systemic fungicides with different modes of action. This eliminates combining contacts and systemics. Unfortunately, mixtures of systemics at full-label rates are costly and may result in turf injury. Turf managers should take the threat of resistance seriously and avoid continuous and repeated use of fungicides with narrow modes of action. **LM**

Dr. Landschoot is an assistant professor of turfgrass science at Penn State University.

TABLE 1

Diagnostic Features of Common Cool Season Turfgrass Diseases

Disease	Causal Agent(s)	Symptoms/Signs	Susceptible Grasses
Anthracnose	*Colletotrichum graminicola*	Yellowing of leaf blades associated with a black crown rot. Pin cushion-like fruiting bodies with small, spiney projections can be seen with a hand lens.	Annual bluegrass, bentgrasses, and fine fescues.
Brown patch	*Rhizoctonia solani*	Large, circular brown patches or thinning of turf. On low-cut turf, patches often surrounded by dark rings. White, cottony mycelium may be present on high-cut turf in early morning.	Bentgrasses, ryegrass, tall fescue.
Dollar spot	*Lanzia spp. Moellerodiscus spp. (Sclerotinia homeocarpa)*	Small, bleached patches of dead grass appear in turf. Lesions on leaves are white, often with brown borders. White, cottony mycelium may be present on dew-covered turf in early morning.	All cool-season turfgrasses.
Fairy ring	*Basidiomycete* fungi	Dark-green rings become apparent in mature turf. Mushrooms often present around periphery of ring.	All cool-season turfgrasses.
Leaf spot/ melting out	*Drechslera* and *Bipolaris spp.*	Small tan lesions with purple or brown borders on leaf blades. In severe cases, the crowns are rotted and the turf may be significantly thinned.	Primarily Kentucky bluegrass. Other cool-season grasses may be affected.
Necrotic ring spot	*Leptosphaeria korrae*	Large ring-shaped patches, usually creating depressions in turf. Roots and crowns show brown or black rot.	Primarily Kentucky bluegrass. In some cases, fine fescues and annual bluegrass.
Powdery mildew	*Erysiphe graminis*	White, fluffy mycelium on leaf blades, usually present on turf growing in shaded areas.	Kentucky bluegrass.
Pythium blight	*Pythium aphanidermatum* & other *Pythium spp.*	Irregular patches of blighted turf. White, dense, cottony mycelium growing in turf in morning.	Perennial ryegrass, bentgrasses, tall fescue.
Pythium root rot	*Pythium spp.*	Small bleached patches of turf may progress to large blighted areas, crowns and roots rotted.	Bentgrasses, annual bluegrass, Kentucky bluegrass.
Red thread/ Pink patch	*Laetisaria fuciformis/ Limonomyces roseipellis*	Small red to pink patches of blighted turf. Long, slender threads of red myceliom (red thread), or fluffy, pink mycelium (pink patch) growing out of foliage.	Fine fescues, perennial ryegrass, Kentucky bluegrass.
Rust	*Puccinia spp.*	Yellowing of leaves often apparent. Brown pustules occurring on leaves and stems.	Tall fescue, perennial ryegrass, Kentucky bluegrass.
Slime molds	*Myxomycetes*	Blue or tan-colored spore-like structures on leaves.	All cool-season turfgrasses.
Snow mold (grey)	*Typhula incarnata*	Large patches of matted turf appearing at snow melt. Gray mycelium and orange resting structures often present on affected foliage.	All cool-season turfgrasses.
Snow mold (pink)	*Microdochium nivale*	Small patches of matted turf with pink or reddish color on the leaves.	All cool-season turfgrasses.
Stripe smut	*Ustilago striiformis*	Black streaks of spores along length of leaf blades. Shredding of leaf blades.	Kentucky bluegrass and bentgrass.
Summer patch	*Magnaporthe poae*	Large yellow or tan ring-shaped patches. A root and crown rot is usually apparent.	Bluegrass and fine fescues.
Take-all patch	*Gaeumannomyces graminis*	Patches of dead or dying turf ranging from a few inches to several feet in diameter.	Bentgrasses.

Source: Dr. Landschoot

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TABLE 2

Generic & Trade Names of Common Turfgrass Fungicides

Generic Names	Contact (C) or Systemic (S)	Common Trade Names[1]
Anilazine	C	Dyrene
Benomyl	S	Tersan 1991, Lesco Benomyl, Lebanon Benomyl
Chloroneb	C	Tersan SP, Teremec SP, Proturf Fungicide II
Chlorothalonil	C	Daconil 2787
Ethazol (etridiazole)	C	Koban, Terrazole
Fenarimol	S	Rubigan
Fosetyl-Al	S	Aliette
Iprodione	S	Chipco 26019, Proturf Fungicide VI
Mancozeb	C	Fore, Formec, Dithane F-45, Lesco Mancozeb, Manzate 200 DF
Maneb	C	Dithane M-22
Maneb + zinc sulfate	C + C	Tersan LSR, Dithane M-22 w/Zinc, Lesco 4 F w/Zinc
Mercury chloride	C	Calo-Clor, Calo-Gran
Metalaxyl	S	Subdue, Proturf Pythium Control
Metalaxyl + mancozeb	S + C	Pace
Pentachloronitrobenzene (quintozene)	C	Terraclor, Turfcide, Proturf FF II, Lesco PCNB
Phenylmercuric acetate	C	PMAS
Phenylmercuric acetate + thiram	C + C	Proturf Broad Spectrum Fungicide
Propamocarb	S	Banol
Propiconazole	S	Banner
Thiophanate-ethyl + thiram	S + C	Bromosan
Thiophanate-methyl	S	Fungo 50, Spot-Kleen, Clearys 3336, Topsin M, Proturf Systemic Flugicide
Thiophanate-methyl + mancozeb	S + C	Duosan
Thiophanate-methyl + iprodione	S + C	Proturf Fluid Fungicide
Thiram	C	Tersan 75, Spotrete, Thiramad, Lesco Thiram
Triadimefon	S	Bayleton, Proturf Fungicide VII, Lebanon Turf Fungicide
Triadimefol + metalaxyl	S + S	Proturf Fluid Fungicide II
Triadimefon + thiram	S + C	Proturf Fluid Fungicide III
Vinclozolin	S	Vorlan

[1] Products may be available only through specialized dealers or only in large quanitiy. Some products can be purchased and applied only by licensed pesticide applicators. This list is presented for information only. No endorsement is intended for products mentioned, or is criticism meant for products not mentioned.

Source: Dr. Landschoot

Biologicals: the new frontier

Biological control is the reduction of disease-producing activities of a pathogen by another organism.

Biological control is a natural occurrence in turf and is a primary reason why diseases do not destroy all of our lawns, grounds and golf courses.

Organisms that limit the disease-producing activities of a pathogen are referred to as antagonists. Antagonists are usually microorganisms (fungi, bacteria, viruses, nematodes, or actinomycetes) that interfere with the growth and spread of the pathogen. Antagonists may be introduced by artificial means or they may already be present in the turfgrass ecosystem.

Antagonists produce compounds that inhibit the pathogen—antibiotics, for example—or more directly, parasitize the pathogen. The direct application of antagonists is likely to result in failure unless provisions are made for it to successfully compete in turf. Direct application of an antagonist that is not adapted to the turf ecosystem is like sending a soldier into battle without a rifle. The pathogen and the other resident microorganisms are usually well equipped to outcompete and fend-off the introduced antagonist.

Another method of biological control that has yielded success with some turf pathogens is the use of pathogen-suppressive soils. Suppressive soils are those in which the pathogen does not establish or persist in populations great enough to cause severe disease damage. Suppressive soils have been implicated as a factor responsible for the absence or decline of take-all patch of bentgrass turf. Take-all patch usually develops on recently-sterilized soils or on golf courses that were formerly woodland or wetland sites and do not have large populations of resident antagonists.

Over three to five years, the disease begins to disappear from these sites, a phenomenon known as "take-all decline." Studies have shown that the transfer of a small amount of soil from sites where take-all decline has occurred to areas in which the disease is active, resulted in suppression of the disease. Studies in Australia have revealed that suppressive soils can be developed in the laboratory and used as a top dressing to control take-all patch. Suppressive soils have also been reported for other pathogens including various species of fusarium, pythium, and rhizoctonia. To my knowledge, there are no companies that are marketing pathogen-suppressive soils for use on turf.

continued on page 44