

Poa annua invades bentgrass fairways and greens often out-competing bentgrass and other desirable grasses, eventually becoming the dominant turf species. Cutless turf growth regulator can help you fight this encroachment, and shift the competitive advantage back to your desirable turfgrass. Unlike some plant growth regulators, Cutless constricts the *Poa annua* but is gentle on desirable grasses such as bentgrass,

allowing the bentgrass to grow and establish in the constricted *Poa annua* colonies. So free your bentgrass and squeeze the *Poa annua* out of your fairways and greens. Use Cutless, the **Poa Constrictor!**^{au}

For more information about Cutless turf growth regulator,

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Cutiess*
Turf Growth Regulator

Matt Shaffer Director of Golf Course Operations, Merion Golf Club, Ardmore, PA

that I am glad to see SePRO bring

back to the golf course market."

"Here at Merion Golf Club, our members are passionate about golf and the condition of our

management program. We rely on Cutless

Poa annua infestations in bentgrass fairways. My experience with Cutless is that it is less

disruptive on the bentgrass, while being highly

In addition to bentgrass conversion, Cutless also

provides labor savings by reducing our mowing requirement. Cutless is a great product

effective in reducing Poa annua populations.

course, so we have an active Poa annua

because it is highly effective in reducing

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Topdressing:

An Ol' Drainage Standby - and More

By Anthony Pioppi, Contributing Editor

Topdressing is

now a nationwide

he process that brought topdressing to fairways was slow. First it was greens, then tees and then approaches. From there it was a migration from the Northwest all the way to the Southeast. Topdressing made its way to the fairways of the rainy Northwest 25 years ago to firm up mucky conditions as well as improve surface drainage. The procedure is now being used nationwide, even in Florida.

"It's been a big help dealing with drainage issues," says John Foy, USGA's director for the Florida Region Green Section.

According to Foy, the practice has been used for about five or six years, mostly by high-end facilities. Along with firming up areas, superintendents are raising fairways - some of which are below sea level — and using topdressing to combat the thatch and organic matter buildup

The application rate is usually between oneeighth of an inch and one-fourth of an inch and occurs a minimum of two times a year. The average annual cost for sand can exceed \$50,000.

The first real catalyst toward topdressing fairways came from superintendents in the North-

west who realized you could turn winter problem areas into playable golf courses. The second catalyst came through technology.

"It took off in the 1980s when manufacturers came up with a better way to spread the sand," says Larry Gilhuly, director of the USGA's Northwest Green Section. Superintendents who had been using topdressers made for greens could now tackle fairways in much less time.

"When spinners hit, that's when it took off," adds Gilhuly, who estimates that more than 50 percent of golf courses in his area are topdressing fairways.

Scott Kinkead, vice president of Turfco Manufacturing, points to the incorporation of the chevron-belt design into topdressers as another reason for the popularity of fairway topdressing. Superintendents were able to spread heavy and wet sand over large areas like never before with that addition, Kinkead notes.

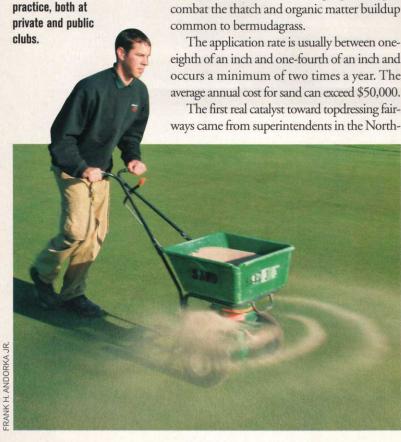
It was the desire for Northwest golf courses to be open year-round that first kicked the idea of fairway topdressing into gear.

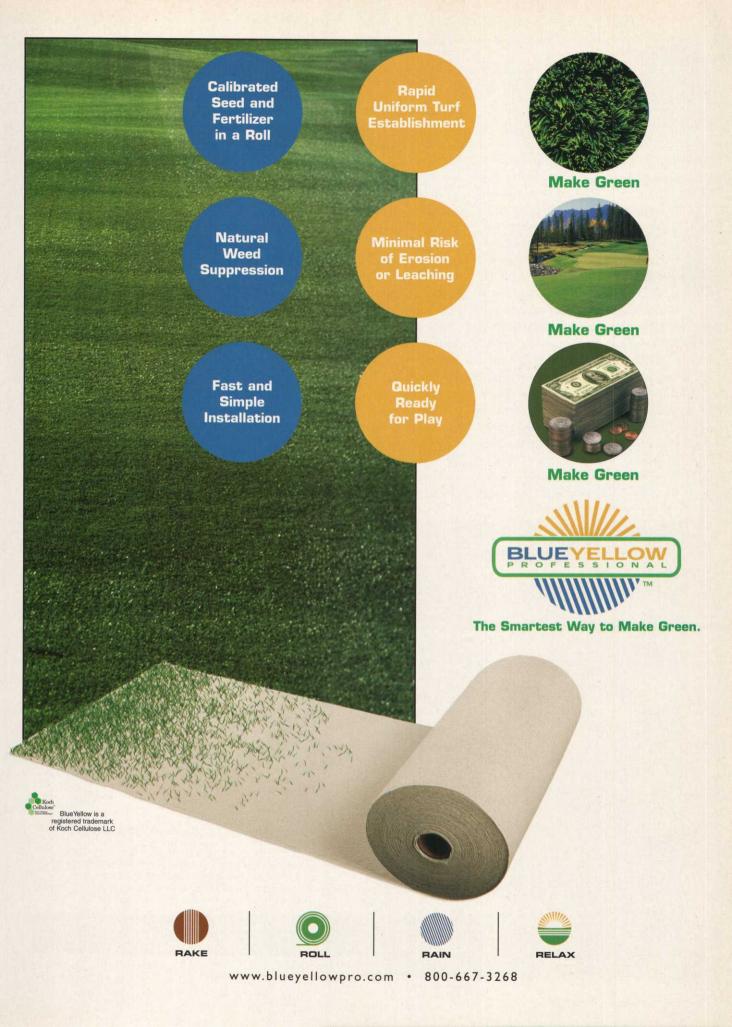
Golf courses turned into muddy quagmires and were basically unplayable in the region during the winter and spring because of the almost daily rainfall on the courses' clay-based soils. Sometimes balls disappeared into the muck, and golf cars went months without being able to leave paths. On other courses, conditions deteriorated so much that mowers could not cut the grass.

At Sahalee Country Club in Sammamish, Wash., superintendent Richard Taylor used topdressing to transform his fairways from mud to manicured turf. Taylor says his soil is glacial till, which is heavy and holds water. There were thatchy fairways with little root zone.

In the early 1990s, Taylor divided the golf course into Priority 1 and Priority 2. He attacked the Priority 1 areas with an aggressive regimen of one-fourth of an inch topdressing every seven to 10 days. Taylor says the members

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Topdressing

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tolerated that regimen for more than a year, but soon had their fill of it. Taylor then switched to spring and fall applications at about a one-fourth of an inch.

Nearly 6 inches of sand were added to the course after 10 years. Taylor is able to maintain those areas by merely aerifying and dragging the cores back into the turf. He continues to apply sand in the few problem areas that still exist. He calls the change "amazing" and likens the soil to an ocean beach at the waterline. "You can play golf on it, even when it is 100 percent saturated," he says.

Topdressing, though, is not just for wealthy private clubs. Many affordable daily fees and municipals now understand the practice can increase winter revenue - or at least make winter maintenance easier and result in better springtime turf.

At Tokatee Golf Club in Blue River, Ore., superintendent Bill Masten says the combination of wet winter months and clay soil would result in frustrating conditions for players. It is the norm for Blue River to get up to 90 inches of rain in a year.

"They'd hit a ball and then it would disappear," he says. "Spring was really bad for us."

Masten said the first spots the privately owned club topdressed were the heavy traffic areas near tees. He contracts his topdressers out three times a year. After nearly a decade of the practice, the cores remaining after aerification are made of sand. A core harvester breaks the cores up enough so the majority of the sand falls off while the thatch and grass are collected.

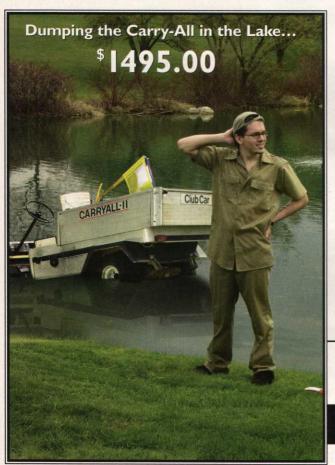
"We still have standing water, but the fairways are firm," Masten says.

Although the course is closed November through February, maintenance during that time is much easier, Masten says, and playing conditions are vastly improved come spring, resulting in more rounds played early in the year.

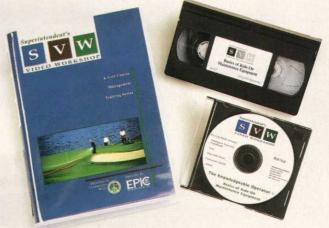
In Florida, topdressing began in the late 1990s and is almost exclusively used on high-end facilities. While it may seem surprising that courses in a state that is mostly sand would topdress, the USGA's Foy says the practice is more about raising the level of fairways and getting rid of thatch than for surface drainage. Foy says topdressing also helps rid courses of the mucky organic layer produced by bermudagrass.

Florida courses topdress in the summer when play is down at about the same rates as the Northwest, but with more frequency thanks to the fast-growing bermudagrass.

Southeastern superintendents, however, have to be careful when applying sand during the heat. "You put this down when it's in the 90s, and you'll torch your golf course," Foy says. ■



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Advanced Aeration Systems Inc. (Advanced Aer) is a pioneer in the design of sensor-based sub-surface aeration system for golf greens.

Sub-surface aeration has been used for years to pull excess moisture from greens. It has evolved from crude homemade systems to modern permanent in-ground units. These units are effective; but without up-to-the-minute information about conditions in the soil profile, it can be difficult to determine when and for how long to apply airflow.

Advanced Aer is the only company marketing sensor-based systems for golf greens. Its patented technology and user-friendly software provide a real-time stream of data that, for the first time, gives superintendents the information needed to effectively use sub-surface aeration.



This compact, powerful aeration system incorporates patented soil gas analysis technology to continuously monitor subsurface oxygen, moisture and temperature levels. The sensor's data is sent to a green-side pedestal or a PC at the superintendent's desk via radio satellite commu-

nications. The system can be programmed to activate automatically and, depending on the situation, either vacuum (pull) or pressurize (blow) air through the root zone.

A vacuum applied to the drainage system pulls fresh air down through the turf surface to increase oxygen, reduce carbon dioxide and draw water out of the root zone. Air pressure applied to the drainage system forces fresh air up into the root zone.

The in-ground system consists of two compact 20-inch diameter by 24-inch tall stainless steel vaults that are connected to the under-green drainage pipes at a check valve off to the side of the green. Moisture, temperature, and/or salinity sensors



are inconspicuously buried in the green's soil profile, and an oxygen sensor is housed in the blower vault.

The Advanced Aer OMT system can be activated remotely from the superintendent's computer or at the green-side

pedestal, or it can be set to automatically activate when specific thresholds, pre-set by the superintendent, are reached. This level of knowledge and control is unprecedented in the industry. The end result is both healthier grass and a faster, firmer, more consistent putting surface.

The system features a unique regenerative motor design that regulates vacuum pressure in response to moisture levels in the green profile, applying

increased pressure when moisture levels rise and a gentler vacuum as moisture levels fall. Competing systems use standard "centrifugal" motors that only provide constant pressure, do not respond effectively to major rain events and have the tendency to over dry and stress the grass.

The Advanced Aer OMT system is ideal for new construction or retrofitting on existing greens. Installation of the vaults and control system is relatively non-invasive and can usually be completed in less than three hours per green. The system is designed to work with either 110-volt, single-phase power or a 220-volt configuration.

Greens are a golf course's most visible, most scrutized and most important asset, and golfers rank the quality of the putting surface as the greatest factor when judging the quality of a playing experience. Healthy turf is more resistant to disease and other problems and better tolerates low mowing heights. Excess moisture can lead to the development of algae or moss, which cause surface blemishes, and to a variety of diseases. A green with too much moisture plays slow and is more susceptible to ball marks and foot traffic damage.

With Advanced Aer, the superintendent now has a tool that monitors and measures the key factors of root zone health – oxygen, moisture and temperature – and effectively removes excess water from the growing medium to create the ideal conditions for healthy growth and optimum playing conditions.





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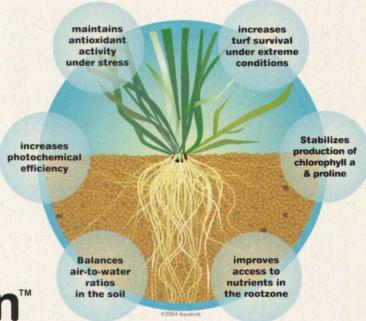
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Since 1954, Aquatrols has led the industry in developing innovative products for effective resource management. Aquatrols effectively combines state-of-the-art research and development techniques, a technically knowledgeable sales force, and a long history of industry expertise to meet the changing needs of the professional turf industry.

The Aquatrols product portfolio includes an array of surfactants and other specialty chemicals tailored to meet the growing challenges of the industry, and all products undergo stringent quality control and assurance testing before they are shipped to assure your satisfaction and your turf's protection.





Revolution™

The amount of stress placed on today's greens is greater than ever. Increased traffic and the demand for faster greens speeds, coupled with heat and water stress, push turf beyond its physiological limitations. As a turf professional, maintaining quality turf under a variety of stresses is your greatest challenge, and establishing control over the growing environment is key to your success. Revolution™ lets you gain control of rootzone conditions so that your turf can perform to its greatest potential. It will withstand daily abuse better, use water more efficiently, and look spectacular even at the height of summer.

Why is it so important to manage your rootzone more effectively? Because it can greatly affect the quality of turf you grow out of it. Revolution™ takes the guesswork out of growing great turf from the bottom up. It works in the soil to stabilize moisture levels, balance air-to-water ratios and provide better access to nutrients in the rootzone.

Revolution lets the plant function at its greatest genetic potential. The result? Stronger turf throughout the season that will perform in all conditions.

This new class of block copolymer chemistry has been carefully engineered to provide a solid foundation for successful turf management, and is an essential tool for protecting turf against damage caused by environmental and cultural stresses. Revolution is a safe, reliable way to comprehensively maintain quality turf conditions throughout the season. And Revolution can be

tank-mixed with a broad spectrum of commonly applied chemicals for even greater convenience.

Revolution ensures that the soil works harder for your turf, so your turf can work harder for you.

Try Revolution to experience what high-performance soil can do for your turf:

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- Extends natural antioxidant activity
- Stabilizes proline production for better playability
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Better turf comes from better products. At BASF, we offer a comprehensive portfolio of products specifically designed to help you keep your course weed-free and disease-free, with maximum efficiency of labor and other resources.

We know your career can be made or broken out on the course. That's why BASF offers the tools you need—including Insignia®, Emerald® and Curalan® fungicides, as well as Drive® herbicide—to keep your course in the peak condition that virtually eliminates player complaints.

Insignia®

Insignia® fungicide from BASF gives turf professionals an exciting new option for protecting turf from disease. BASF, the global leader in agricultural fungicides, has



again applied its expertise to the development of a fungicide specifically for turf. The result is Insignia, with the active ingredient pyraclostrobin, a brand-new, state-of-the-art class of strobilurin chemistry that offers exceptionally broad-spectrum, long-lasting disease control and prevention. In short, Insignia is the fungicide other fungicides dream of being when they grow up.

In university field trials conducted at multiple sites, Insignia has consistently demonstrated exceptional control of brown patch, Pythium blight, gray leaf spot, anthracnose, pink snow mold and summer patch, as well as 12 other diseases, for up to 28 days.

Emerald®

Emerald® is an all-new class of fungicide chemistry for dollar spot control. The active ingredient, boscalid, inhibits a system called complex II in the mitochondria of fungal cells,



depriving the fungal cells of energy, disrupting fungal growth and development and halting disease development. Designed specifically to control dollar spot, Emerald is effective on most major turf species, including:

- Creeping bentgrass
- Colonial bentgrass
- Perennial ryegrass
- Annual ryegrass
- Kentucky bluegrass
- Common bermudagrass
- Hybrid bermudagrass
- Annual bluegrass
- St. Augustinegrass
- Tall fescue
- Bahiagrass
- Zoysiagrass
- Centipedegrass

Curalan® EG

Curalan® EG is a broadspectrum fungicide that provides economical control of dollar spot in cool- and warm-season grasses, while



also aiding in the control of snow molds, patches and other turf diseases. Don't take our word for it, though:

"Recently, I had my worst battle with dollar spot. Toward the end of the season, I decided to try a combination of Curalan and Banner® on greens and tees and was amazed at the instant results on active dollar spot. I also got three to four weeks of control—and that's with a low use rate of 2.75 pounds per acre. This year, I am going to use Curalan on all turf areas, including fairways. It's a great stand-alone product and I don't have to put a lot of it out to get results, which helps protect the environment and the club's bottom line."

Paul Knulty, CGCS Superintendent, The Oak Club of Genoa Genoa, IL

Drive® 75 DF

Drive® 75 DF postemergent herbicide is the only postemergent that dependably controls a broad spectrum of



both broadleaf and grassy weeds. Quinclorac, the active ingredient in Drive, uses two powerful modes of action to control targeted weeds in a wide variety of cool- and warm-season turf-grasses. Drive works as an enzyme/cell wall disruptor to control grassy weeds and has auxin-type herbicidal activity to disrupt plant growth in broadleaf weeds. Whether you manage turf on golf courses, residential lawns, athletic fields or at sod farms, you can rely on Drive to eliminate such hard-to-control weeds as:

- Crabgrass
- Kikuyugrass
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- Foxtail
- Clover
- Torpedograss

- Speedwell
- Bindweed
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When your job depends on green, healthy turf, you need quality products that deliver consistent, reliable results. Bayer Environmental Science offers a complete line of turf-care products that guarantee you cutting-edge technology and the highest performance standards, season after season.

Bayer sets the industry's standard for disease, insect and weed control. Whether you're fighting unsightly weeds, destructive insects or tough diseases, you can count on Bayer products to protect your turf.

Backed by Bayer means we're building on an already solid foundation of proven products to help you succeed. But you purchase more than products when you do business with Bayer Environmental Science. What you're buying is an added measure of confidence. It's the assurance that comes from value-added programs, services and an ongoing commitment to the industry.



Merit revolutionized grub control with outstanding preventive and curative pre-damage control from egglay through second

instar. Merit also delivers systemic control of mole crickets and a variety of other pests at use rates that are up to 96 percent lower than most currently registered turf soil insecticides. Its unique mode of action allows Merit to provide strong residual activity and superior biological performance.

COMPASS[™]

Compass is a cornerstone product for disease management on fairways and greens. This broad-spectrum strobilurin fungicide controls a variety of diseases, including brown patch, anthracnose, rapid blight and leaf spot, while suppressing dollar spot. Compass provides longer residual protection than contact products and cost-effectively improves turf quality.

REVOLVER

Revolver provides post-emergent control of a variety of unsightly grasses, including Poa annua, goosegrass and others, in bermudagrass and zoysiagrass. Revolver also smoothes transition by controlling clumpy ryegrass and Poa trivialis. Based on foramsulfuron, Revolver's unique mode of action helps manage resistance.

Signature

Signature is the foundation of summer and winter decline programs. With multiple applications before turf stress hits, Signature activates turf plants' natural immune systems to ward off diseases in cool- and warm-season turf, improving turf quality. Signature makes an excellent tank mix with other fungicides for season-long healthy turf.

RONSTAR

Ronstar offers season-long control of 25 broadleaf and grassy weeds, including goosegrass, crabgrass and Poa annua, with just one pre-emergent application. Ronstar provides up to 120 days of effective control without inhibiting turf root growth or turf damage recovery. Ronstar may be applied weeks before weed seed germination, giving you unmatched application flexibility.

TEMPT®

Tempo is an advanced-generation pyrethroid that quickly controls a broad range of the toughest turf pests. Tempo provides residual control for up to 30 or more days and uses up to 80 percent less active ingredient than organophosphates.



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A rapidly growing company established in 1982, Becker Underwood develops cutting-edge biopesticides, colorants, specialty products and new technologies for a wide range of applications. Becker Underwood specializes in the discovery, scale-up fermentation and formulation of live organisms with its biopesticides and biostimulants, which offer turf care managers the opportunity to reduce the use of chemical pesticides and fertilizers. This is best evidenced with the Nematac and Nemasys lines of biopesticides, which are revolutionary weapons in the difficult battle against insects. Nematac S is the only product on the market consisting of insect-parasitic nematodes that reproduce to keep killing mole crickets. Other bio-agronomic products that Becker Underwood brings to the turf, ornamental, horticultural and agricultural markets include: Nematac S®, Rhizanova™, Bio-Gain®, Canteen® VigaRoot™ and Sprint®.

BioGain WSP® with Sprint 330

BioGain® WSP® + Sprint® 330 is a simple, yet effective combination of two proven Becker Underwood products that are designed to work in tandem to thoroughly reduce stress, stimulate root growth and prevent iron deficiencies in turf. BioGain is a fertilizer-free combination of natural humic substances, seaweed extract, and a proprietary blend of natural sugars, vitamins, amino acids and beneficial bacteria. The addition of Sprint iron chelates to BioGain is designed to help fortify the protection of plant-available irons in turf grass and ensure dark green, healthy turf. Sprint has long been recognized as offering the highest quality chelates available.

VigaRoot

Designed for professional golf and sports turf applications, VigaROOT™ is used in spray application programs to reduce stress and stimulate root growth through enhanced water and nutrient uptake and correct micronutrient deficiencies. VigaROOT™ is a dry soluble combination of iron-chelated manganese, chelated zinc, natural humic substance, seaweed extract, yucca, and a proprietary blend of natural sugars, vitamins, amino acids, and beneficial bacteria.

VigaROOT™ biostimulant programs are most beneficial applied at two-to-three week intervals during stressful summer conditions and as an establishment boost during overseeding.

VigaROOT™ is ideal for sod, either preharvest or after installation to enhance root regeneration.

Canteen

Becker Underwood's Canteen® treats newly seeded or established turf, sod and landscaping plants. Canteen®, a performance-enhanced spreader and soil penetrant, loosens compacted soils, improves seed germination, delivers pesticides and fertilizers to the root zone and assists wetting of spray tank mixes.

Sprint

For dark green, healthy plants, Becker Underwood's Sprint® 330 and Sprint® 138 iron chelates provide unmatched performance. Unlike non-chelated or weakly-chelated irons, the strong Sprint chelates maintain and protect plant-available irons in turf, trees shrubs, field-grown plants and plants in a container. Sprint 330, a 10 percent fully chelated DTPA iron, performs best in slightly acidic to slightly alkaline soils with a ph of up to 7.5. Sprint 138, a 6 percent fully chelated EDDHA iron, is preferred in the most challenging soils, which are alkaline and calcareous, including soils with a ph greater than 7.0.

Rhizanova

Rhizanova increases water absorption, nutrient availability and survival rates of trees, shrubs and ornamental flowers. Designed to get your trees and plant material off to a fast start and give them the best chance of root colonization, Rhizanova puts the fungal inoculum at the roots were the opportunity for contact with feeder roots is highest.

The Rhizanova family consists of five products known as Mycorrhizal Fungi Inoculants. Mycorrhizal Fungi are beneficial fungi that form symbiotic relationships with plant roots. The fungal growth into the soil increases the absorptive area of colonized roots. The chemical activities of these fungal extensions or hyphae on minerals help make inorganic nutrients available to plants. Rhizanova is the best insurance a landscape contractor or arborist can use when getting new trees or plants established.

Nematac S

Becker Underwood Inc. introduces Nematac® S, a biopesticide that uses a natural enemy instead of chemicals to control damaging mole crickets on golf courses, sod farms, parks and pastures in the southeastern United States. Exclusively licensed by Becker



Underwood, the beneficial nematodes in Nematac S become active when applied to a soil profile and use mole crickets as hosts. The microscopic nematodes enter inside the mole crickets and release bacteria, which is lethal to the pest. The mole cricket becomes a food source for the nematodes, which will reproduce and continue to attack the mole crickets infesting the turf.