

Just because you spray it on, don't assume you're spraying it in.

Top 10 reasons to use NutriRationals

1. Increase turf quality and density.
2. Increase root mass and depth.
3. Increase stress tolerance.
4. Reduce thatch accumulation.
5. Increase nutrient absorption.
6. Reduce clipping removal and loss of applied fertilizer.
7. Reduce nutrient leaching.
8. Increase photosynthesis and photochemical efficiency.
9. Increase disease resistance.
10. Reduce potential for diseases associated with excess Nitrogen.

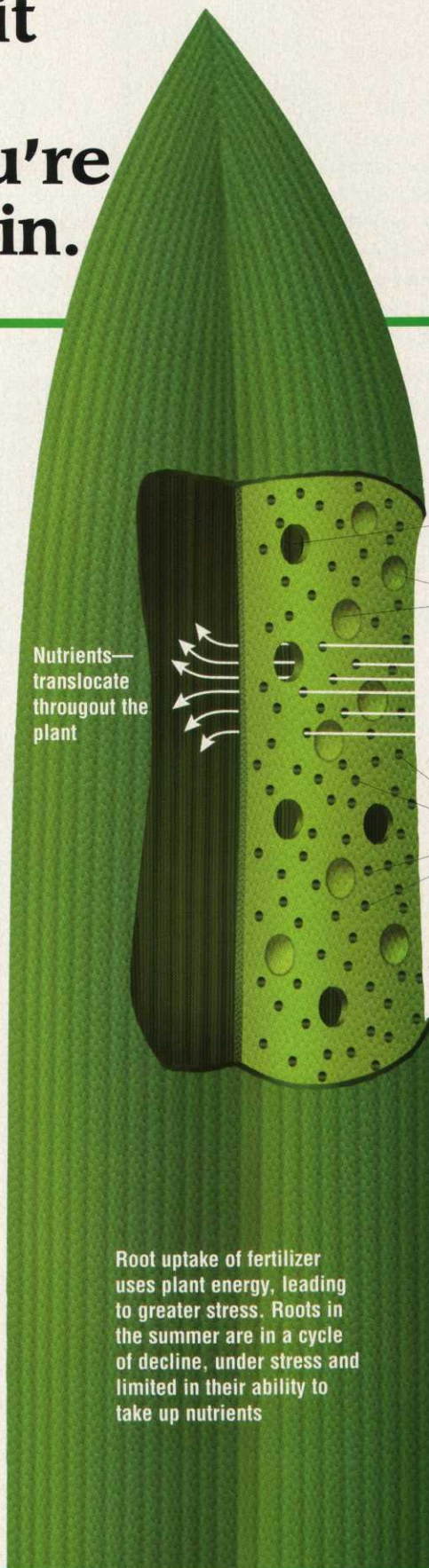
There's a big difference between a liquid spray and a **true foliar**.

The **true foliar** must be formulated to overcome molecular size exclusion, get past electrochemical gradient barriers, and be absorbed directly into the leaf tissue.

NutriRational™ is the **true foliar**—plus it's fortified with sea plant extract for *more* root development and *less* thatch.

NutriRational is the **professional choice** because it provides the essential nutrition necessary to overcome stress and resist disease, without stimulating excessive shoot growth. Combined with **CPR**, you can have a consistent, scientifically-proven Pre-Stress Conditioning and True Foliar program to meet your highest expectations and take you to your ultimate goal: **a superior playing surface**.

You're a professional. Don't just spray it on. Spray it in.



Turfgrass Leaf Blade

Stomatal openings—historically the entryway into foliage for liquid fertilizers. Larger openings, but more often closed than open.

NutriRational True Foliar

Transcuticular pore spaces—These are always open, more numerous, but smaller.

NutriRational true foliar is formulated so the molecular structures are small enough to pass through these pore spaces and penetrate into the turfgrass plant.

Root uptake of fertilizer uses plant energy, leading to greater stress. Roots in the summer are in a cycle of decline, under stress and limited in their ability to take up nutrients



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Nutrient use

Is it possible to develop a turfgrass that stays green even under low soil fertility? Early research results suggest that it may. Stay tuned while researchers focus the picture a little more clearly.

Have scientist's made significant progress towards delivering on Edminister's trait list? Have we aimed for the moon? If so, are we getting closer to making a successful landing?

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Since there is no wrong answer, we will give you ours. We believe it is clear the aim has certainly been high, and significant progress has been made.

While the future is indeed bright, and we look forward to enjoying the benefits of biotechnology-enhanced turfgrass, we will continue striving to develop the "perfect" turfgrass.

Harriman is vice president of technology development, and Lee is senior scientist in genetic engineering for The Scotts Co. in Marysville, Ohio.

TURFGRASS TRENDS

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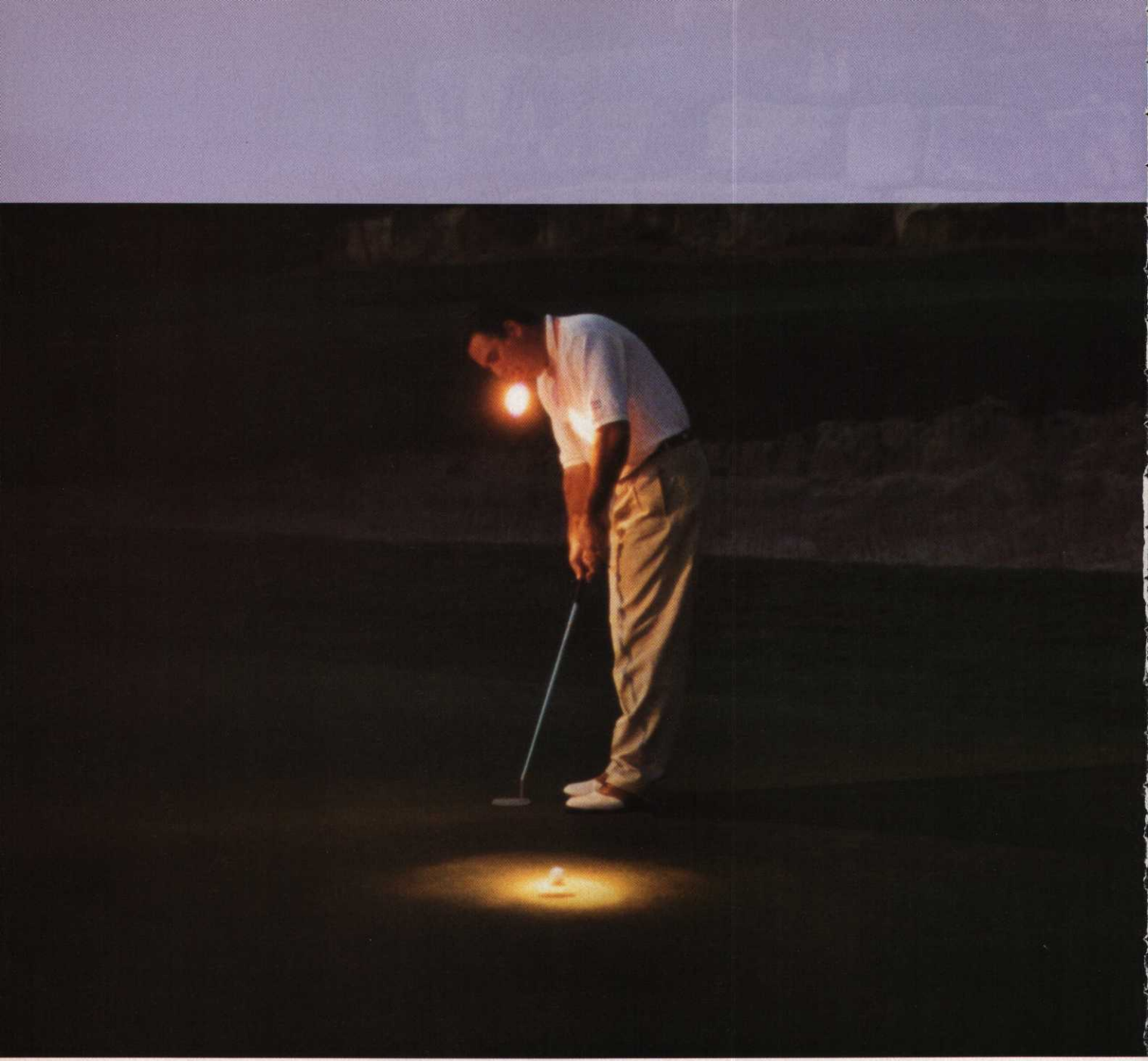
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Time to KILL That Turf

BY FRANK H. ANDORKA JR., MANAGING EDITOR

No, *seriously*. Experts weigh in on how superintendents should choose the right chemical tool to ensure their regrassing projects go smoothly

You're tending 50-year-old push-up greens that succumb daily to a *Poa annua* invasion, and you watch enviously as that new \$40 million course down the street

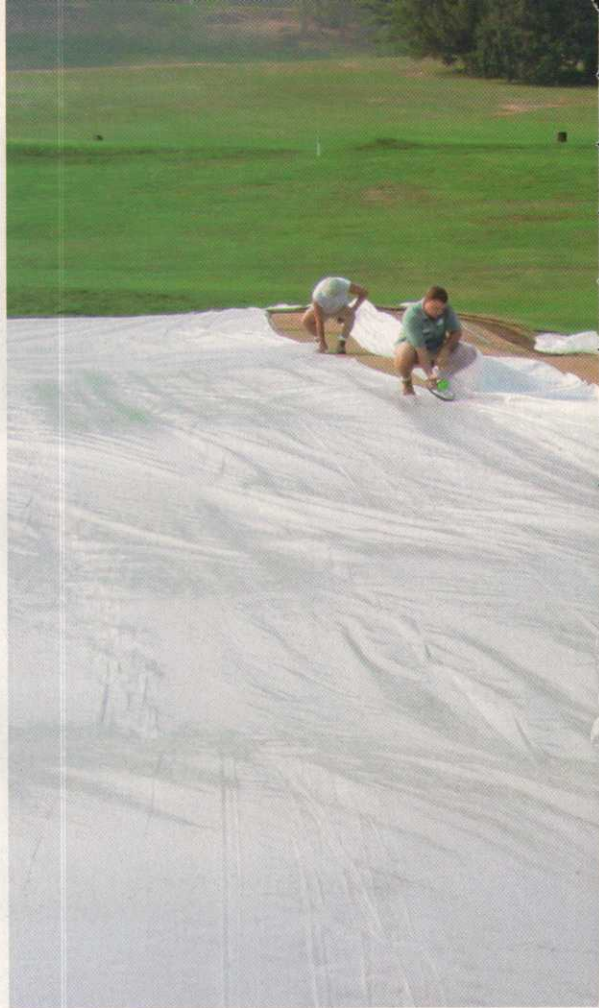
installs the new A's. Your membership complains about the quality of your greens and weed-infested fairways. So you decide it's time to regrass.

But planning how to do it is almost as important as the actual process itself. You have to choose the right tools. You have to prepare the ground properly, and you have to time your reseeding just right.

Golfdom asked experts to talk about the process of using nonselective herbicides and/or fumigants for regrassing projects and offers the following how-to guide so that your next regrassing project goes as smoothly as possible.

Choosing a chemical tool

There are plenty of good reasons to renovate, says Dennis Williamson, technology development manager for the southern United



States region for Monsanto. Perhaps the old turf is no longer aesthetically pleasing or the area's being converted to a new use or it's time to install a new and improved cultivar. Whatever the reason, Williamson says the initial planning is important.

"I would start by figuring out when I plan to use the turfgrass again, and then work back from there to determine a schedule for applying the herbicides," Williamson says. "One of the problems you face when you're replacing perennial turfgrass is that it takes a lot of time to control the existing turfgrass and establish the new. It's not a simple process."

Joe DiPaola, golf market manager for Syngenta, says superintendents must decide what they want to accomplish. If they are willing to accept a few weeds that can be controlled postemergently (on fairways, for example), then nonselective herbicides may be the way to go because they will kill the turf. If they're looking to sterilize the soil, however, fumigants may be the best choice.

"You have to decide what you want your end result to be," DiPaola says. "Do a site survey to find out what kind of weeds you have.



As workers at Gulph Mills GC prepare to use methyl bromide on the course's Donald Ross-designed greens, they tamp down tarps to keep the gas contained.

PHOTOS COURTESY OF GULPH MILLS GC

That will also help you decide what you need to do.”

It's not always an either/or proposition. The experts argue that methyl bromide is most effective on small areas that can be easily covered while it works, while Basamid, a granular fumigant manufactured by BASF, can be used on broader areas. Nonselective herbicides are most effective on larger areas because of their ease of application and fewer restrictions. Sometimes both can be used on the same project.

Rick Holanda knows that — he used both methyl bromide *and* a nonselective herbicide in preparation for the 2003 PGA Senior Championship. The superintendent at Aronimink GC in Newton Square, Pa., used Roundup on the fairways and methyl bromide on the greens when the club decided to do a complete regrassing for the tournament. He says the size of the area determined what chemical was used where.

Mike Smith, certified superintendent at Gulph Mills CC in Philadelphia, gassed his Donald Ross-designed greens last year and says methyl bromide was clearly the way to go in his case.

“Methyl bromide is still the most effective way I know to clean out everything on small areas,” Smith says. “It takes human error out of the process because you don't have to be as precise. You've got to be careful with the handling of it, but it does a great job.”

If fumigants are in your future, but you have concerns about methyl bromide's toxicity, you might consider Basamid. Though you have to be more precise in its application than methyl bromide, the product is gaining ground among superintendents in light of the Environmental Protection Agency's (EPA) restrictions on methyl bromide's uses (with an eventual complete phase out of it by 2005). Rick Tatum, director of golf operations at Grey Oaks CC in Naples, Fla., says he likes both fumigants, but Basamid's ease of application makes it the choice of many superintendents in his area.

“You don't have to hire an outside contractor to apply Basamid,” Tatum says. “You can use a drop spreader and a well-trained employee, and that's it. It's less toxic than methyl bromide.”

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Time to Kill That Turf



Experts suggest removing a ring of sod from around greens to seal in the methyl bromide.

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But Basamid isn't a solution in every case. Willie Pennington, sales specialist for BASE, says that in his experience, Basamid makes sense for greens if you're not going to fumigate the surrounds as well. Basamid would not be the ideal choice for treating sloped areas because of the potential for runoff, however.

The final option for regrassing is nonselective herbicides. They work best for larger areas like fairways and roughs and are easy to apply, says Greg Richards, senior product manager for LESCO. Their drawback is that glyphosate products don't sterilize the soil. So if you're looking for completely weed-free turf, there are better options.

Preparation and application

Once you've selected the tool, you have to prepare the area properly to maximize its effect. The preparations differ from product to product.

With methyl bromide, experts agree that you should scalp the turf as low as it can go and aerate the soil to provide the gas a path

into the soil. Smith says superintendents would be wise to topdress the area before they apply the gas to ensure the entire soil profile is sterilized.

"We deep-tined and aerated our greens and topdressed them before we applied the methyl bromide," Smith says. "That way, you can guarantee that you're working with a completely clean greens mix when you put down new seed."

Dan Dinelli, certified superintendent at North Shore CC in Glenview, Ill., says it's important to get an experienced applicator because of the potential toxicity of the gas.

"I was a little nervous about using it at first, but I did my homework and hired people to do it that I trusted, based on their reputation," Dinelli says. "They were professional and took all the appropriate precautions."

Tatum says it's important to apply the methyl bromide under the soil surface at consistent depths, which he says is 6 inches. "If you apply it unevenly, you're not going to get the results you're expecting," he adds.

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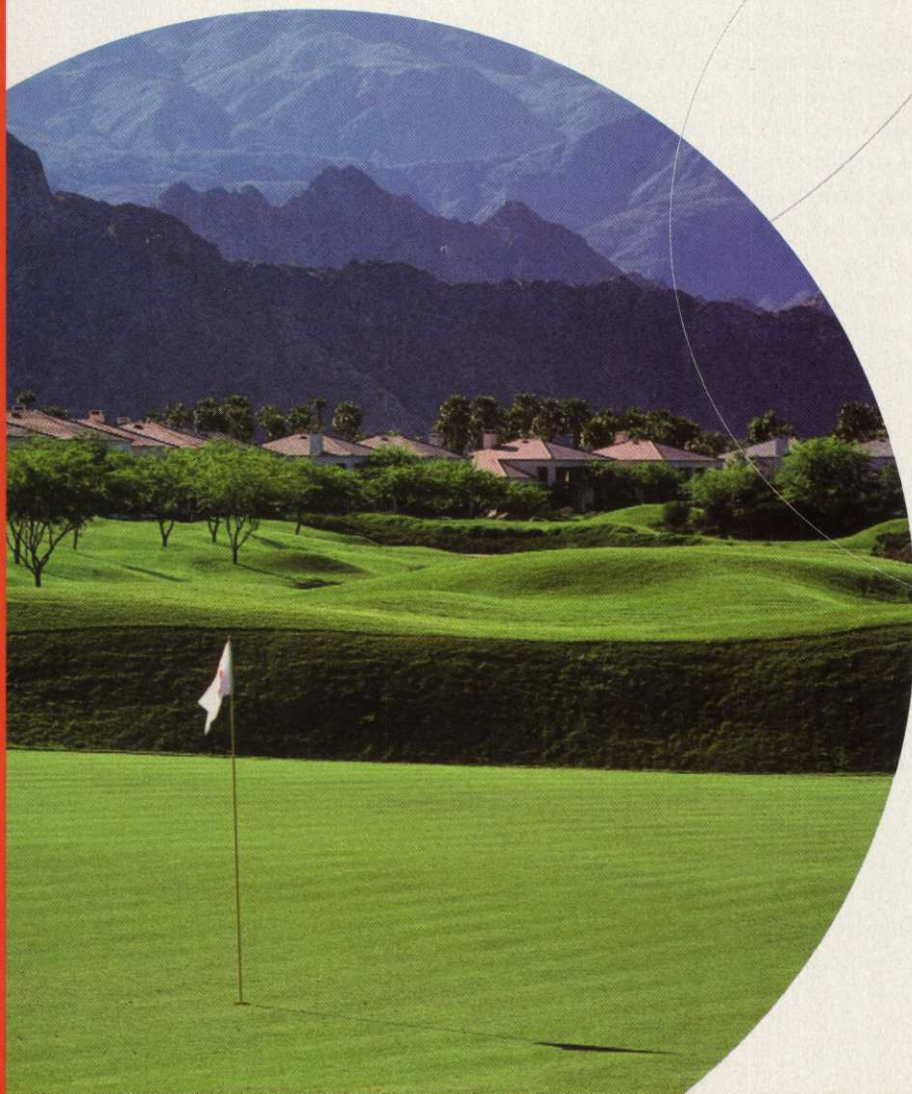
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“It’s not a project you take lightly, and you’d better warn your staff about how much work the project will entail.”

RICK TATUM
DIRECTOR OF GOLF COURSE
OPERATIONS
GREY OAKS GC
NAPLES, FLA.

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Holanda suggests leaving the greens covered for 72 hours. After the residual period, remove the covers, let the turf air out and then reseed. Just make sure golfers and workers stay away from the area as it’s airing out, he adds.

BASF’s Pennington says the preparation for Basamid is similar to that for methyl bromide. Scalp the turf as low as you can before application, aerate and verticut to create more pore spaces. Make sure there’s going to be a string of sunny days before you apply it because you don’t want the fumigant to run off the soil, he adds. He also says it’s important to overlap the spreader paths to ensure the best coverage.

Richards says superintendents should water Basamid in to the point of soil water holding capacity to make sure it reaches the seed bed.

“We’re seeing more and more interest in the granular product as methyl bromide faces its phase out,” Richards says. “Its ease of use is a plus.”

If you decide to use a nonselective herbicide, the preparation of the area is just the opposite, Richards says. He suggests letting the turf grow out unmowed for a couple of weeks before applying the product. Most of those products work on contact with the leaves, so it’s important to have as much leaf contact as possible. Then treat with a boom sprayer and apply the herbicide according to label rates, he says.

“Then you want to wait 14 days to see what areas need another application and do spot treatments,” LESCO’s Richards says. “Then wait another seven days and you can slit-seed it after that.”

Syngenta’s DiPaola warns superintendents to make sure the applicators aren’t tracking the herbicide off the intended area of use. “It is non-selective, and if someone tracks it near ornamentals, trees or desirable turf, it will kill them,” he adds.

DiPaola also says superintendents should keep golfers away from the area until it’s completely dry, per label instructions. DiPaola’s colleague and Syngenta’s turf and ornamental technical manager Dave Ross says superintendents should wait at least seven days before disturbing the soil.

Monsanto’s Williamson says it’s important not to disturb the soil while the herbicide is working. “Roundup will translocate best when plants are left undisturbed for several days following application.”

Solar-Powered Soil Sterilization

Dan Dinelli, superintendent at North Shore CC in Glenview, Ill., says superintendents should consider alternatives to chemicals when regrassing their courses. He says that any time superintendents use chemicals to clean out the soil, they destroy good microbes as well as the turf and weed seeds.

“There’s heavy competition between microorganisms in a mature soil, and when you gas the turf, you kill the good along with the bad,” Dinelli says. “You throw off the balance.”

Dinelli says he likes the idea of solar sterilization of soil, which is accomplished by covering the area with tarps during a period of several hot, sunny days. The solar heat gets trapped under the tarp and accomplishes the same nonselective herbicide effect without applying chemicals to the soil. “You can smoke the surface of the soil well with this method,” Dinelli says.

If it’s determined that a fumigant is the only solution, Dinelli urges his colleagues to add biological products to the soil afterward to rebuild it. “You can give the good microbes a head start after you fumigate if you add the right components to the soil, like a compost tea or other biological products of your choice.”

— Frank H. Andorka Jr., Managing Editor

Tatum says superintendents in Florida have a particular problem when it comes to regrassing fairways — *nothing* kills bermudagrass. It usually takes three Roundup applications and some heavy earth moving before you can make sure you’re clean enough to reseed. And after that, you may still have to fumigate.

“It’s an intense project for us down here,” Tatum says. “It’s not something you take lightly, and you’d better warn your staff about how much work the project is going to entail.”

Tatum adds that it’s important to make sure whatever the application method — a drop spreader for Basamid or a boom sprayer for glyphosate — the equipment is calibrated properly so there’s confidence that the correct amount of product is being applied. (Since licensed

Continued on page 62