

Basamid[®]
Granular Soil Fumigant

Golf Course Renovation Guide



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Golfdom

Fumigation for Renovation

“It’s like opening up a new sleeve of golf balls.” That’s how architect Craig Schreiner describes fumigation as a tool for golf course renovation. Schreiner means that fumigation leaves soil in virtually a “new” condition for reseeded greens, fairways and tees.

“Fumigation is a surgical way to clean up contaminated soil,” says Schreiner, president of Kansas City, Kan.-based Craig Schreiner Golf Course Architects. “With fumigation, you get the most antiseptic way of preparing a site for seeding.”

Schreiner points out that fumigation doesn’t destroy the necessary microbials in soil that are vital in helping reseeded areas to grow into healthy turf. “Fumigation doesn’t turn soil into a biological desert,” he says. A renovated area that is properly fumigated and reseeded will grow into lush turfgrass.

There are several reasons to renovate golf courses using fumigation, but they differ according to region. Inevitably, superintendents and architects use fumigation to rid areas of disease, insects, weeds and unwanted turf varieties.

If country club members at a Midwestern golf course begin complaining about the inconsistent play of 50-year-old greens, it might be time for the superintendent to fumigate the greens and rid them of *poa annua* and other unwanted turf stands and weeds. If you’re a Florida superintendent like Joe Boe, who tends the turf at Coral Oaks GC in Cape Coral, fumigation is an excellent way to control nematodes, which flourish in the sandy soils of courses in the deep south.

Schreiner stresses that golf courses are dynamic lands whose infrastructures are always changing. “A course changes in the time you start a round of golf and finish it,” Schreiner explains. “Most people don’t understand or appreciate that.”

Over time, the action taking place on a golf course — from the thousands of players trekking on it to the fairway mowers and greens mowers bustling through it — eventually takes its toll. Also, it’s difficult to keep different turfgrasses in their proper areas.

“Today, you have six to 12 different turf varieties on any given course,” Schreiner says. “Trying to keep them separated is difficult. If you get this to point, you’re managing several types of turfgrass, and it becomes a burden. So you want to start over with something that’s more predictable and gives you more ease of control. There’s no better way to wipe the blackboard clean than by fumigating.”

Some superintendents only consider fumigation for greens, but it can also be used successfully on fairways and tees. Steve Godbehere, director of research for Hendrix and Dail, says many course renovation projects specify fumigation of the greens, but not of fairways, which can be damaged over time. Godbehere says fumigation of fairways comprises a small percentage of the total cost of renovation projects. ■

What Is Basamid® and How Does It Work?



◀ Basamid® is not a new product, but BASF has developed a new protocol for its use in turf renovation.

will provide you with enough starter fertilizer to get turf off to a healthy start,” says Pennington, noting that the breakdown ingredients in Basamid are considered as plant nutrients.

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So you've decided to fumigate areas on your golf course to rid it of disease, insects and weeds in preparation for reseeding. And as an environmentally aware superintendent, you don't want to use liquid or gas fumigants, such as methyl bromide, to sterilize the soil. Besides, they require expensive injection equipment to apply liquid or gas fumigants.

Basamid®, a granular soil fumigant, manufactured by BASF Corp., may be the answer to your fumigation needs. Basamid's common name is dazomet, and it's from the thiazine family. Dazomet is not a restricted-use product.

“That's the benefit it has over other products on the market,” explains Willie Pennington, BASF's Basamid specialist. “When applying Basamid, you don't have to suit up in protective clothing — as you do with restrictive products. It stays inert until you activate it in the soil with water.”

Basamid, which is a microgranule, is used to renovate fairways, greens and tees. It is simply applied using a drop spreader. The product comes in 50-pound bags. It's a convenient alternative to using 2-ton cylinders that are often used in fumigation.

“Basamid will give you a clean seed bed to plant turf, and it

“Basamid has been used for 10 years, but few end users or superintendents were given a step-by-step program on how to use the product effectively,” Pennington says, explaining that turf scientists at Michigan State University conducted studies in the early 1990s and discovered that Basamid could be successfully used for golf course renovation.

Ed Braunsky, CGCS at Geneva GC in Geneva, Ill., was the first superintendent to use the “new” Basamid on a large scale. Braunsky successfully treated 12 acres of his



Proper irrigation is vital for all soil types, but differ according to varieties.





course to prepare it for reseeding in August 1999.

"To look at what we accomplished with \$24,000 when any other approach would have cost a minimum of twice that ... that's pretty amazing," Braunsky says.

Joe Boe, superintendent of Coral Oaks GC in Cape Coral, Fla., plans to use Basamid® in the spring to renovate tee boxes. Boe, who has used methyl bromide in the past, is aware that he's going to have to find an alternative fumigant, and he has heard good things about Basamid. "My friend used it on tee areas and had success with it," Boe says.

Fairways and soils

Basamid applications vary according to soil type and turf variety. Fairways consisting of clay, silt or silty sand soils require different management than sandy loam, loamy sand and sandy soils.

Soil preparation work, including verticutting and aerification, should be completed before the Basamid application. Cores need to be removed. Turf surfaces with clay, silt or silty

ent throughout the five days after application. The key requirement is to maintain good soil moisture. If heat and high winds persist, frequency of irrigation may have to be increased. Soil should be allowed to dry out on the sixth day to prepare it for seeding.

Greens and tees

Basamid applications for renovating greens and tees differ according to cool-season and warm-season turfgrass. The soil for both types should be prepared to seedbed condition and tilled to a 6-inch depth. Also, the ambient temperature needs to be at least 50 degrees Fahrenheit or higher and the soil temperature should remain above 43 degrees during the fumigation duration.

It's vital to make sure that Basamid granules are mixed into soil. Basamid's active ingredient, dazomet, is triggered by moisture in soil. It's also important for soil to be moist throughout the seven-day treatment period to ensure the proper release of fumigant gases.

For cool-season turfgrass, there are two options. The No. 1 option, greens and tees should be mowed to 1/8 inch or less. They should then be aerified and the cores removed. Soil temperature should be checked at 4 inches. Basamid should be applied to soils with a temperature of at least 43 degrees and no higher than 85 degrees. An irrigation program similar to that of fairways with sandy loam, loamy sand and sandy soils should be followed.

The No. 2 option, for greens and tees with cool-season turfgrass, sod should be stripped from the area to be renovated, which should then be rototilled to relieve compaction and prepare adequate seedbed. Sand or other organics should be added to the area and mixed into the soil profile. After Basamid is applied, the area should be irrigated with a minimum of 1/2 inch of water. The irrigation program for sandy loam, loamy sand and sandy soils should then be followed.

For warm-season turfgrass and to convert existing greens and tees from common bermudagrass to new turfgrass, a non-selective herbicide should be applied to the area to control typical growth of common bermudagrass. About seven days after the herbicide application, the greens and tees should be irrigated with at least 1/4 inch of water.

The areas should then be tilled with deep shanks to break the soil hardpan and relieve compaction. Soil temperature should be checked at 4 inches. Basamid should be applied at 8 pounds per 1,000 square feet to a depth of 8 inches or more, preferably with the till knives. The soil should then be tilled down to 8 inches or more and another Basamid application should be made at 2 pounds per thousand square feet.

The area should then be irrigated with a minimum of 3/4 inch of water on the application day and a tarpaulin should be used to cover the area for a minimum of four days. When the tarpaulin is removed, the area should be allowed to dry for the next two or three days. ■

PROPER PREPARATION

Basamid applications on fairways vary according to turf. Follow these instructions:

Clay, silt and silty sand soils:

Lightly irrigate two or more times at least two days prior to applying Basamid.

Should be scratched with dethatching-type equipment before applying Basamid.

Sandy loam, loamy sand and sandy soils:

Do not need to be irrigated prior to Basamid application unless they are too dry.

Bentgrass:

Mow to 1/8 inch or less prior to application.

Bluegrass, fescue-type turf:

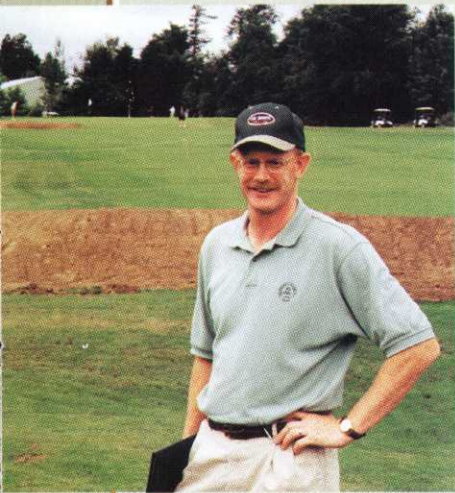
Mow to 1/4 inch or less prior to Basamid application.

sand soils should be scratched with dethatching-type equipment before applying Basamid. Consult your local BASF rep or USGA agronomist for further instruction.

Basamid should be applied with a drop spreader at 4.5 pounds per thousand square feet (196 pounds per acre) to 5.25 per thousand square feet (229 pounds per acre) with a 50% overlapping pattern in the same direction. The rate may change depending on the pest to be controlled. It should only be applied to dry turf, not wet due to rainfall, irrigation or dew.

Proper irrigation applications are vital for all soils, but vary according to soil types. Clay, silt or silty sand soil fairways should be irrigated with 1/4 inch of water or less, but not to the point of runoff. Sandy loam, loamy sand and sandy soil fairways should be irrigated with 1/2 inch of water after application.

Irrigation practices for the two soil-type classes are differ-



Prep School

Ron Forse, of Forse Design in Hopwood, Pa., offers the following tips for fairway renovation:

Kill thoroughly whatever grass you are replacing.

Forse says you must overcome your instincts about keeping grass alive. Such sentiments serve no purpose in a fairway renovation.

"You have to kill everything in sight," Forse says. "What you're aiming to do is give yourself a fresh start"

Forse suggests one or two applications of a non-selective herbicide will usually do the job.

Cut the sod and bury it.

It's important to take off the first few inches of soil and bury it, Forse says. That will help the sterilizer kill whatever weed seeds are hiding in the top layer.

Do any regrading before you sterilize the soil.

Forse says any earth movement should be done before the sterilizer is applied. If you wait to move the earth until afterward, you'll create an uneven application which may not sterilize the soil completely.

Rototill the soil to break up any impediments that might block the deep penetration of the fumigant.

Soil fumigants, like fertilizers and other turf chemicals, need room to move within the soil to provide maximum effectiveness. Breaking up the soil and providing air spaces for the fumigants to move in will help the sterilization.

Apply the soil sterilizer.

Make sure you understand how to apply the sterilizer and what you need to do to keep it acting properly. In the case of Basamid®, for example, the sterilizer is water activated, so you need to make sure you get enough water on the ground to start it working. Also, make sure you allow the sterilizer enough time to do its work, Forse says. This can take anywhere from five to 14 days.

Cultivate the soil once it has been sterilized.

Forse recommends using a box blade to smooth out the soil after the sterilizer has done its work. That provides a proper resting place for the grass seed or sprigs. After that, Forse says, you're ready to seed or sprig your fairways with new grass.

Happy grow-in.

Simple Method, Better Results

It's easy and safe to apply Basamid® on fairways. If you follow directions properly, you'll have better results.

To start your renovation project right, it's important to properly prepare the area for renovation:

- Waste cans and other items should be removed from the area, and "course closed" signs should be posted. Superintendents can also outline the renovated area with paint if they wish.

- Fairways should be mowed, and grass clippings should be blown into the rough areas and cut with a rough mower.

- Low areas of fairways should be filled with fresh soil and rolled to the proper grade.

- Fairways should then be aerated and the cores removed.

- Sprinkler heads should be flagged.

- Signs should be posted warning that "Basamid granular soil fumigant will be applied."

The steps for proper Basamid application are also vital. Follow these directions:

- After preparation of the renovation area, Basamid should be applied according to label requirements.

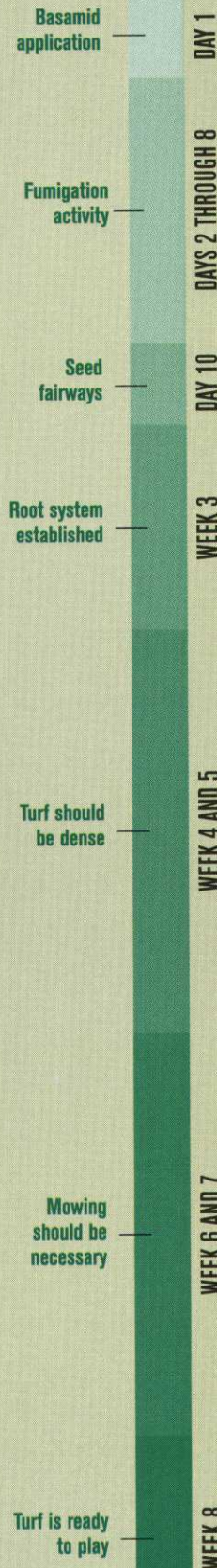
- The area should then be watered within 15 minutes to activate the Basamid. Make sure that no one enters the treated area for 24 hours.

- The area should be watered for the next five days — three times a day and for 15 minutes each time. But make sure the area is only moistened and not saturated. This will create a water seal that will keep the Basamid in the root zone.

- The renovated area should be left undisturbed for at least seven days after application.

- Nine days after application, the fairways are ready to be seeded with a slit seeder. After seeding, fertilizer should be applied to the area immediately.

Thereafter, superintendents should maintain the renovated fairways using their customary practices.





Cleaning House

Basamid® proves to be a cost-effective and safe way to prepare fairways for renovation

The 100-year-old fairways at Rockford CC in Rockford, Ill., showed their age. The original bentgrass fairways had become a hodge-podge of bentgrass, bluegrass and *poa annua* that the members found unacceptable. In addition, the mismatched grasses increased the susceptibility to disease and weed growth, leading the green committee to the following decision: The fairways had to be renovated.

Mitch Hamilton, assistant superintendent at the course, says former superintendent Dan Wyatt had tried to overseed for years with bentgrass in an attempt to crowd out the nuisance grasses — to no avail.

“Dan knew he was fighting a losing battle,” Hamilton says. “He was excited when he finally got the go ahead to do a total renovation.”

But Wyatt didn't want to reseed the fairways with the 50-50 mix of L-93 and Providence bentgrasses only to have the same *poa* and other weed problems rapidly re-emerge. The key was to find a cost-effective, safe soil fumigant that would eliminate enough of the weed seeds to prevent an immediate reinfestation.

The problem

Hamilton says the effects of the brutal summer of 1999 proved to be the undoing of the fairways. The hot, dry summer killed large patches of the turf, leaving parts of the fairways unplayable. The lack of moisture also left the fairways susceptible to diseases. In the end, it was time to do something about them. “That summer clearly showed the members why the mix-and-match grasses we had on our fairways just weren't a long-term solution,” Hamilton says.

To oversee the renovation, Wyatt hired Lohmann Golf Designs in Marengo, Ill., to create the master plan. Wyatt



knew that he would first have to kill the grass menagerie and then sterilize the soil. The first step was easy: He sent Hamilton to each of the 18 fairways with an applicator filled with RoundUp®.

“That was the hardest part for me,” Hamilton says. “I'd been taught all along that it was my job to keep the grass alive. Now I was killing it all.”

The RoundUp stayed on the fairways for 10 to 14 days, Hamilton says. After Lohmann's crew rototilled the soil six to eight inches deep, it was time for the soil sterilization.

Popular products, such as methylbromide and Vapam®, had worked for other superintendents, but those products raised environmental concerns. Wyatt wanted something that would be safe to the workers and would minimize the course's downtime.

The solution

Lohmann Golf Design told him about BASF's Basamid® soil fumigant. Basamid is a granular soil fumigant activated by water (see sidebar). Hamilton says it's easy to use because any crew member that knows how to operate a drop-spreader can apply it. Since he could do the job himself, the labor savings practically paid for the product itself.

“With some of the gases, you have to hire outsiders to

The crew at Rockford CC in Rockford, Ill., started by killing off the hodge-podge mixture of grasses. Then they hauled away the top layer of soil (left). Then, they regraded the fairways (below) and applied the Basamid. Once they were sure the soil was sterile, the crew added topsoil and seeded the fairways (right).



come in to put it down because you need a special license," Hamilton says. "The BASF product was so easy that we were done in almost no time."

Hamilton says that he, Wyatt and other crew members diligently watered the product into the soil for five to seven days before they reseeded. Then they waited for the grass to come in. Hamilton says the results have been excellent — gone are the fairways with three different types of grasses and numerous weeds.

"From what I've seen, the grass that has come up has been practically free of weeds," Hamilton says. "You don't have the patchwork look to the fairways anymore. What you have instead is strong stands of turf."

He also says he could tell the difference between the

areas that were treated with Basamid from those that weren't.

After the fairways were reseeded, the members decided that they wanted to widen them. This time, Hamilton didn't apply Basamid® to the soil.

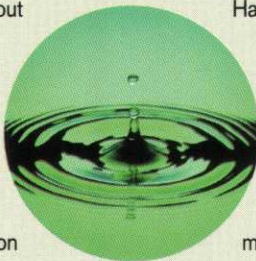
"It's a startling visual difference between the widened sections and those we did originally," Hamilton says. "The amount of *poa annua* in the untreated sections is unbelievable compared to what we redid earlier. It's like night and day." ■

Just Add Water

Mitch Hamilton, assistant superintendent at Rockford CC in Rockford, Ill. says superintendents can't underestimate the importance of water in activating Basamid®. In fact, without the addition of water, the product won't even work.

"It works when the water, product and soil are in contact with each other," Hamilton says. "If those three elements aren't working together, then you've wasted your money."

According to BASF, which manufactures the product, the first three days after the initial application are critical. Hamilton says superintendents should keep the soil damp without putting so much water on it that it puddles. If too much water is applied, it will wash the product away before it has a chance to work. He says you don't have to depend on an auto-



matic irrigation system to do the job adequately.

"Even with the most sophisticated system, there will be environmental factors that you can't control with an irrigation system,"

Hamilton says. "Wind is the biggest factor. It can blow the water around so that it's not even hitting the proper area."

At Rockford CC, the crew syringed the fairways three times a day for five to 10 minutes each time (syringing timing may differ for other soil characteristics). They started at 5 a.m. with the first application and ended each day at 7 p.m. with the third. That formula activated the Basamid so well that the newly seeded fairways have little weed activity in them.

"If you're not willing to put the effort into applying the water, then you should strongly consider another product," Hamilton says. "You have to make the commitment to doing this correctly."