The second key is not to oversoak the seed. The tests showed quite clearly that it is possible to remove too many nutrients along with the germination inhibitors. Although these tests did not try to determine an optimum soaking period or minimum amount of water required to prime the seed, they clearly showed that two soaking periods of 12 to 16 hours each were excessive. The 12- to 16-hour soaking period was chosen because it fit the normal work schedule. We believe that inconsistent wetting and oversoaking contributed to some of the problems we had observed with limited priming.

The third key is an efficient soaking and rinsing container. The easiest way to soak and rinse seed is to dump it into a 55-gallon drum fitted with a rack above the bottom covered with window screen and a side valve below the rack to allow for drainage. Only soak 100 pounds of seed at a time.

Soaking the seed in the bag should be avoided. The seed is hard to wet, cannot swell to absorb the maximum amount of water, and rinsing is difficult if not impossible. We believe that improperly rinsed seed will still be surrounded by germination inhibitors on the exterior of the seed and, again, lead to inconsistent germination. The seed in the test was rinsed with running water until the rinse water was clear.

"Speed Seed" was the result of a testing program to find an alternative to limited priming and pregermination.

A further advantage of the short soaking period before drying is that there is no possibility for mold or fungi to get a foothold. Also, the seed will not degrade through decomposition, nor will the germination actually begin.

After the seed is soaked, rinsed, and drained it is a simple matter to use a hand truck to wheel it over to a drying area where it can be dumped out for drying. Once it is dry, Speed Seed is ready to use.

The advantages to Speed Seed are consistent, rapid germination and the ease of handling the dry seed. We would never return to limited priming or pregermination.

There are several other areas that merit further investigation, such as the use of aeration during soaking. We did not evaluate this because we already seemed to be pushing the envelope of pregermination. It might be interesting to add a peroxide, such as hydrogen peroxide, during soaking as an oxygen source. Other questions that remained unanswered include those regarding seed variety, the effects of cycling freezing and thawing, and the seed's ultimate shelf-life after drying. ❑

Editor's Note: Todd Detzel is head groundskeeper of the Laytonville Unified School District in Laytonville, CA. He has been a member of the national Sports Turf Managers Association since 1988.

PRODUCT SHOWCASE

STMA FOOTBALL FIELD OF THE YEAR:

GOING LONG AT FITTON FIELD

By Bob Tracinski

Commitment to excellence is the driving force throughout the campus of the College of the Holy Cross in Worcester, MA. Perhaps it stems from the traditions of fierce determination established by those early settlers who carved their living from the New England wilderness. Surely it's been tempered by the realities of coping with the extremes of New England weather. But most of all, it's embedded in the spirit of the people for whom "good enough" means "the best that can be accomplished."

The College of the Holy Cross is a Jesuit, liberal arts institution, which was founded in 1843. Current undergraduate enrollment is 2,800. Its 175-acre campus is situated on the northern slopes of a modest hill named Mount St. James.

Commitment to excellence is also the driving force behind the 1993 Sports Turf Managers Association Football Field of the Year — Fitton Field, the varsity gridiron of the College of the Holy Cross.

This is the ninth national award presented to the grounds department staff — the 15 people who maintain those 175 acres. The four divisions do the "whole thing" in-house. The greenhouse and landscape division handles the landscaping for new construction, plant installation, and maintenance. All of the annuals used in planting and more than 3,000 house plants are raised in campus greenhouses. The general grounds division covers trash pickup and litter control, general maintenance, mowing, and hedge trimming. The motor pool services and maintains 60 vehicles.

Practicing at Fitton Stadium is a treat for the Holy Cross football team. One reason is that problems with the turf are solved by a team of dedicated specialists.

A remarkable three-man crew maintains and services the entire Holy Cross athletic grounds — foreman John Brosnihan, crew chief Sam Alcorn, and laborer Steve McCann. In addition to Fitton Field, these same three men are responsible for the varsity baseball field, the freshman baseball field, five natural turf practice fields, one artificial turf field, one intramural field, one softball field, one soccer field, 13 tennis courts, a running track, and a cross country track. The only assistance they normally require from the rest of the crew is for stadium clean-up the day after a football game.

Superintendent of Grounds James D. Long is in his thirty-fifth year at Holy Cross. A neighborhood kid, he joined the grounds crew as a laborer in the summer of 1958. Soon after, Father Gillis, S.J. took him under his wing. Gillis wrote to Pennsylvania for their agriculture program's reading list, and Long developed the routine of reading the books and giving a full report to Gillis. Long completed the Penn State agriculture program and absorbed "everything that was available" in extension training from the University of Massachusetts and through Holy Cross.

"Father Gillis made me resourceful," says Long. "He taught me to go out and get the answer. It was the best combination of practical training and technical experience. I loved what I was doing and the more I learned about it the more I wanted to know.

"Everything that happens on campus contributes to the excellence of the college," he continues. "It was that way when I started in 1958 and it's that way now. The work you do matters and how you do that work matters, whether

John Brosnihan refreshes paint on team logo in the endzone of Fitton Field.

you're on the board of trustees, part of the administration, part of the teaching staff, part of the maintenance crew, or the college president. The entire team is committed to excellence."

Long worked his way up on the grounds crew, then on the greenhouse crew. In 1977 he was named superintendent of grounds.

"We 'team solve' problems," he enthuses. "I meet with division foremen twice a day, in the morning and at noon. We all know what needs to be accomplished and how we're doing at reaching our goals. I meet regularly with my supervisor, Gerard A. Zimmerman [physical plant director] on the same team solving basis. That process is followed throughout the college.

"Although each department has its own areas of responsibility, everyone pitches in on any project when circumstances call for it," he adds. "Grounds maintenance jobs don't go by the clock. We were all out there moving mountains of snow in January."

Long is a strong believer in continuing the learning process. He's an active

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PRODUCT SHOWCASE

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The Holy Cross crew is able to provide a deep-green natural turf field despite severe winters in Worcester with a combination of tarps, fungicides, fertilizers, and charcoal chips.

STMA Football Field of the Year

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member of the New England Chapter and the national Sports Turf Managers Association and of the national Professional Grounds Management Society. And, he points out, his bookshelves "are loaded."

Long also believes in "giving back" to the industry. He's served on the national boards of both STMA and PGMS — he was chairman of the STMA scholarship and research grants committee for six years. He's written numerous articles for major trade publications and penned the chapter on "Snow Removal with Facility Management, A Manual for Physical Plant Administrators" for the Association of Physical Plant Administrators.

The Holy Cross grounds are terraced on five levels. Fitton Field is located at the base of the hill, on the lowest terrace level. The varsity baseball field is next to it, on the same level. Fitton Field, constructed in 1905, has played host to some of the greatest teams in college football history — Army, Harvard, Georgia, Syracuse, and Penn State, to name a few.

The area that is now Fitton Field was originally a marsh bordering the Blackstone River. The football and baseball fields were created by filling in the marsh with cinders from a nearby steel mill. That cinder layer is approximately four feet deep. It provides the drainage for the grassy areas.

A heavy clay soil covers the cinders. For Fitton Field, this clay is topped with an 18-inch layer of loam. The original turf was established by seeding and seeding is used during the annual renovations. The field has never been sodded.

Maintaining a college athletic field in New England presents many challenges. One major problem is the late winter flooding that occurs when the snow melting on Fitton Field is joined by the runoff from Mount St. James. Since Fitton Field is at the lowest point on the campus, it becomes a natural repository for all drainage, so much so that an early thaw followed by a freezing of the water sometimes gives the field the appearance of a natural ice skating rink.

The stadium stands tend to block sunlight from the field, extending the icy conditions in open winters. To alleviate this potentially damaging situation, the ice is fractured with an aerator. Then a mix of approximately 50 percent 1/4-inch charcoal chips and 50 percent urea fertilizer is spread to cause melting. This procedure, along with the November application of a fungicide to prevent snow mold, helps see the field safely through the harsh New England winter.

Other conditions have contributed to field maintenance problems in the past. During the 1980s, Fitton Field served multiple uses. Junior varsity football, lacrosse and field hockey were played there, as well as varsity football. The field was used for such non-athletic events as rock concerts, an Evel Knievel stunt show, and a national drum and bugle corps competition.

The field was irrigated using a mobile water cannon. The cannon was pulled to the field and hooked to a hydrant. It was capable of delivering one inch of water to an acre in one hour.

These conditions now have been alleviated through the implementation of a five-point plan, completed over a period of six years, to upgrade the athletic facilities of the college.

A new policy eliminates non-athletic events from Fitton Field.

Five new turf practice fields have been added at the "top of the hill."

A new artificial turf outdoor practice field was constructed, also at the "top of the hill." This field is a resource for all sports, which keeps play off the turf fields when conditions are poor, avoiding excessive turf damage.

Irrigation systems, incorporating Toro 640 heads, have been installed on all turf athletic fields.

As part of the plan, the Fitton Field stadium was equipped with all new aluminum seating in a horseshoe shape and a new VIP box.

Fitton Field use is now limited to varsity football's five games a year, though it's possible a Canadian Football franchise may make use of the field in the future.

In the 1970s, when Long became superintendent, there wasn't much choice in grass varieties. Maintaining quality turf sports fields was a constant battle. There was little consistency in the grasses. Discoloration was a major problem when turf was cut short for fall play. In 1977 and 1978, Long incorporated herbicide weed control and the new Manhattan perennial ryegrass into the athletic field program.

The 1990s seed mix is an athletic blend containing a combination of Kentucky bluegrasses and improved Manhattan Perennial ryegrass. Prior to spring fertilization, Fitton Field is topdressed with a 50:50 mix of screened loam and washed brick sand, aerated, and vertically sliced and seeded.

The grass is cut at 2-1/2 to three inches during the summer months to devel-

Jim Long credits Father Gillis for making him resourceful.

op a strong root system. In late August and early September, the grass is cropped down to 1-1/2-inch for seasonal play.

Depending on the weather, the initial cropping may cause discoloration and burning. In this event, an application of nitrogen and iron fertilizer at half-rate, followed by heavy watering causes the grass to green up within a week.

Fitton Field requires an average of 1-1/2 to two inches of water per week during the season. Hot summers and areas of compaction, such as those along the sidelines and bench areas, make it necessary to guard against crabgrass and knotweed. Grubs, especially Japanese beetles and chinch bugs, are familiar invaders.

The treatment program established for athletic fields includes applications prior to May 1 of crabgrass control, broadleaf weed control, surface insect control, and a balanced fertilizer delivering one pound of nitrogen per 1,000 square feet.

A second treatment includes broadleaf weed control, surface insect control, and another balanced fertilizer application. The third treatment combines a balanced fertilizer application with broadleaf weed control.

A fourth fertilizer application rounds out the fertilization program. In late November, a fungicide for snow mold prevention is applied to Fitton Field and the varsity baseball field.

The football field is aerated a second time during the fall season. The adjacent baseball field, which doubles as a parking area for home football games, receives more frequent aeration.

The now consistently excellent quality of the athletic fields provides the safest possible turf conditions for the college's athletes. And safety, which has always been a major consideration, is even more so now in these times of greater concern over liability.

Long attributes much of the program's success to the Holy Cross administration for its outstanding support of excellence in the quality of the college grounds and athletic facilities. "The whole secret is teamwork and a commitment to excellence," he says. "That support has to come from the top."

To grounds managers who have the capability but are frustrated by lack of administrative support for their efforts, the College of the Holy Cross serves as an example of the benefits that can be derived by investing in a sound grounds management program. ❑

Editor's Note: Bob Tracinski is the manager of public relations for the John Deere Company in Raleigh, NC, and public relations chairman for the Sports Turf Managers Association.

PRODUCT SHOWCASE

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CHEMICAL LOG

Handling Sod Webworm

Healthy turfgrass is an irresistible draw to a variety of insect pests. It can usually sustain some level of infestation without much visible damage. Environmental conditions such as heat or drought, however, can exacerbate insect damage. Voracious pests weaken the already weather-stressed turf, sometimes damaging it to the point that it never recovers.

The key to good insect control is not to let cracks in your turf's defenses ever become wide enough for a bug to slip through. Proper fertilization, adequate watering and drainage, regular aeration and topdressing, careful variety selection, and close attention to mower cutting heights go a long way in keeping turf healthy and able to withstand moderate pest infestations.

But even with the best cultural practices in place, insects do sometimes get the upper hand. That's when chemical controls become necessary. Familiar, broad-spectrum insecticides are available to regain control over most turf pests.

A working knowledge of the biology of common turf insect pests is critical for turf professionals to select appropriate control strategies. In the next three issues of *sportsTURF*, "Chemical Log" will focus on a specific insect pests, including some of the cultural, mechanical, and chemical options available to control them.

Sod webworm

Sod webworm (*Crambus* spp.) is the larval stage of plain-looking white-to-brown moths. The pests range across North America but are usually most damaging to turf in the eastern, southeastern, and midwestern United States.

At dusk in late spring and early summer, newly emerged adult females take to the air seeking patches of lush grass on which to distribute their loads of tiny, off-white eggs. Each is capable of producing up to 200 eggs. Females frequently deposit their eggs in the same locales, a habit that concentrates damaging larvae populations in patches scattered across fields and fairways. Larvae hatch from days to two weeks later.

Sod webworms vary in color from grayish brown to dingy white and grow to a length of about an inch. As first and second instars, caterpillars limit their feeding to a single blade of grass, eating only tender tissue between the veins. This early skeletonizing is slight and usually goes unnoticed.

Sod webworm (Crambus spp.) is the larval stage of plain-looking white-to-brown moths.

As the caterpillars mature they begin constructing silk-lined tunnels through the thatch at the soil line. Their appetite increases and they begin grazing over larger areas. Maturing larvae devour whole blades of grass at a time. They sever leaves at the crown and pull them into tunnels to eat.

At this point, damage becomes apparent. Irregular brown patches about the size of a quarter or half-dollar develop around tunnel entrances, giving turf a "pockmarked" appearance. Because this symptom is characteristic of several turf pests, however, a positive identification is necessary for accurate diagnosis.

First, look for missing — not just dead — blades within the damaged area. Next, examine the thatch; look for sod webworm tunnels with larvae inside, green excrement pellets (frass), or holes pecked by birds in search of a webworm snack.

Soil drenches of soapy water bring caterpillars to the surface so they can be counted. Populations of as few as one worm per square foot are enough to warrant treatment if turf is stressed by other factors. Healthy turf can tolerate two to three worms per square foot.

Depending on the species, sod webworms go through between six and 20 instars before reaching maturity. When they do, they leave their tunnels, burrow into the soil a short distance away, and spin the cocoon in which they pupate. In about two weeks, adult moths emerge to begin laying a second generation.

Controlling Sod Webworm

Sod webworms are most damaging to turf when temperatures are high and water is scarce. But because turf growth slows under these stresses, webworm damage is usually not apparent until the damaged grass resumes growth. It is important, therefore, to keep turf adequately irrigated during hot, dry periods and to regularly aerates areas at risk of compaction.

Because webworms dwell in the thatch layer, regular dethatching will help eliminate their natural habitat. Experts recommend that thatch should be no thicker than 1/2-inch to 3/4-inch thick.

Several varieties of tall fescue and perennial ryegrass contain fungi, called endophytes, that actually repel sod webworms and other insect pests, including armyworms, cutworms, billbug larvae, and chinch bugs. These endophytic grasses should be considered for areas where sod webworms are chronic pests.

Severe sod webworm infestation requires chemical control. Adult sod webworm moths do not eat grass, so instead of applying pesticide at the first sight of moth activity, wait a few days until larvae hatch and begin eating. ❑

Editor's Note: Provided as a service by Rhône-Poulenc, formulator of Chipco brand products, including broad spectrum Sevin. Look for Chinch Bug control in next month's "Chemical Log."

Peter Selmer Loft Memorial Scholarships Awarded

The New Jersey Turf Expo in Atlantic City served as the appropriate setting to award 12 Rutgers University turfgrass science students the Peter Selmer Loft Memorial Scholarship Award.

This marks the eleventh year for these awards. The Fund, set up in memory of Peter Loft in 1983, is subsidized by royalty contributions from Lofts Seed, royalties from the sale of Tribute Tall Fescue and through private and corporate donations.

This years recipients were: Karen Plumley, Gary Gentilucci, Pedro Perdomo, Michael Ventola, Michael Holtman, Dirk Smith, Randall Prostak, Stephan Cronin, Joshua Honig, Wendy Hill, Tracy Bunting and Joseph Clark.

Reform Ahead For OSHA

Labor Secretary Robert B. Reich stated at a news conference in January, that an agency with a $300 million budget and 2,300 employees cannot police the nations 6 million employers. He promised to focus on the worst violators of workplace laws.

The OSHA reform bill, especially provisions mandating written health and safety plans and worker-management safety committees, would shift the agency's focus from government to the workplace. Joseph Dear, OSHA's new chief, is a proponent of "reinventing" government. He says the reforms are the only way to extend the reach and range of workplace safety under present budget conditions.

Notre Dame Installs Fence Guard

The University of Notre Dame, South Bend, Indiana, recently installed OLY-OLA Fence Guard, a protective yellow safety cap for the top of chain-link fences, at the Frank Eck Baseball Stadium. Fence Guard is designed to protect against injuries from chain-link fences. The vinyl safety cap makes conditions safer for outfielders when leaping for fly balls and also make it easier for umpires to make their calls. The high visibility color helps the players judge the distance between themselves and the fence.

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Keeping Reels Sharp

By Monty Montague

Reel mowers are high-precision machines that provide top-quality cutting. To deliver such cutting performance, they employ a combination of a reel, often spinning between 600 and 2,000 rpm, and a bedknife.

Because those two elements combine to do the cutting, they should be adjusted precisely. There should be little or no contact between the reel and the bedknife, and the leading edges of both should be squared off — some manufacturers even believe there should be a "reverse angle," and those vary from five to 15 degrees.

There are several ways to sharpen reels. The most commonly used is backlapping, which is actually a simple, inexpensive honing procedure that should be done after approximately 40 hours of cutting. Backlapping involves spinning the reels in reverse after applying (brushing) a special compound, and either backing the reel down to the bedknife or the bedknife to the reel, depending on the particular mower. The pressure between the reel and bedknife, combined with the sharpening compound acting as "liquid sandpaper" actually sharpens the reel blades. When the "grinding sound" stops, the backlapping process is usually complete.

Sharpening compounds come in number grits, from a very coarse 50 grit to a very fine 220 grit. Most people tend to use them in the 80 to 120 grit range.

There are two basic ways of spinning reels backward for backlapping. For reel mowers that are not hydraulically driven, there are electric backlappers. They cost about $400 and can be hooked directly to the mower. Hydraulically driven reels, on the other hand, will probably have a backlapping switch on them.

Sometimes backlapping isn't enough. The next step is grinding and there are several ways to grind mower reels. The first is a spin grinder. Spin grinders range in cost from $2,600 to $20,000, so many sports turf managers will actually send their reels out for grinding. But whether you send your reels out for grinding or do it in house, the most important thing you do *before* is to check the reel for bearing wear and adjust end play. A worn reel, particularly an unevenly worn reel, could be the sign of an improper adjustment or even a worn bearing that needs replacement. If that same reel was sent out for grinding without the mechanical problem being corrected first, the reel and bedknife could "slap" during grinding and create a damaged or an unevenly sharpened reel. Solve any and all mechanical problems with your reels before you send them out for grinding — check your owner's manual for specific adjustment instructions.

Spin grinding is "flat-edged" grinding and is good until you have no relief left on your reel blade. Relief grinding creates an angle on the trailing edge of your blade. All blades come from their manufacturers with relief, and it reduces the pulling and tearing of grass when reels get dull. Relief also speeds up the backlapping resharpening process. Some manufacturers believe its extends the life of the bedknife.

One of the most common tests for reel sharpness after backlapping, grinding, or relief grinding involves placing two pieces of newspaper between the reel and bedknife. If they cut the first piece of paper and bend the second, then the mower is probably ready for action. It's important to repeat this test, not just in the center of the mower but at both ends. Improper adjustment or a worn bearing can lead to uneven sharpening and leave you with a conical reel.

One of the most common tests for reel sharpness after backlapping, grinding, or relief grinding involves placing two pieces of newspaper between the reel and bedknife. If they cut the first piece of paper and bend the second, then the mower is probably ready for action.

How often you backlap, grind, or relief grind your reels will, in large part, be determined by your specific situation. Factors include grass type, cutting frequency and height, topdressing frequency, obstacles, and more — it all depends on use. If your reel mower is still cutting beautifully at the end of the season, there's no sense in grinding it. Again, the most crucial thing is to consistently check bearing wear or end play wear, and correct it immediately. If you make adjustments and still get end play, it's probably time to change the bearing — before you use *any* reel sharpening method. ❑

Editor's Note: Monty Montague is a regional sales manager for National Mower and Turfco, Inc.