

Pink snow mold. Photo ©1978 CSSA, slide set "Diseases of Turfgrass."

Fungicides containing PCNB, chloroneb, iprodione, vinclozolin, and chlorothalonil have activity against one or both of the major snow molds. Good results have been observed with iprodione/chlorothalonil and PCNB/chloroneb tank mixes. The systemic DMI fungicides fenarimol, propiconazole, and triadimefon are also active against snow molds. Check with your state or regional pathologist or extension personnel to determine what works best in your area. Be sure to read and follow all label directions — rates and timing are important.

Fungicides are normally applied before the first heavy snow or cold, rainy period. Systemic compounds should be applied before leaves become dormant to ensure uptake and distribution of the product. Also, susceptible sites should be retreated during a spring thaw to provide late-season protection and improve recovery.

**Alternatives to Fungicides.** There are several factors that have been identified which contribute to snow mold severity. Some examples are prolonged snow cover, compaction of the snow cover, shaded sites, poor soil drainage, long matted leaves, and imbalanced fertility. Examination of susceptible sites and their management may reveal problem areas that can be corrected and result in reduced snow mold severity.

For example, simply continuing to mow the grass at a suitable height until dormancy is important. Another key is to avoid a mid-fall nitrogen application which can stimulate a flush of late-season growth and increase susceptibility. Use of snow fences or other barriers can reduce snow accumulation or drifting on some sites. Controlling traffic from skiers, snow mobiles, and other machinery may keep snow from com-

acting. Trimming trees to increase sunlight penetration and using dark-colored granulated products such as activated charcoal or organic fertilizers could speed snow melt and soil warming in spring. Improving surface and subsurface drainage of water from snow melt will also reduce diseases and improve turf growth and recovery.

Use of disease-resistant plant materials where possible should not be overlooked. There are a number of Kentucky bluegrasses, perennial ryegrasses, and fine fescues reported to have

improved snow mold resistance. Again, check with state or local experts for planting recommendations before renovating a snow mold-susceptible site.

**Biological control.** In the near future, we may see development of commercially viable biocontrol-type products for snow mold suppression. Research has shown that a nonpathogenic species of *Typhula* can compete with and suppress the activity of *T. incarnata* under snow. The level of disease suppression was comparable to a PCNB treatment.

Another series of studies has shown that certain types of organic composts can suppress snow mold when applied in late autumn. Other microbial antagonists may be found as the search continues — a major stipulation is that the microbes must be active at or near 32 degrees F.

Since Hg fungicides are being discontinued and other products require high rates or repeat applications, manufacturers should become increasingly interested in developing biocontrols or alternatives to fungicides. A market for new products could boom in the not-to-distant future! □

*Editor's note: Dr. R.T. Kane is a turf grass advisor for the Chicago District Golf Association and a frequent contributor to this sportsTURF.*

#### FURTHER INFORMATION

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# CULTIVATION STRATEGIES: Five From the Field

By Matthew Trulio

**A**eration, aerification, cultivation — by any name you care to call it, the practice of penetrating and loosening the soil is vital to maintaining healthy turf. Few if any turf management techniques have a greater impact. Cultivation benefits include reduced compaction, thatch control, and improved percolation rates.

Regular aerification is something to build into your turf management routine. Unfortunately, there is no single aerification strategy. Each must be tailor-made, taking into account the field conditions including its schedule of events, construction (sand-based or native soil), turf conditions, and special problems (compaction, thatch, etc.), as well as the year-round weather conditions and the maintenance budget. Aerification timing, frequency, and depth, what to do with cores and when topdressing is appropriate, and a host of other decisions must be based on the individual field.

Successful sports turf managers stay flexible and constantly reevaluate their cultivation strategies. Here are five tales of successful aerification programs, and a bit of the thinking behind them.

## Shallow and Deep at Notre Dame

At the University of Notre Dame Stadium, home of the Fighting Irish, athletic facilities manager Dale Getz and his crew aerify no less than five times a year between the last home football game of the season and the first home game of the next season.

Getz and his crew core aerify with a Toro walking aerifier and a Ryan Greensaire II. They use 5/8-inch tines and topdress with USGA Green Spec sand three out of the five times they aerify.

The Notre Dame crew will aerify and topdress more frequently if it is necessary and possible. For example, between the end of the 1991 season and the beginning of the 1992 season, they cultivated and topdressed the field seven times.

"We adjust the program according to the weather," Getz explains. "If we have a hot, dry summer, we're reluctant to do any aerifying because the grass is under enough stress.

"I've been on this aerification program for four years now, and more than anything I've noticed a big change in the amount of Poa [annual bluegrass] I have to manage in our field — it's one of a number of practices I use to keep Poa under control," he continues. "Last year, for the first time I used a Floyd-McKay deep tine aerator. The machine drills a number of holes simultaneously, moves forward, and drills them again. We used 12-inch carbide-tipped tines.

Getz plans to use the machine again. "I think it improved my drainage, and it breaks up deep layers that can form from aerifying at one depth for a number of years," he concludes.

## Desert Cultivation Menu

Cultivation is a critical aspect at the University of Arizona's Arizona Stadium in Tucson, AZ. The field, which was named the 1992 STMA Football Field of the Year, is aerified six to eight times a year with a Ryan aerifier, with 3/4-inch tines, towed behind a tractor.

"We usually start aerifying right after the Copper Bowl around January 1," says Chuck Raetzman, assistant director of operations services for the university. "After that aerification, we'll go ahead and topdress with sand and drag everything in — we let the cores lay there for a day or two so they dry out before dragging them in, and we topdress with sand twice a year. We aerify again in March, right before football practice starts in the spring. Normally, they're off the field in April. We aerify again in the middle of May and topdress again with washed mortar sand, which is part of our field's construction profile.

Raetzman and his crew aerify again in mid-June and mid-July, if the events schedule will allow it. Once the football season begins, they don't aerify again until after the Copper Bowl in late December.

"Our feeling is that unless there are some extraordinary circumstances, we won't aerify until the season has ended," he says. "The field is getting pretty well aerified by the players' cleats."

One of those extraordinary circumstances is "Band Day," where marching bands fill the field for an entire day. To break up the resulting compaction, the maintenance team uses a slicer to cut the



Successful sports turf managers stay flexible and constantly reevaluate their cultivation strategies, both in shallow and deep aerification applications. Photo courtesy: Ransomes America Corporation.

turf vertically, in combination with a soil penetrant.

## Staying Ahead at Camden Yards

Despite the relative newness of Oriole Park at Camden Yards, home of the Baltimore Orioles and site of the 1993 STMA Conference and Exhibition, head groundskeeper Paul Zwaska has implemented an aggressive aerification strategy. Zwaska and his crew aerify once in March, April, May, June, and July. He skips aerifying in August because of the summer heat, and then aerifies once in September. In October, he "double aerifies," running his aerifiers over the field twice.

While compaction has not been a problem, he says, he double aerifies in October to facilitate overseeding.

"By double aerating in October, we bring up a lot of soil so that when we overseed there isn't a lot of competition," he says. "We bring up enough soil so that we don't have to topdress, but when we do topdress we do it twice a year with a sand-peat mix."

Zwaska uses two Toro green aerifiers. For the double aerification, he borrows a third. In all his aerification procedures, he cultivates to a depth of three inches. "With our P.A.T. [Prescription Athletic Turf] field, we really don't see a need to go much deeper," he notes.

Zwaska has implemented the program for two years. "It's worked well so far," he says. "One of the main things we're doing with our aerification program is keeping our thatch down, rather than relieving compaction which isn't a problem for us. But thatch could affect our percolation rate."

*continued on page 24*



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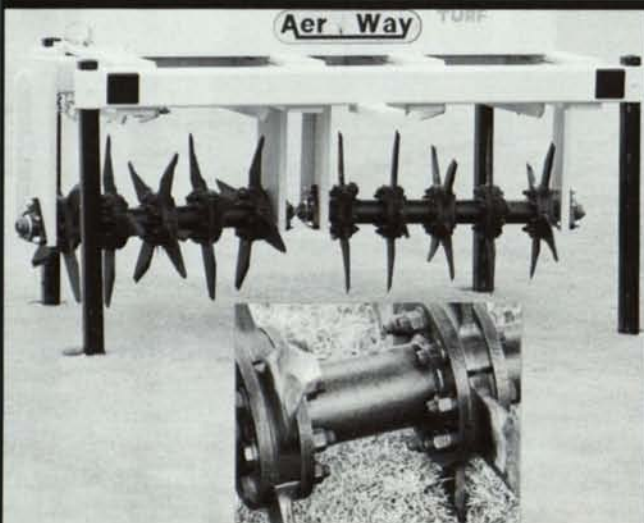
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## CULTIVATION STRATEGIES

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### Going Deep in Colorado Springs

The public parks and athletic fields of Fort Collins, CO, are well-used by the community. Compaction, explains Bill Whirty, supervisor of parks and recreation for the City of Fort Collins, can be a problem, particularly with the area's native clay soils.

"We aerify our athletic facilities two to three times a year — we shoot for three at least and get no less than two," Whirty explains. "We also have park sites to aerify. We had always operated with small aerators, but this year we bought a big Verti-Drain deep tine aerator. We're going down 10 inches.

Aerification is generally scheduled for the spring and fall. Although the Verti-Drain will be used for the bulk of the procedures, Whirty and his crew will use a Ryan Greensaire for spot aerification prior to overseeding.

With the deep tine aeration, says Whirty, they've been able to relieve compaction and improve percolation rates. In fact, he reports that on some fields they've actually been able to reduce irrigation rates.

Whirty began the deep aerification program in the spring of 1993. "We had rented the machine the year prior, and that gets pretty expensive, so we decided to buy one," he says, then laughs. "Now all the local golf courses want to borrow it.

"The deep aerification program is helping out immensely," he concludes. "We're seeing a lot better soil and rooting conditions, and our athletic fields are holding up better than ever."

### Multi-Front Attack in Texas

At Texas A&M University in College Station the aerification challenge is two-fold. First, the area has what Eugene Ray, deputy director of physical plant calls "a very difficult, compacted soil." Second, the area's water supply has a high sodium content.

"That can be particularly difficult when you go through a summer like we had this year," says Ray. "We had an inch of rain two weeks ago, but it was the first measurable precipitation since June 25. Plus, when you put the type of water we have on the type of soil we have, it's almost self-defeating."

The aerification solution at Texas A&M is a combination of conventional and not so conventional methods. Most of his turf is bermudagrass.

"I'm convinced that there needs to be a couple of different techniques to solve the problem," Ray explains. "We use spoon-type aerification in the fall and winter months because it's fast. That could be as many as three or four times in an athletic area.

"For the summer months, I've become quite a believer in shatter aerification and we've tried two or three different types.

A third form of soil cultivation which Ray has tried with success is "vibratory" aerification. A Yeager-Twose machine was used for this method. It slices into the turf and vibrates as it moves forward, loosening the soil with little disturbance of the surface.

"Aerification is one of the things that people too often overlook," Ray concludes. "We have 500 acres of irrigated landscape and almost 43,000 students. We have to keep it green and growing. Aerification helps us meet this goal." □

# EXPLORING EQUIPMENT

## Air Cleaner Maintenance

**T**urf care equipment generally operates close to the ground, exposing engines to dirt and debris. The air cleaner or filter is the engine's defense against exposure to harmful particles.

For each gallon of gasoline your equipment uses, the engine will take in about 10,000 gallons of air. Most of that air will pass through the air cleaner. Therefore, equipment operators and mechanics should pay close attention to regular air cleaner maintenance. The time spent cleaning and changing air cleaner elements can pay off in many hours of trouble-free operation.

There are two general types of air cleaner elements. Some engine manufacturers use paper air cleaner cartridges while others use oiled foam elements. Some use both. The type of air

cleaner used will generally depend on the type of conditions the engine will face.

The following is a description of the different air cleaner types and maintenance information.

**Foam air cleaner.** Oiled foam elements operate efficiently when you keep them properly oiled and moist. When dried out, they might allow abrasives to enter the inner part of an engine.

Regular maintenance is important for foam air cleaners. Briggs & Stratton recommends cleaning and re-oiling the air cleaner element every 25 hours under normal conditions. Do this more frequently under dirty conditions.

To maintain a foam cleaner, first remove it from the filter housing. Inspect the filter for tears. Replace the filter if it is torn because it is important for the

filter to fit tightly in the filter housing.

Next, wash the filter in kerosene or liquid detergent and water. Wrap the foam in a cloth and squeeze dry. Saturate the foam with engine oil. Squeeze out excess oil and return to the engine.

**Dry element filter.** Paper air cleaner elements do a good job, but they tend to plug up when they become dirty. This will make the engine run poorly and ultimately choke it off. The one advantage to this is the operator will know when the filter must be changed. However, it is best to change paper filters before they become excessively dirty.

Check paper air filters regularly. Remove the filter from the housing and gently tap it on a flat surface to knock loose collected dirt and debris. *Do not use*

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## EQUIPMENT UPDATE

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pressurized air to clean or dry the cartridge. If the filter is extremely dirty, replace it or use a non-sudsing detergent in a warm water solution. Never use petroleum solvents such as kerosene to clean the cartridge. Do not oil the paper filter.

**Dual-element air cleaners.** Many engine manufacturers offer dual-element air cleaners. In dual systems, a foam pre-cleaner surrounds the paper element, helping catch dirt and debris before they reach the paper filter. This double line of defense offers additional engine protection.

Dual-element air cleaners often are requested because equipment will be operated under extremely dusty conditions. Therefore, check and clean the filters more frequently than normal. Follow the instructions listed previously for cleaning the foam and paper elements. Be sure each filter is thoroughly dry before you reassemble the filters and install.

### Maintenance Tips

The operator's manual suggests when you should clean and change the air fil-

ter. Normally, this recommendation is listed in operating hours. A log book is a good way to track maintenance scheduling. However, during the busy season you may not always have time to check a log book. Make regular air cleaner maintenance something you schedule, like refueling. You wouldn't think of starting the day without a full tank of gas. Make checking the air filter just as automatic.

Many landscape contractors have equipment operators check air cleaner elements in the morning before they begin work. This is not the time when you want to be cleaning and re-oiling a foam element. Invest in a few extra foam elements. Clean and lubricate them, and then place them in a resealable plastic bag. When it's time to change filters, just remove the dirty filter and pop in a clean one. However, someone will have to clean the dirty filter and place it in the bag so it is ready for the next change.

The conditions under which engines operate can vary with the location and applications. However, you can minimize wear and tear with a strong maintenance program, part of which can be as simple as keeping air filters clean.

*Technical credit: Briggs & Stratton*

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### PRODUCT UPDATE

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