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LANDSCAPE MANAGEMENT is written for golf course and landscape professionals, while LAWN CARE INDUSTRY satisfies the information needs of chemical lawn care professionals. Together, they provide total show and industry news coverage.

You could call their editorial and marketing teams "roadies," because they spend 50% of their time traveling to shows, tracking stories and getting candid perspectives from suppliers. Listed here is just a portion of the shows they'll be attending this year. Frankly, it's the only way to stay on top of late-breaking news and keep both books fresh and on the cutting edge of their market segments. This dedication makes them the authoritative voices on industry problems and opportunities readers need to be aware of...and explains why their competitors look like warm-up acts.

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Methods of Disease Control for Warm-season Turigrasses

Disease	Cultural control	Chemical control	Resistant species/varieties
Anthraconse	Avoid fertility imbalances, improve drainage and remove excessive thatch. Stress due to insects or nematodes should be eliminated.	benomyl, chlorothalonil, fenarimol, mancozeb, propiconazole, thiophanate methyl, triadimeton	No resistant centipedegrass cultivars are available.
Bermudagrass decline	Aerate and topdress greens monthly during late spring, summer and early fall. Apply NH4-N rather than NO3-N. Balance N with K and apply micronutrients. Raise mowing height during disease outbreaks.	benomyl, fenarimol, propiconazole, thiophanate methyl, triadimeton	No resistant cultivars are available.
Brown patch	Avoid excess N, especially readily available forms of N. Avoid excessive irrigation.	anilazine, benomyl, chlorothalonil, iprodione, maneb, mancozeb, PCNB, thiophanate methyl, thiram. Do NOT use benomyl or thiophanate methyl if causal agent is R. oryzae or R. zeae. Use fenarimol, propiconazole and triadime	No resistant species are available.
Cercospora leaf spot	Avoid N deficiency. Irrigate deeply and less frequently.	None are currently labeled. Contact fungicides such as chlorothalonil, iprodione or mancozeb may provide disease suppression.	Bitter-blue selections of St. Augustinegrass are less susceptible.
Dollar spot	Avoid N deficiency, Irrigate deeply and less frequently.	anilazine, benomyl, chlorothalonil, fenarimol, iprodione, mancozeb, maneb, propiconazole, thiophanate methyl, thiram, triadimefon, vinclozolin	No resistant species are available,
Fairy ring	Mask symptoms with N fertilizers. Remove mushrooms as some are poisonous. Before planting, eliminate large sources of organic matter such as tree stumps, wood building materials, etc.	None are currently registered. To eliminate fungus, fumigate with soil sterilant and replant.	No resistant species are available.
Gray leaf spot	Avoid excess N. Irrigate deeply and only when necessary.	chlorothalonil, propiconazole, thiophanate methyl + mancozeb	Yellow-green cultivars of St. Augustinegrass are less susceptible. St. Augustinegrass treated with the herbicide atrazine is more susceptible.
"Helminthos- porlum" leaf spot/ melting out	Avoid excess N. Balance fertility components. Irrigate deeply and less frequently. Avoid thatch accumulation. Raise mowing height during disease outbreaks.	anilazine, chlorothalonil, iprodione, maneb, mancozeb, propiconazole, vinclozolin	No resistant species are available.
Pythium blight	Improve drainage and air circulation. Reduce irrigation. Avoid excess N.	chloroneb, ethazol, metalaxyl, fosetyl-Al, propamocarb	No resistant species are available.
Pythium root rot	Improve drainage, aerate and reduce irrigation.	chloroneb, ethazol, metalaxyl, fosetyl-Al, propamocarb. Except for fosetyl-Al, these fungicides should be watered into the root zone.	No resistant species are available.
Rust	Avoid N deficiency, Irrigate deeply and less frequently.	anilazine, maneb, mancozeb, propiconazole, triadimeton	No resistant species are available.
Spring dead spot	Avoid low mowing heights, thatch, compaction and excess N.	benomyl, fenarimol, propiconazole, thiophanate methyl	No resistant species of bermudagrass are available.
St. Augustinegrass decline	Do not plant susceptible cultivars.	None. Disease is caused by a virus.	Resistant St. Augustinegrass cultivars are Floratam, Floralawn, Raleigh and Seville.

Daconate 6. The first word in grassy weed control.Bahiagrass.Barnyardgrass. Crabgrass.Chickweed.Dallisgrass. Nutsedge.Sandbur.Woodsorrel. Goosegrass. Cocklebur. Johnsongrass. Buckhorn, Clover, Common Chickweed. Curly dock. Dandelion. English daisy. Ground ivy. Knotweed. Lambsquarters. Mallow.Mouseearchickweed. Morning glory.Pigweed.Plantain. Purslane. weed. Red clover. Red sorrel. Speedwell. Stitchwort. White clover. Wild garlic. Wild onion. Yarrow. 2 Plus 2. The last word in broadleaf weed control.

Two proven postemerge performers. Broad-spectrum. Effective. Cost efficient. It adds up to more for your herbicide dollar.

Daconate 6 gives you economy and convenience, with an excellent built-in surfactant for first-rate control of tough grassy weeds. It's the ideal warm weather postemerge herbicide.

2 Plus 2 (MCPP + 2, 4-D Amine) delivers superior control of hard-to-control broadleaf weeds on a wide variety of turfgrasses.

And 2 Plus 2 contains no dicamba. So it can be used in turf areas which include trees and shrubs without risk of root pruning on the ornamentals. A major worry with some other products.

For real value in grassy and broadleaf weed control, make your postemergence herbicides Daconate 6 and 2 Plus 2. That's the word.

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Gray leaf spot as shown on St. Augustinegrass. Yellow-green cultivars are less susceptible. St. Augustinegrass treated with the herbicide atrazine is more susceptible.

bahiagrass have an optimum soil pH between 5 and 6 whereas zoysiagrass and St. Augustinegrass prefer soil with pH between 6 and 7. A soil pH greatly above or below these optimum values results in turfgrass that is constantly stressed and susceptible to turfgrass pathogens. Soils that are compacted and poorly drained result in stressed turf also, especially of the root system.

Install drainage and aerify regularly to help reduce disease development

Thatch is a natural component of a turfgrass ecosystem. However, excessive thatch accumulation indicates an imbalance has occurred and plant tissue is being produced more quickly than it is being decomposed. Factors that impede microbial decomposition are excessively wet or dry conditions, very high or low thatch pH, inadequate nitrogen levels and repeated use of chemical pesticides. Thatch accumulation is probably most severe with zoysiagrass and does require periodic renovations.

Chemical control

Except for St. Augustinegrass decline, diseases of warm-season turfgrasses are caused by fungi. Chemical control of these diseases is accomplished by using fungicides. However, chemical controls are all too often implemented without considering cultural controls or understanding the reasons behind disease development.

The next time you spray a fungicide, determine what else you can do to prevent or control disease development. We cannot afford to apply fungicides, or any pesticide, without understanding the reasons for the applications. We must explain our actions intelligently to the public-and emphasize the other actions we have taken to reduce a particular pest.

Fungicides do not eliminate the pathogens from the turfgrass area. They primarily suppress fungal pathogen growth to prevent them from infecting the plant when the environment is conducive for disease development.

Contacts and systemics

Turfgrass fungicides can be divided into

two broad categories based on the location of their activity: (1) contact fungicides and (2) systemic fungicides which include true systemic compounds and local-systemic compounds.

Contact fungicides, generally applied to the leaf and stem surfaces of turfgrasses, act as protective compounds. They should evenly coat the entire leaf surface. These fungicides remain on the plant surface. They remain active only as long as the fungicide remains on the plant in sufficient concentration to inhibit fungi. Leaves which emerge after the fungicide has been applied will not be protected. In addition, fungicide on the plant surface will be gradually lost due to mowing, irrigation, rainfall and decomposition.

Consequently, they are only effective for short durations, usually 7 to 14 days. To obtain optimum protection, contact fungicides should evenly coat the entire leaf surface and be allowed to dry completely before irrigating or mowing. Ideally, the turf area should be mowed and irrigated prior to a fungicide application to allow a maximum time interval between fungicide application and the next turfgrass maintenance operation.

In general, systemic fungicides have curative and protective activities with extended residual activity. Because systemic fungicides are absorbed by the plants, they "work" inside the plant to, (1) control pathogenic fungi which have already entered the plant and initiated a disease (curative action), and, (2) inhibit fungi that enter the plant from initiating a disease (preventive action).

Inside the plant, a systemic fungicide will not be removed by rain or irrigation, and newly emerged leaves may containsufficient concentrations of the fungicide to protect

them from fungal infection.

Systemic fungicides do not need to be applied as often as contact fungicides; usually 15- to 30-day intervals are adequate. Systemic fungicides usually have a very specific mode of action and do not have as broad a spectrum of disease control as contact fungicides. However, they will control both foliar and root/ crown pathogens. When attempting to control the latter, systemic fungicide should be watered into the rootzone immediately after application, since the majority of systemic fungicides are xylem-limited, i.e., they move in an upward direction in the plant. If these fungicides are only applied to the leaf tissue, the compounds may never reach their root target in the amount needed for control.

Local-systemic fungicides are capable of penetrating the plant surface, but only move very short distances within the plant and usually not within the xylem or phloem tissue. The majority of fungicide remainson or near the plant surface. Included in this group of fungicides are iprodione and vinclozolin. These fungicides are primarily protective in activity wheras the true systemic compounds have both curative and protective activities.

Preventing resistance

Fungicides are grouped according to their chemical properties. To prevent fungicide resistance from developing in a pathogen population, it is important to know which fungicides belong to the same chemical group or have the same mode of action. Fungicides should be periodically alternated or used in mixtures with fungicides belonging to different chemical groups to prevent fungicide resistance.

Trade names are not an indication of the chemical group. For example, alternating between Tersan 1991 (benomyl) and Fungo 50 (thiophanate methyl) does not mean you have alternated between chemical groups, as both fungicides belong to the same chemical group.

If you do not achieve disease control with a fungicide, make sure the disease was properly diagnosed and the fungicide properly applied before assuming that a fungicide resistant

strain has developed.

The number of documented cases of fungicide resistance is limited for warm-season turfgrasses. Turfgrass managers can keep it that way by exercising intelligent, prudent use of fungicides.

Monica Elliott is an assistant professor of turfgrass pathology at the University of Florida in Ft. Lauderdale.

26,978,000 DEGREES FAHRENHEIT.

The sun's scorching rays make an otherwise beautiful course downright nasty. People can hide from the sun's heat by taking a cool dip in the pool or with a cold drink in an air conditioned room. But your turf just lies there, unable to hide, subjected to the sun's pounding rays for an entire season.

The powerful summer sun can scorch your greens and ruin your fairways, not to mention what it can do to your reputation as a turf specialist.

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NoburN™ is not a quick fix product. It flocculates soil particles, loosening compacted soils for long term relief. Your heavily traveled tees and greens will benefit from the improvement in percolation.

Since NoburNTM is 90% organic, it is biodegradable in the soil and there is no problem with residue build-up. Come September when all is said and done, NoburNTM will make sure there was a lot more done than said.

So this summer don't let the heat get the better of you: beat the heat with NoburN™



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25 Science Park, New Haven, CT 06511 Please call us toll free at 1-800-342-6173 for further information Headline = sun's interior temperature according to Encyclopedia Britannica (1974 edit.)

Protecting your wheel loader investment

It is a critical player on many jobs, as well as a major investment. That is why adhering to a consistent wheel loader maintenance routine makes smart business sense for both equipment operators and owners.

"Only a few minutes of operator attention at each shift will keep wheel loaders performing at peak efficiency," says Jerry L. King, wheel loader service manager at JI Case. "Coupled with performing the regularly-scheduled maintenance tasks like filter and oil changes, the efforts result in a greater return on equipment investment and productivity."

Here are the basics for a routine inspection, and some suggestions on scheduled maintenance:

Fluid and oil

Checking fluid and oil levels are the most important elements of a daily inspection.

The traditional method to check levels is with a dipstick, although there is a trend toward sight glasses, which make inspections easier and help avoid dust contamination.



Wheel loader joints need lubrication every 1,000 hours.

Regular engine oil change intervals are recommended at 250 hours. Burned oil often means the engine is operating at higher temperatures than it should. This calls for an immediate inspection by a certified mechanic.

Oil analysis programs like Systemgard from Case offer a more thorough critique. Periodic oil samples are sent to a lab where technicians analyze it to determine engine wear.

Hydraulic oil should be drained and replaced every 1,000 hours—sooner if the machine is operated in very dusty conditions. Simultaneously, the hydraulic oil filters should be replaced, and the suction screen should be cleaned.

When checking transmission fluid,

pay close attention to different level requirements for cold and warm fluid, as listed in the operator's manual.

Additionally, brake fluid should be checked before each shift.

A quick radiator examination will indicate if it has been damaged during the previous day's op-

eration. In most models, coolant bottles are conveniently visible and can be checked in the daily walkaround.

Both primary and secondary fuel filters should be replaced every 500 hours—sooner when working in extremely dusty conditions.

Every 50 hours, the fuel sediment bowl should be checked and cleaned if necessary.

Some wheel loaders have a light in the operator compartment that indi-

> cates air filter restriction. Filter elements do not need to be disturbed until the warning light comes on.

With dualstage cleaners, the primary filter can be removed and checked for tears, perforations and excess dirt. If cleaning is necessary, use compressed air at

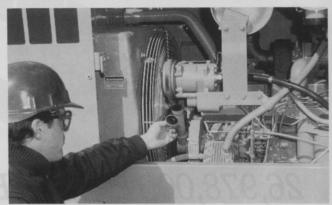
30 psi maximum and wash the element as directed in the operator's manual. The secondary filter should not be disturbed until replacement.

Always change both primary and secondary filters after one year maximum, or after the primary filter has been cleaned three times.

Most air systems have a tank to collect moisture that should be emptied at the end of each shift, minimizing the changes of moisture entering the entire system. Units equipped with air dryer systems require element replacement every 12 months.

Grease points

Some wheel loaders have drive lines with "lubed for life" universal joints



An oil analysis program could reveal engine problems.

that do not require regular greasing. If the drive line is not sealed, this grease point should be lubricated with the appropriate grease according to the maintenance schedule.

The center articulation and slip joints should also be checked and greased according to intervals specified in the operator's manual. While inspecting the center joint, check the hoses that route through to insure they are clean, properly spaced and not damaged.

Outside maintenance

Pivot points on loader arms also need regular greasing with a proper lubricant, such as molydisulfide. The operator should also look for any damage to the cylinders and hydraulic plumbing at this time.

Check the bucket's cutting edge for damage that might impair operation, and inspect teeth to insure wear limits have not been reached.

Because they are reliable and long lasting, tires are often neglected in routine inspections. However, they should be checked regularly for wear, punctures or cuts that can weaken tires and cause blowouts.

When new tires are installed or wheels are removed, check the torque on all lug nuts for tightness after 20 hours of operation. Monthly, or every 250 hours, give the tires and wheels a complete inspection.

With the unit running, check windshield wiper and its fluid level.

On engines with turbochargers, idle them for a few minutes before any shutdown. This extends equipment life by giving the turbocharger time to cool down.

"Although the number of elements to check may make a walkaround seem like a time-consuming task, it truly does become a routine that can be completed in just a few minutes," King says. LM

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So if your power equipment

could use a little peace and quiet, consider the soothing sound of a

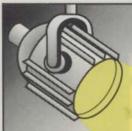
Sovereign OHV from Wisconsin Robin.

It's good news for eardrums everywhere.

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More power to you.

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Products to control aquatic weeds

Control of aquatic weeds-those in ponds associated with golf courses and/or finely-manicured lawns and landscapes—can be obtained in numerous ways. Control products for the green industry include aquatic herbicides, aerifiers and harvesting machines. Here is a sampling of some:

Aquatic herbicide works on toughest weeds

Sonar aquatic herbicide from DowElanco selectively controls tough weds such as hydrilla, milfoil and duckweed, and leaves desirable vegetation alone.

One application lasts one year or longer. The company says Sonar is ideal for ponds, lakes, reservoirs and canals.

During a typical treatment season, it takes 30 to 90 days for Sonar to work. Susceptible plants absorb Sonar through their leaves and shoots, and from the hydrosoil by way of the roots. Within seven to 10 days, weeds bleach due to chlorosis. Sonar won't restrict swimming, fishing or drinking, even immediately after application, according to DowElanco.



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Aeration system proves effective against algae

Toro Company announces the AIRE-O2 pond water aeration and circulation system which is designed to quickly attack algae infestation.

The quiet system is suitable for irrigation canals and ponds and goes to the source to eliminate algae buildup which can lead to odor, clogged filters and sprinkler heads and piping problems.

The device injects and mixes atmospheric oxygen in a horizontal pattern into the water at a high speed.



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Growth regulator controls by light

Aquashade aquatic plant growth regulator controls development of weeds through light control.

Aquashade is simple to use. It has been proven for 19 years to be effective, without harm to humans, fish, wildlife, cattle, or to turf and agriculture commodities.

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Herbicide manages wide weed spectrum

Diquat successfully manages a wide variety of water weeds. A highly-



active, water-soluble contact herbicide, diquat provides superior

control over pennywort, salvinia, water hyacinth, water lettuce, bladderwort, coontail, elodea, naiad, pondweeds, duckweed, cattails and algae.

Due to its low toxicity to fish and other aquatic organisms, diquat has the added advantage of unrestricted fishing following application. Diquat also will not contribute to groundwater pollution, according to Valent

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Aerator comes with new, enhanced float

The RainJet Aquavator floating aerator comes with a new and enhanced float that provides: im-



proved stability, lower profile and overall size reduction.

The float now sits lower in the water for a more natural fountain effect. Fountain patterns are now also more consistent and function at maximum performance heights.

The Aquavator is designed for use on ponds or lakes at golf courses as a retention basin, or general waterscape on commercial sites. It helps condition water, preventing algae build-up, especially during the hot summer months.

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