

blade (spring trip, hydraulic lift, replaceable skid shoes), a cab enclosure (windshield, electric wiper), a 60"-wide polypropylene brush, a heater/defroster, and a headlight set.

Circle No. 303 on Reader Inquiry Card

Deere & Company's array of snow removal equipment is extensive with blades, snow blower, snow thrower, and brush attachments available for practically every John Deere tractor (including lawn & garden tractors) and its front mowers, too. Tractor enclosures, loaders, and eight different walk-behind snow blowers add to Deere's winter equipment offerings. Deere's two 8- and 10-hp snow blower models have worm-gear drive, adjustable locking differential and cutting widths to 32".

Circle No. 304 on Reader Inquiry Card

Excel extolls the superior maneuverability of its Excel Hustler out-front rotary mower. Attachments include a dozer blade, a V-blade, rotary broom and heavy-duty snow thrower. Tire chains, wheel weights and rear weight kits are also available. For operator comfort and safety, the Excel Hustler offers ROP structures and cab enclosures.

Circle No. 305 on Reader Inquiry Card



Frink manufactures snow plows, wings, spreaders and truck bodies. Its Super Trac Revers-A-Cast Trailblazer plow fits on a pickup. Its 9-foot-long moldboard can be reversed 30 degrees left and right. Polymer moldboard repels ice and snow, and is corrosion resistant.

Circle No. 306 on Reader Inquiry Card

Gravelly's snow removal equipment includes 40" and 48" two-stage snow blowers, a 44" power brush, and a 48" snow dozer blade. These attachments are available for the Gravelly Professional-G Series riding tractors.

Circle No. 307 on Reader Inquiry Card

Polaris ATVs (all-terrain vehicles) can be fitted with optional 48" or 60" snow plow blades. Polaris ATVs have no gears but are equipped with the Polaris Variable Transmission which matches torque or speed to the job.

Circle No. 308 on Reader Inquiry Card

Simplicity Manufacturing's attachments for its lawn & garden tractors include a 42" snow blade, a 36" snow thrower, a snow cab, tire chains and wheel weights. Also, Simplicity offers five different, 8- and 10-hp, walk-behind snow throwers,



including 28"-clearing Model 870 and the 32"-clearing 1080. Both these models feature Power Boost that allows the operator to work at maximum power at all times.

Circle No. 309 on Reader Inquiry Card

Snapper's Model 10303 is a full-size, two-stage snowthrower that clears 30" wide in one pass. Like all Snapper models, this unit's multi-directional chute moves snow where you want it. This model has a 10 hp engine. Six-speed, on-the-go shifting lets you gear down for the heavy stuff.

Circle No. 310 on Reader Inquiry Card

Steiner Turf offers 48" and 60" Power Angle Blades, 49"-wide, two-stage snow blower, and 54-inch wide rotary sweeper as attachments to its line of 2- and 4-wheel drive turf tractors. The attachments can be installed and removed in two minutes or less.



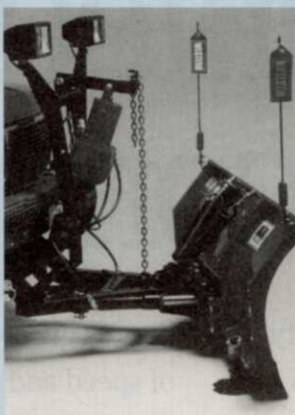
Circle No. 311 on Reader Inquiry Card

Thomas skid steers can be fitted with a "quick-tach," hydraulically powered, two-stage snow blower or, for lighter snows, a 72" angle broom.

Circle No. 312 on Reader Inquiry Card

The **Toro Company** offers a full line of walk-behind snow throwers. Its Power Shift 38570 has an 8-hp B&S engine, and like several Toro models, comes with adjustable traction wheels that allow more weight to be put on the auger. Accessory kits include: light, chain, drift breaker, 110V electric start, cab, 30" grader blade and skids.

Circle No. 313 on Reader Inquiry Card



Western Products' UniMount System allows quick and easy removal of a Western Snowplow from the front of a truck. Four pins and two electrical plugs are all that's needed to attach or remove the UniMount System. Western's hopper-type sand and salt spreader is a self-contained material spreader for ice control on driveways, roads, parking lots and sidewalks. Mounts easily on pickup, dump or platform trucks.

Circle No. 314 on Reader Inquiry Card

York Rakes now offers a line of rotary brooms. The YB32 mounts to a standard 3-pt. hitch tractor and requires a PTO running at 540 RPM. A hydraulically driven 3-pt. hitch model is also available. The Model TFB328 mounts to a trucks' snow plow hitch frame and is powered by a hydraulic motor hooked to the truck's hydraulic system.

Circle No. 315 on Reader Inquiry Card



Patented 2-pedal drive compacts a pretty

Unlike many compact utility tractors, the John Deere 55 Series won't leave you stranded in the clutch.

That's because our 55's are truly shiftless.

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ve makes John Deere y, shiftless bunch



Patented 2-pedal hydrostatic drive gives you control of speed and direction. Left pedal controls forward, right pedal reverse. Center pedal is a brake that returns tractor to neutral when depressed.

blower, for example) in five minutes or less, without tools.

And you can use the mower, loader, or tiller, without having to detach either of the other two — true implement compatibility.

Make the switch to shiftless. See your dealer for a no-hands demonstration. Or for more information, call 1-800-544-2122.

Circle No. 113 on Reader Inquiry Card



**NOTHING RUNS
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Six steps for wildflower success

■ The right reasons for establishing wildflower areas in the landscape:

● Once established, they require less care and watering, and virtually no fertilizing or trimming.

● Typically, they're mowed just once, when their color fades at the end of the season.

● But of course, the biggest reason is beauty, often year after year.

These virtues make wildflowers well suited for golf course roughs, highway medians and roadsides, hill-sides and, increasingly, in and around industrial/commercial properties. Even homeowners are looking at wildflowers with fresh enthusiasm. Homeowner sales jump when the public sees wildflowers along a highway or at a golf course.

But some people have the mistaken belief that all you have to do to establish wildflowers is scatter or plant the seeds and let them take care of themselves. Usually, they won't. Wildflowers do not compete well against weeds.

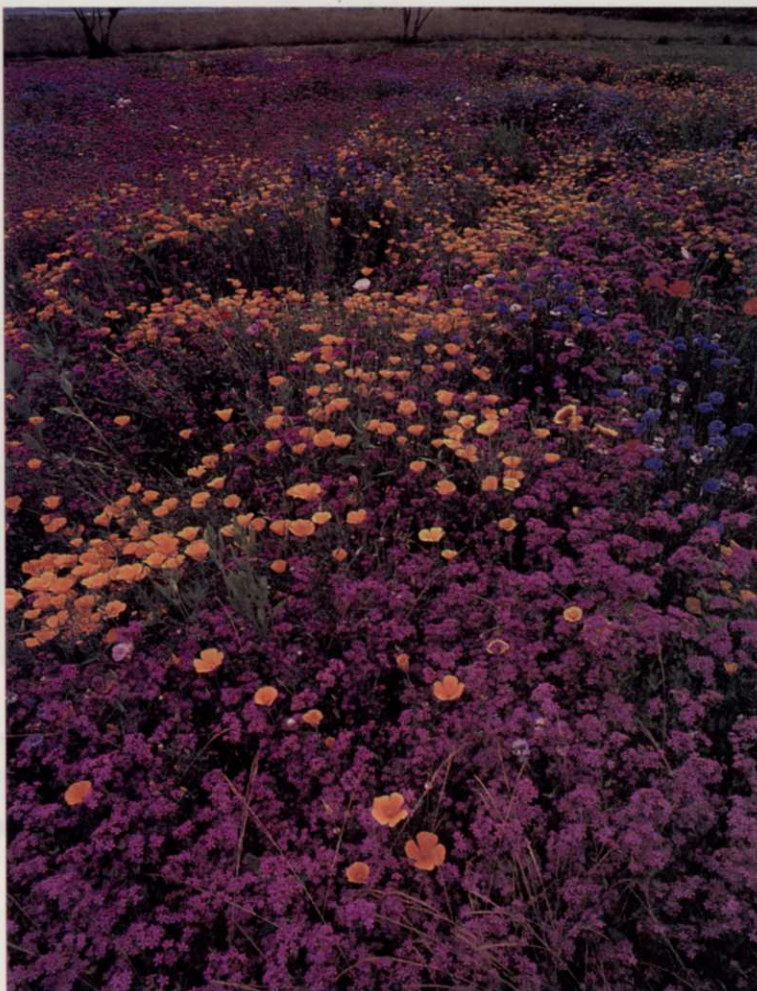
Quite simply: plant a wildflower area as thoughtfully as you'd plant any other type of garden.

1) Site selection—

Wildflowers perform best in moderately fertile soils with good moisture-holding capacities. Don't expect wildflowers to prosper in areas that won't support other types of vegetation.

2) Planting times—Rainfall and climate determine planting times, but generally it's best to plant in either the spring or fall. In cold climates, if you plant in the fall, plant late enough so seeds won't germinate. In mild climates, fall plantings give annuals a head start the following spring. Moisture for four to six weeks after planting is critical regardless of the climate.

3) Weed control—Remove existing weeds by tilling, pulling or using a general herbicide. If weeds are numerous you might need to remove the weeds, irrigate the area to germinate weed seeds on or



Wildflowers need less care and watering, and virtually no fertilizing or trimming.

near the surface, then kill/remove this next crop of weeds. In fact, you might have to do this several times.

4) Soil preparation—Prepare a loose seed bed or, if this is impossible, at least scarify the top surface of the soil. Cover the seed by $1/8$ to $1/4$ inch of soil by raking the area lightly. Caution: don't cover the seed too deeply.

5) Rainfall & irrigation—If your area gets at least 30 inches of rainfall per year, you'll probably have to irrigate only in

drought emergencies. If you get less rainfall, you'll have to irrigate more often; about $1/2$ inch per week is the rule.

6) Maintenance—Weed and irrigate as needed, particularly as the wildflowers become established. Some landscape managers mow their wildflowers in the fall. Also, it may be necessary to re-seed a wildflower area for a year or two, at about half the original seeding rate. Perennial wildflowers usually take two to three years to attain their full growth.

(For more immediate wildflower results, a relatively new product is pre-established wildflowers, wildflower "sod," on 5-sq.-ft. mats, plants that have already been grown to about 3 inches high. Denver-based Wildflower Carpet, Inc. says it's establishing dealers across the country to pallet-ship "carpet" from growers directly to users. Cost, of course, is greater than seeding.)

Technically speaking, many wildflowers aren't so wild anymore. Many species are now grown in fields like other seed crops, but usually on a much smaller scale. Some wildflowers are prolific seed producers, others aren't. Weather and market conditions also influence the availability (and price) of specific wildflower seed.

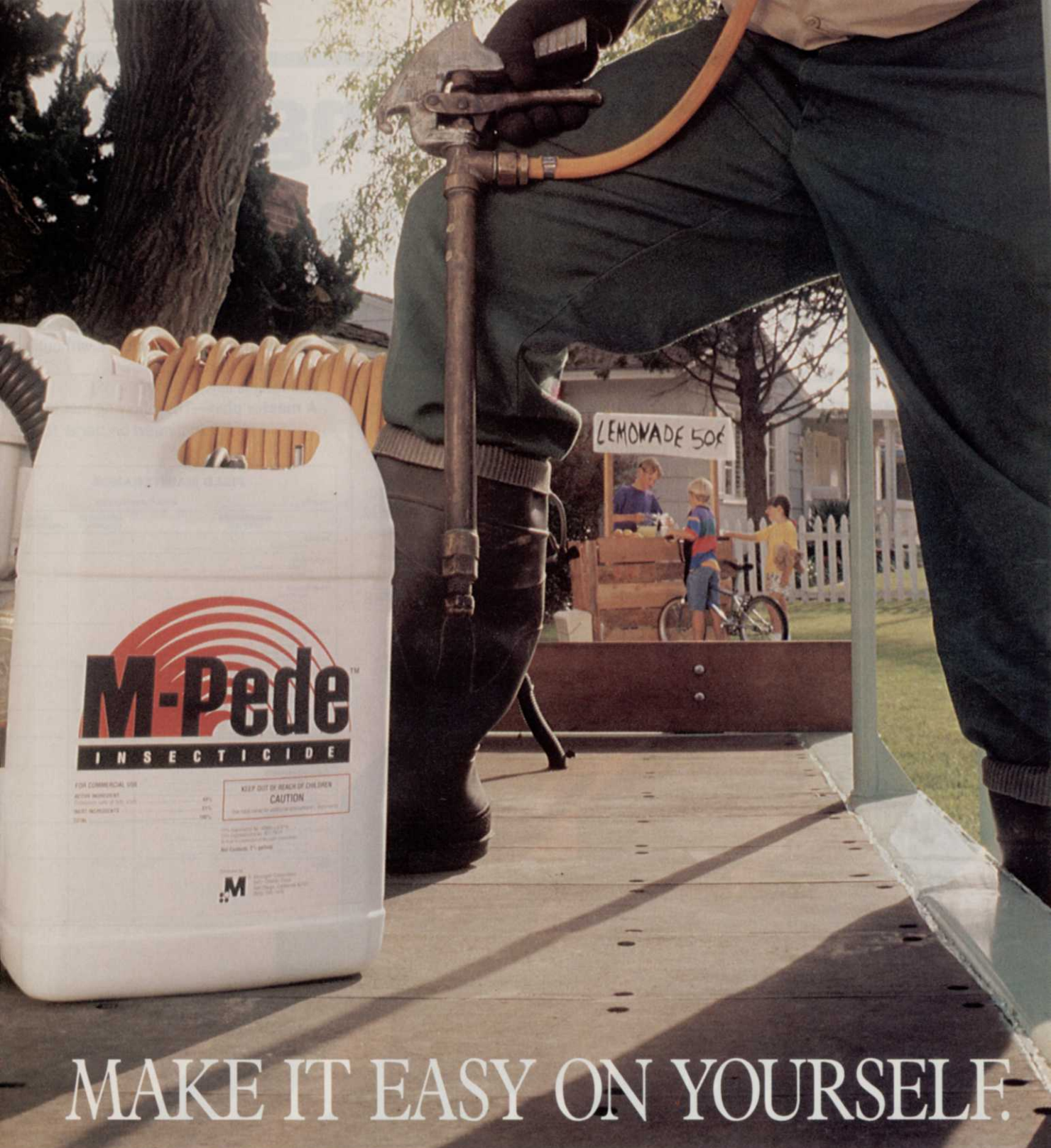
Wildflower seed producers and suppliers now offer an astonishing selection of bloomers.

The most natural and long-lasting displays result from mixtures of annual and perennial species that are well-adapted to local growing conditions.

Most suppliers can recommend appropriate, if not entirely native, seed mixtures for every area of the country. In many cases, they're also able to custom blend wildflower seed to meet specific customer demands.

For more information about wildflowers, write: National Wildflower Research Center, 2600 FM 973 North, Austin, TX 78725-4201; or phone (512) 929-3600.

(Bloomers Wildflower Mixture from Turf-Seed Inc. Photo by Larry Kassell.)



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Scheduling field maintenance

Segregating parts of the total landscape into different maintenance areas helps prioritize needs.

by John Anderson

■ Wouldn't it be great if, year after year, the same field management program produced perfect results? If it were only so simple. But from one year to the next,

changes in cultural practices are necessary to achieve the desired results.

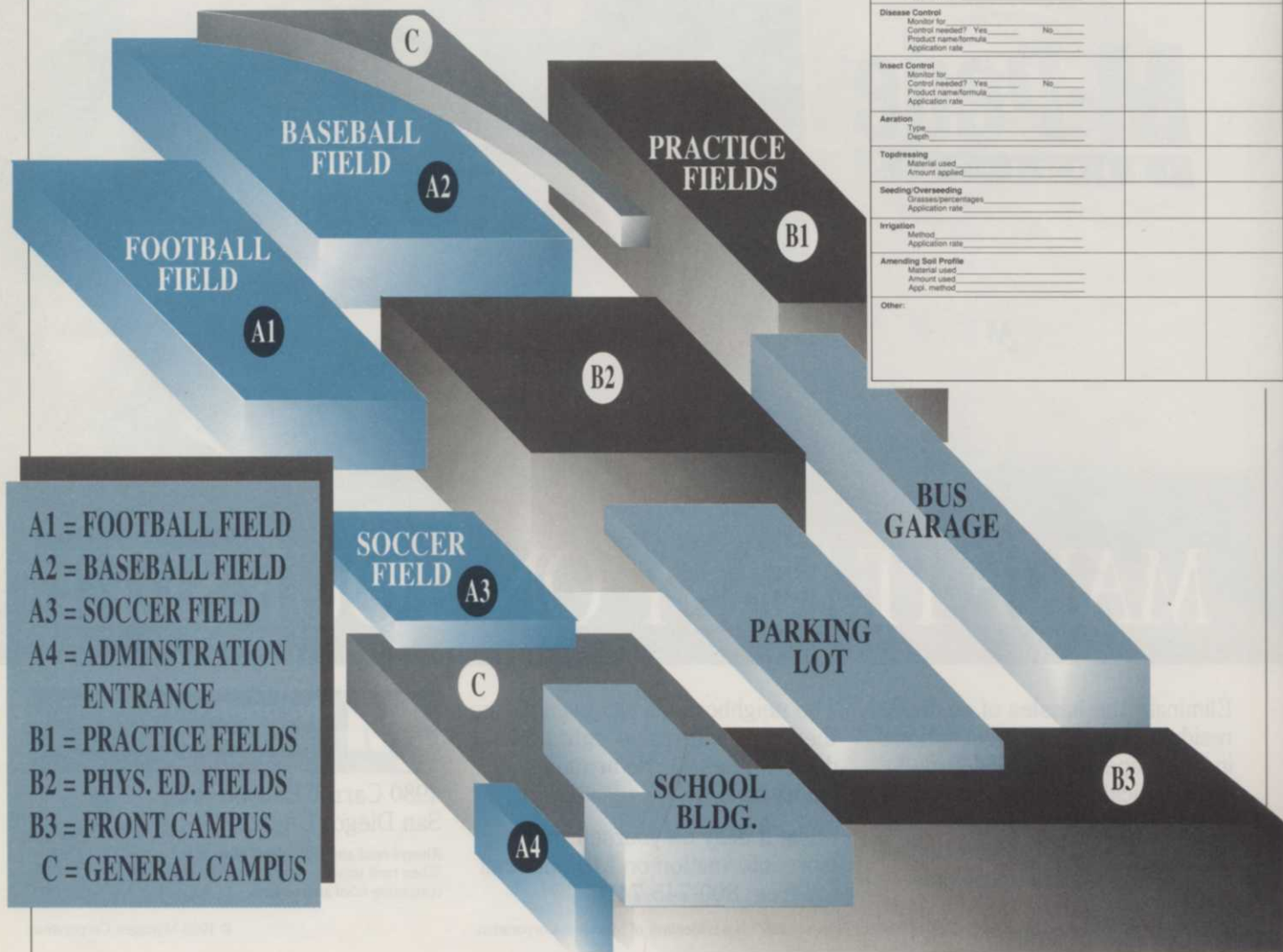
Varying circumstances from outside forces—like weather conditions, degree of use and budget restrictions—may drive certain changes. Other changes are instigated in response to updated research, improved equipment and products, or analysis of past program results.

It takes the expertise of a trained professional to develop a schedule of field maintenance to deal with all the variables. The ability to adjust and manipulate management practices is key to achieving the desired results. Planning a year-long

schedule, rather than just a seasonal one, allows for program adjustments that can be adapted to changing conditions without losing sight of the overall plan.

Planning is key.

A master plan—The following method *continued on page 18*



FIELD MAINTENANCE			
MONTH	AREA CLASSIFICATION		
	MAINTENANCE PRACTICE	SCHEDULED FREQUENCY	DATE(S) PERFORMED
Mowing	Height of cut, _____		
Fertilization	Product name/formula _____ Application rate _____		
Weed Control	Monitor for _____ Control needed? Yes _____ No _____ Product name/formula _____ Application rate _____		
Disease Control	Monitor for _____ Control needed? Yes _____ No _____ Product name/formula _____ Application rate _____		
Insect Control	Monitor for _____ Control needed? Yes _____ No _____ Product name/formula _____ Application rate _____		
Aeration	Type _____ Depth _____		
Topdressing	Material used _____ Amount applied _____		
Seeding/Overseeding	Grasses/percentages _____ Application rate _____		
Irrigation	Method _____ Application rate _____		
Amending Soil Profile	Material used _____ Amount used _____ Appl. method _____		
Other:			



Howard Mees, Vice President/Regional Manager-Environmental Care. Full-service lawn maintenance company operating in six states.

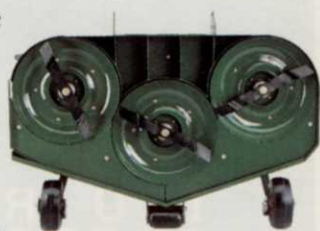
A down-to-earth approach to mulching

"Mulching is a practical solution to grass clipping disposal. But you have to do it right to get the most out of it. That's why we're satisfied with Ransomes Bob-Cat Versadeck™ mulching mower. It not only chops the clippings multiple times, but the Versadeck returns them to the soil where they promote healthy, vigorous grass. In addition to benefiting the lawn, mulching reduces the stress placed on landfills.



"Before we bought our Ransomes Versadeck mulching mowers, we

tested units from all the major manufacturers. What we discovered is the Versadeck has a high deck design that allows the clippings to be drawn up and chopped several times before they are forced to the ground where they decompose. Because of the fine cut, we don't have a problem with clumping. And, for those times when we can't mulch, the Versadeck can be converted to a side discharge mower."



For more information on the benefits of mulching or the Ransomes Bob-Cat Versadeck mulching mower, call 1-800-228-4444.



RANSOMES

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of developing a master plan is adaptable for any site. Classify your grounds into areas according to their maintenance requirements. Set up as many areas as you feel are necessary to work out your plan. Consider these five major factors in determining the classifications:

1) What level of use do the grounds receive? How many people go through the area? What type of use occurs there? How often is it under use?

2) What quality level do you wish to achieve? What degree of maintenance will be required to maintain field playability with anticipated use? How often and by whom is the area seen? What are the quality expectations of users, coaches and athletic directors, owners or management, spectators?

3) What level of management do the plants require? What are the seasonal needs of the various turf species under

anticipated use? Are there any potential problems that may be triggered by unusual weather or heavier use? What about specific problems or major maintenance tasks for ornamentals?

4) What are the site conditions? What soil type or types are involved at each site, including skinned vs. grassed areas? What effect does site location have on climatic conditions (e.g. windswept field, full sun, etc.)? What drainage and irrigation factors are involved?

5) What kind of budget is available? What is the staff level and experience of the labor force? What equipment is available (on-hand or lease/loan)? How much of the budget is for supplies?

After looking at these factors, separate your sites into areas of management (see illustration), then create a program specific to the needs of each classified area.

Specifics—Look at the tools available in terms of cultural practices, and determine to what extent each will be needed for each classification. For example, cultural practices available for turf include: mowing, irrigation, fertility, pest control, aeration, seeding, topdressing, amending the soil profile, etc.

Plan soil tests so that results will be available to formulate the most effective fertilization program for each site. Note trouble spots that will require special attention or eventual renovation. Set up a monitoring schedule for pest problems so that control products will be used as needed to deal with target organisms specifically. Consider the effects of each practice in relation to overall site conditions.

Once you have established what work each site needs done, the next step is to schedule when the work should take place. This is determined by the five factors (above) used in separating areas.

Breaking the calendar into two-month groups allows you to formulate a flexible program, but keeps the goals in a manageable but defined time frame.

The last process of the year is to evaluate the strengths and weaknesses of the program. Winter is no hibernation period: even if the weather keeps everyone off the fields, the time is highly productive. It's ideal for analyzing what went right or wrong the previous growing season, and developing a strategy to improve and refine the program.

—The author is account representative for Arthur Clesen, Inc., Wheeling, Ill. He has 15 years experience in the turf industry, and is a member of the national Sports Turf Managers Association and its Midwest Chapter.



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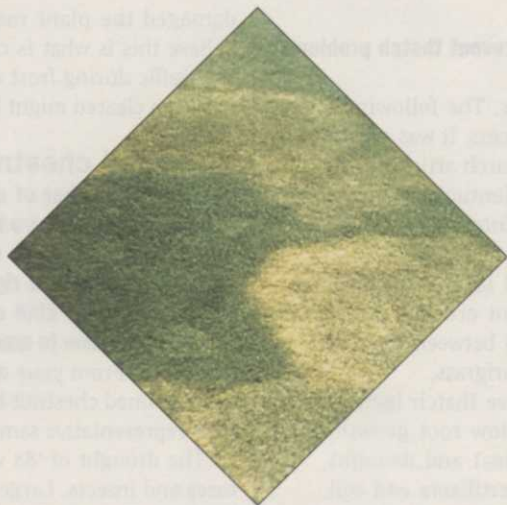
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Circle No. 126 on Reader Inquiry Card

It's tougher on your course than a foursome of hackers.
And slows down play even more.



Brown patch

A bad case of Brown patch can turn even the most avid golfers away from your course.

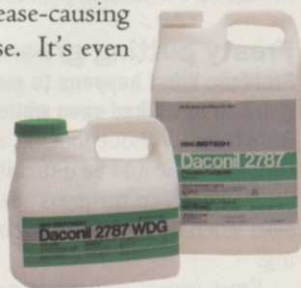
That's why you need the superior protection of Daconil 2787® Flowable Fungicide or WDG Fungicide from ISK Biotech Corporation. They control tough summer diseases like Brown patch on all Northern area grasses — including Bentgrass tees, greens and fairways.

And when you use Daconil 2787, you get effective, broad spectrum control of 17 other disease-causing organisms. That includes those that cause Melting out, Dollar spot, Leaf spot and Anthracnose. It's even registered for effective control of *algal scum*. Plus, use Daconil 2787 as recommended on your ornamental plantings and plant beds to control disease.

This summer, make Daconil 2787 the most important component in your turf management program. For disease resistance management, it's hard to beat. Daconil 2787 protects your turf from disease, and leaves the damage to all the golfers you'll attract.

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Nothing performs like Daconil 2787. Nothing.



ASK THE EXPERT

DR. BALAKRISHNA RAO

Earthworms and thatch

Problem: Does earthworm activity help prevent thatch problems? (Mich.)

Solution: We get these calls every year. The following article might be useful in understanding the process. It was excerpted by Dr. Douglas L. Caldwell from several research articles by Dr. Dan Potter and others at the University of Kentucky, particularly a report from the *Journal of Economic Entomology* (1990.83-1: 205-11).

Thatch is a tightly intermingled layer of decomposed roots, rhizomes, stolons, plant crowns, stems and organic debris that accumulates between the soil surface and the green vegetation in turfgrass.

Problems associated with excessive thatch include reduced water infiltration and shallow root growth, which increases vulnerability to heat and drought stress and restricts penetration of fertilizers and soil insecticides. Thatch may also encourage insect and disease problems and weed encroachment.

Many invertebrates, including earthworms, are important to plant litter decomposition and nutrient recycling in soils. They enhance decomposition by fragmenting and conditioning plant debris in their guts before further breakdown by micro-organisms.

Earthworms, in particular, affect the chemical and physical composition of soils by pulling down and mixing organic matter into subsurface layers, enriching and humifying the soil with their excreta and disseminating bacteria and fungi.

Dr. Potter summarized his research by stating, "Our results show that earthworms perform a function similar to topdressing by rapidly incorporating soil into the thatch matrix, as well as dispersing organic matter to subsurface layers, and by creating a micro-environment that enhances a microbial decomposition."

Therefore, avoid applying Sevin, Turcam or benomyl to lawns with thatch, as these chemicals are particularly toxic to earthworms. Dylox, Oflanol, Rubigan, Bayleton and 2,4-D have little impact on earthworm populations.

Frosty putting greens

Problem: What happens to make the grass on a putting green die if driven or walked upon while a frost is on the ground? (Va.)

Solution: Without looking at the problem areas and suspected turfgrass, it would be difficult to explain the reasons for turfgrass death. However, turfgrass affected with frost can be severely damaged when driven or walked on due to blades and/or tillers breaking.

Frost causes vegetative parts to become stiff and brittle, and they break easily. This is a stress and can also serve as a potential site for many low-temperature basidiomycete fungi to colonize. Some of these can establish and cause snow mold disease.

Frost injury can also injure or kill the exposed crown. Since the crown is the only perennial part of the grass plant, once it is

damaged the plant may not green up the following spring. I believe this is what is causing the grass to die. Perhaps avoiding the traffic during frost or delaying the traffic until after the frost has been cleared might be helpful.

Two-lined chestnut borers

Problem: A number of our oak trees are showing severe decline and dieback. Some are already dead. We found small holes on the branches and, in some cases, a few slender-bodied insect larvae about 1/2-inch long in zigzagging tunnels in the inner bark. Could you tell me what kind of problems we may be dealing with, and what can be done to manage these? (Mich.)

Solution: From your description, you are probably dealing with the two-lined chestnut borer. However, for positive identification, send representative samples to your local extension service.

The drought of '88 weakened many established plants to diseases and insects. Large oak trees have been severely damaged by borers such as the two-lined chestnut borer. I believe the slender long larvae you have found is related to this borer.

Two-lined chestnut borers primarily attack oaks weakened by drought, defoliation, diseases like anthracnose, and other stresses. Extensive feeding damage by chewing insects like gypsy moth, forest tent caterpillar or cankerworm also can severely weaken and stress the plants. The larvae kill the trees by constructing galleries, primarily in the phloem. Affected trees initially will show wilting and brown leaves in upper parts of the crown. They usually die after two to three years of repeated borer infestation.

Seeing "D"-shaped holes, the adult emergence holes, is a good indication of two-lined chestnut borer activity. When you see these holes and wilting leaves, it is too late.

Quite often, trees may get oak wilt disease caused by fungi because of extensive weakening and stress. It is not uncommon to find both problems on the same tree.

If the problem is related to borers, promptly remove and discard affected trees. Natural control using predators such as woodpeckers to feed on overwintering larvae may be useful. Minimize leaf-chewing activity by using microbial pesticides such as Bt or traditional pesticides such as Sevin. You may practice a cultural approach by using trap trees to attract adult borers. In this case, girdle living trees in spring, preferably the trees already infested. Adults will lay eggs on these, but larvae will die because the trees become very dry. Another method is to cut infested trees in the summer so that the larvae will die due to rapid drying of the cambium.

For positive identification and management guidelines, contact your extension office.

Dr. Balakrishna Rao is Manager of Research and Technical Development for the Davey Tree Co., Kent, Ohio.

Mail questions to "Ask the Expert," LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130. Please allow two to three months for an answer to appear in the magazine.