



The fans never see the varied mowing techniques necessary to keep the turf healthy.

Food is manufactured by a complex series of processes known as photosynthesis. Energy provided by sunlight causes carbon dioxide and water to combine and form the food source for the plant. The food is used by the plant to produce energy and build cells and tissue. Energy is required for plant growth and development. The release of energy is the result of a process known as respiration. In turf management, respiration results in growth. A balance between fuel production (photosynthesis) and fuel consumption (growth via respiration) must be maintained and is critical when developing mowing and other management strategies (see table 1).

TABLE 1

Factors that encourage excessive respiration

- Over-fertilizing with nitrogen
- Mowing
- Wear, insects and diseases
- Mid-summer conditions
- other versions shows Mowing, wear and disease together as the second bullet point

Factors that limit photosynthesis

- Close mowing
- Water and temperature stress
- Soil compaction

Mowing

The mowing schedule will be determined by many factors, including the geographic location of the field, the turfgrass species, the sports played on the field, the team schedule, staff availability, height of cut and weather conditions. At Notre Dame I would meet with coaches, study team schedules, assess the weather conditions, analyze

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David Mellor has designed more than 1,000 striping patterns for sports fields, home and corporate lawns and golf courses. Shown is a picture of Frontier Field in Rochester, N.Y., taken in July 2000 at the Triple A All-Star game where Mellor worked with the crew to create this dazzling design.

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existing turf conditions and efficiently schedule mowing into the mix. This could involve mowing on weekends, early in the morning, late in the afternoon and even under the lights at night if necessary to produce the best results.

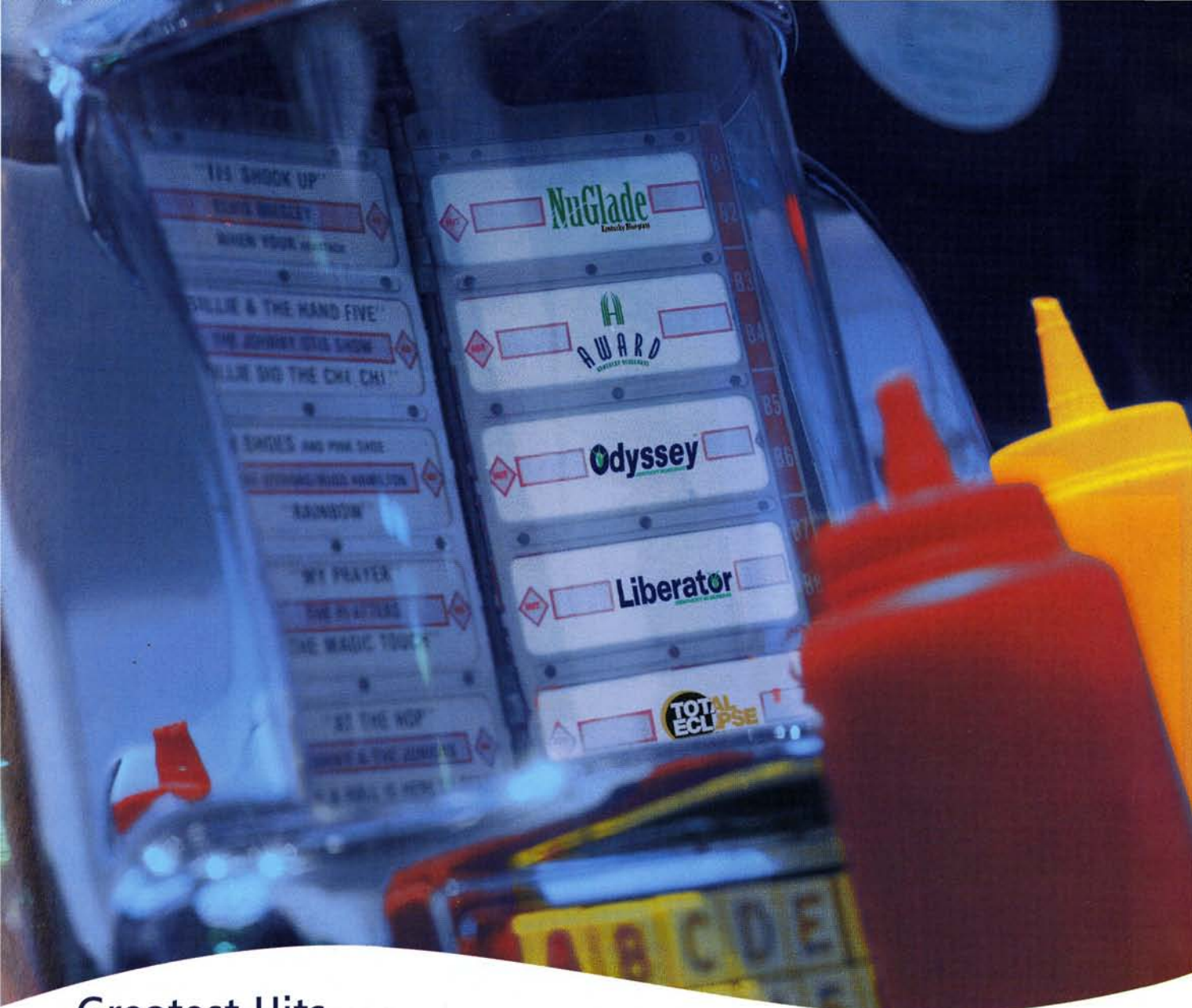
The selection of the most appropriate height of cut is influenced by each grass species' or cultivars' recommended mowing height range. This height is determined by the growth habit of the species (see table 2). The cardinal rule is to cut

no more than 1/3 of the grass blade at one time, and remember, grass grows back after mowing because the growth tissue or crown is located beneath the path of the mower blade or reel. The tissue that is cut off is the oldest part of the leaf.

Anytime the grass is mowed it is injured. These injuries provide a place for disease-causing fungi and other pathogens to enter and infect the plant. Mowing with dull blades or reels will cause damage to leaf tissue, causing the wound to heal more slowly; therefore, repeated mowing with a dull blade seriously weakens the turf.

It is important to cut the grass in a different direction each time it is mowed. Turfgrass tends to grow or lean in the direction it is mowed. Repeatedly mowing in the same direction can cause it to grow horizontally creating a microclimate conducive to diseases, insects and excessive thatch accumulation. One exception, though, is grass that is intentionally mowed in one direction to prepare field striping patterns for a big game or major event.

continued on page 24



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TABLE 2

The following chart lists various grass types and the optimum height of cut for each species.

Cool Season—

Grass type

Kentucky bluegrass

Annual bluegrass

Perennial ryegrass

Tall fescues

Cool season species grow quickly in spring and fall, but slowly in the summer.

Optimum Height of Cut

1 - 2 1/2"

1/4 - 1"

1 - 2-1/2"

1-1/2 - 2-1/2"

Warm season—

Grass type

Bermudagrass

St. Augustine

Zoysiagrass

Warm season species grow best in hot weather.

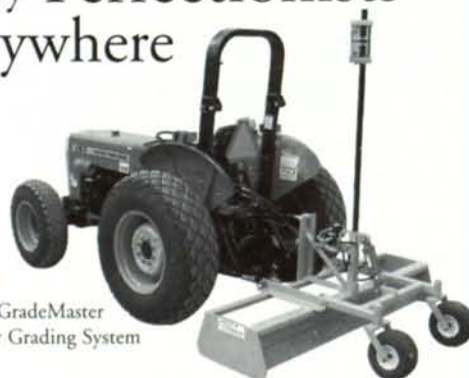
Optimum Height of Cut

down to 1/8"

down to 3/4"

down to 1/4"

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Field Demands

The main goal of a turfgrass manager is to give coaches, players and fans what they want—safe, playable and aesthetically pleasing fields, especially if the game will be televised. The turfgrass manager is particularly challenged when maintaining a multiple use field. Many venues are used for football and soccer in the fall and lacrosse and/or field hockey in the spring. Picnics and barbecues are common and some are used for marching

band practices. Then there is the ultimate field demand, although I personally have never had to endure one—a rock concert in the middle of summer when the turfgrass is already under stress and the playing season is a month away!

Field Aesthetics with Rotaries and Reels

Each sport has different objectives when it comes to mowing heights and aesthetics on the field. Baseball infields are sometimes mowed shorter than the outfields and field hockey and soccer generally prefer shorter heights of cut than football, rugby or lacrosse. Baseball and soccer have led the pack with interesting field striping patterns. Striping can be accomplished with rotary or reel mowers, although reel mowers are used more often for the task. Reel mowers are equipped with a full roller behind the cutting unit to lay the grass down and provide the grain necessary for the pattern.

Rotary mowers have blades that rotate horizontally at high speeds. They lay the grass down slightly but

do not provide as much grain as reel mowers unless they are equipped with a full roller. The sharpened edges at the ends of the blades cut off leaf tissue by impact. Rotaries will cut from 3/4 to 4 inches. Reel mowers, in contrast, have blades attached to a cylinder, which is the reel. As the reel rotates, leaves are pulled against a sharp bedknife and cut off. The blade and the bedknife create a scissors-type cutting action leaving a clean cut, which heals quickly. Reels can cut from 1/8 to 2-5/8 inches although quality of cut decreases above 2 inches. Rotary and reel mowers each have qualities for specific situations.

Reel mowers provide a consistent, higher quality of cut, particularly at lower heights. The scissors cutting action is better for the health of the plant, when the reels are kept sharp. The key aspects of reel mowers are the precision cut they deliver and the excellent pattern or striping on fields.

Rotary mowers are more versatile at higher levels of cut. Some new rotary mowers have a full roller behind the deck to provide field patterns. Rotary mowers are generally less maintenance intensive than reel mowers and are highlighted for their productivity.

Striping has become more than a way to mow grass. It has become a scientific art that can enhance the big event or ball game. David Mellor, director of grounds for the Boston Red Sox (and previously assistant director of grounds for the Milwaukee Brewers) is author of *Picture Perfect, Mowing Pattern Techniques for Home Lawns, Landscapes, Athletic Fields and Golf Courses* soon to be published by Sleeping Bear Press/Ann Arbor Press. In his book, one of the pictures he included is of a Toro Groundsmaster(3500-D as a new rotary mower that can be used for striping.

The great debate will continue. Some turfgrass managers will only use reel mowers, some swear by rotary mowers and others will use a combination of both. The goal is to determine the grass type, desired height of cut and the sport played on the field to make the grass optimum for the situation. With all these things considered, you will score points with the coaches, the players and the fans.



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Table 3

Bottom line considerations—criteria for the selection of the mower

Quality of cut: Always use the equipment that will give the best quality of cut required for the sport. My general rule for sports turf maintenance is: Below 2 inches a reel mower provides a better quality of cut and above 2 inches a rotary mower is generally preferred.

Height of cut: The height of cut is determined by the turfgrass species, the sport, the environmental conditions and the coaching staff.

Maintenance: It is essential to the health of the grass and to achieve the best quality of cut to keep the blade or reel sharp. Reel sharpening is a more time intensive and costly procedure than rotary blade sharpening. Reel sharpening should be done at least once each year in the North with periodic backlapping performed. Reel sharpening should be done 2-3 times a year in the North with periodic backlapping performed.

Expense: Reel mowers are typically more expensive than rotary mowers, but there are certain instances in which a rotary mower may be higher priced, however, the maintenance on a reel mower is more expensive.

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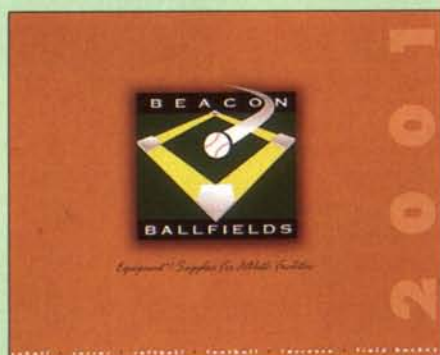
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Find products to improve your field
Beacon Ballfields, based in Middleton, Wisc., has released their 2001 catalog to support those working to improve athletic playing fields. Products in the catalog help turf managers increase field performance and safety, lower maintenance needs and improve field appearance. The company supplies materials, equipment, education, design services and technical assistance to help make any project more successful.

Beacon Ballfields

For more information circle 150.



Environmentally-friendly trimmer

RedMax BCZ2500S Clean Air Trimmer meets CARB II and EPA standards with a 25.4 cc, two-cycle Strato-Charged engine, the only engine to meet the 2,000 standards without a catalytic converter. The engine weighs 5 percent less, uses 34 percent less fuel and reduces emissions by 73 percent over previous engines. Clean air standards are met by introducing fresh air into the engine between the exhaust gases and the fresh charge of air/fuel mix. The ergonomically-engineered, commercial-grad bump-and-go trimmer car-

ries a two-year warranty.

RedMax

For more information circle 151.



Mower gives operators a brake

Hustler Z Riding Mower features an integral park-brake system. When the steering levers are placed in the off position, the park brakes are engaged. This feature makes the starting and stopping sequence much more natural and instinctive. The operator does not have to remember to disengage the brake to drive nor engage the brake before starting. At 76 inches in length, it is the most compact z-rider on the market, with the lowest seat height in the industry (29 inches). The 60-inch-wide Side-Discharge Deck features high blade-tip speed, high-lift blades and six anti-scalp wheels to produce a quality finish.

Hustler Turf Equipment

For more information circle 152.



New Ditch Witch enhances productivity

Powered by a 185 horsepower turbo-charged diesel engine, the Ditch Witch JT 4020 Mach 1 horizontal directional drilling system develops 40,000 lbs. Of pullback, 5,000 foot lbs. Spindle torque

and spindle speeds to 250 rpm. It has the power and fluid capacity to accommodate a mud motor. New features include Mach 1 electronics, automated cruise control, four-point anchoring, improved pipe loading, heavy-duty vise wrenches and an improved automatic pipe lubrication system.

Ditch Witch

For more information circle 153.



A lasting legacy

With a 54-inch-wide Free Floating design, Legacy Garden Tractors deliver a smooth, manicured cut. Combined with full-width rollers, they leave a distinctive striping pattern to enhance the quality of the cut. The deck is built using rugged 10-gauge steel and heavy-duty components throughout. The 54-inch mower deck features a unique three-blade design, with the center blade smaller than the other two, that increases blade overlap which maximizes the quality of cut. The mower deck has been repositioned under the tractor to enhance its ability to trim and to better pick up and cut grass laid down by the front tires. The trim side of the mower has an integrated rub bar welded to the deck and a protective bracket to prevent the roller bar from getting hung up on objects during tight turns.

Simplicity Mfg.

For more information circle 154.

Backhoe offers heavy-duty, efficient design

The heavy-duty tractor loader back-



hoe Allmand Contractor TLB-20 tackles many jobs typically reserved for larger TLBs, maneuvers easily in tight areas and can be towed on a trailer behind a pickup truck. The unit features a Robin EH65D air-cooled gasoline engine generating 20.5 horsepower at 3,600 rpm. An optional Kohler 20-horsepower air-cooled engine is available. The unit's gross overall weight is 3,100 lbs. The backhoe offers a 2-foot flat bottom digging depth of 7 feet, 6 inches. The backhoe's dual cylinder, 180-degree hydraulic cushioned swing allows precise work in tight areas. Easy joystick controls and hydrostatic drive provide a large backhoe feel.

Allmand Bros.

For more information circle 155.



Mix it up

The Earth & Turf MultiSpread 200 and 200H are now approved for spreading infield mix for baseball fields. The 15-cubic-foot-capacity unit is available in a ground drive or hydraulic drive version and makes easy work out of a previously back-breaking task.

Earth & Turf

For more information circle 156.



Top-adjust rotor is easy to use

Rain Bird has introduced the 3500 Series half-inch inlet rotor, the latest addition to its top-adjust rotor line for light-commercial applications. All settings for the 3500 Series are made from the top with a flat blade screwdriver, making this rotor easy to install. Reversing full- and 40-360 degree part-circle operation in one unit makes it easy to stock. And with a specially designed filter and nozzles that are easily removable with a flat blade screwdriver, it is easy to maintain. The series also includes an attachable "nozzle tree" of six Rain Curtain nozzles complete with a built-in pull-up tool.

Rain Bird

For more information circle 157.

Worksite Gator made rugged for industrial applications

Rugged and durable, the 6-by-4 diesel Worksite Gator utility vehicle is made especially for off-road reliability in worksite, rental, landscape and industrial applications. The vehicle offers the same styling options and operational features as the traditional 6-by-4 diesel Gator utility vehicle, such as mig-welded unibody design and a fully

independent, single A-Arm design that stands up to the bumps and jolts of off-road work. A standard front bumper, surrounded by a front and fender brush guard, provides extra reinforcement and durability. The unit is equipped with standard heavy-duty, all-purpose tires, allowing it to conquer the rugged landscape of a worksite while treading lightly on natural terrain. With a payload capacity of 1,400 lbs. And an additional towing capacity of 1,400 lbs. The vehicle hauls heavy loads with ease.

John Deere

For more information circle 158.

Tiller attachment for skid steer loaders

Model SS725 Preseeder tiller attachment for skid steer loaders give contractors the ability to turn a rough grade into a finished seedbed. The 72-inch-wide rotor tills, levels and rakes in one operation. The rotor teeth are mounted in a helical pattern for smooth operation and a uniform seedbed depth, providing a superior seedbed. The attachment can be used while driving in forward or reverse. The finished seedbed virtually eliminates all the expensive handwork. Working depth and rotor angle can be adjusted from the seat, during operation. The rotor can be hydraulically angled left, right or straight. The hydraulic motor mounts directly on the rotor, eliminating the maintenance problems of sprockets, chain and an oil bath.

ATI Corp.

For more information circle 159.

Motivating and Retaining Quality Employees

by Steve Keating

Want to motivate your employees? I believe that one of the most effective ways to motivate people is to fire them! Not really fire them, just fire them up.

Almost every business manager agrees that their most valuable asset is their employees. No one in a leadership position, whether they are a leader in sports, politics, a profession or business can succeed without committed, quality employees. Yet, on any given day, in the heat of the battle, it is easy to overlook that most valuable asset and just manage "stuff" or to put out the inevitable fires. We leave that most valuable asset to fend for itself and often suffer serious consequences as a result.

President Eisenhower said, "The urgent is seldom important and the important is seldom urgent." Think about that; is what you do each minute of everyday the most important task you have to accomplish or just the most urgent? Successful leaders know the difference and work hard to ensure that the majority of their time is spent on the truly important tasks, such as motivating and retaining quality employees.

We all know how difficult it can be to find quality employees but the satisfaction we feel when we add an excellent employee to the team makes it worth the effort. Then just as they begin to produce for us, they're gone. That very expensive and time-consuming cycle

begins again, and again and yet again. The good news is that there are concrete actions that we as leaders can take to break this cycle once and for all. I believe that the first step to break this cycle is to recognize the importance of motivating our employees everyday, on our good days and bad, even on their good days and bad.

Let's take a look at some of those daily actions for motivating quality employees.

We need to highly value all employees

When we hired the employee we saw

"something" in them that made us believe they could be an asset to our team. Look for that "something" everyday. Let them know continually, sincerely how important they are to you. Our organization is only as strong as its weakest link and we can't afford any weak links.

Look for what's right today

The average person has 40,000 thoughts a day. For the average person who would call themselves a positive person, 80 percent of those thoughts are negative in some way. When we look at our people it is vital that we look for the good, that we look for what they are doing right and not just what they may have done wrong.

A good example of this would be a little boy playing baseball all by himself in his front yard. With no one else to play with he just throws the ball in the air and tries to hit it with his bat. Unsuccessful on his first two attempts he throws the ball up a third time; once again he misses it completely. At this point his mother calls him in for dinner and as he picks up his ball and begins to walk into the house he says to himself, "Wow, what a great pitcher." Can you be like that little boy and find the positive in any situation?

If we can't then how can we expect our employees to remain positive when they are challenged?

Reward correct actions

A recent survey conducted by Robert Half International shows that the primary reason people leave jobs today is limited recognition. Somewhat surprisingly, this is true for all categories of workers, from the career minded individual to those just working day to day. If we are going to look for what's right then when we find it we need to share it. Regular recognition is one of the best ways to motivate employees. That



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