



The pull-behind aerator/spreader combo from John Deere, NC, can do two jobs at once. It perforates the soil while the calibrated drop-spreader follows with seed. Lime or fertilizer can also be dropped. Unit is 40 inches wide with up to 2-inch penetration. Unit has 132 steel tine tips on 8-inch diameter tine stars. Adjustable flow control and direct drive for consistent performance make this the right tool for smaller jobs or use with a lawn tractor.

Circle No. 255

**FINN CORPORATION**  
800/543-7166  
www.finncorp.com

The T30 HydroSeeder from Finn, Fairfield, OH, is designed as an entry-level machine for establishing new lawns and turf. It has a 300-gallon capacity and applies mulch up to 70 feet from the hose end, covering 3,200 sq. ft. in as little as 8 minutes.

It offers simple controls for easy one-man operation, hydraulic reversible mechanical agitator for fast thorough mixing, and a unique pump to handle heavy hydro-mulching slurries.

Circle No. 256

**GANDY COMPANY**  
800/443-2476  
www.gandy.net

Combination dethatcher/over-seeder from Gandy, Owatonna, MN, has a rugged 7-gauge steel frame and a 42-inch, covered steel hopper that holds 3.5 cubic feet (or 100-125 lbs. of seed). This 48-inch wide unit drops seed on 2-inch centers through 24 outlets. It requires a 540-rpm tractor with slip clutch for tractors 18-hp and up. Easily accessible tumbuckle adjusts planting depth. Optional shoe assembly puts seed right in the slit for improved seed-to-soil contact. Trailing 3-section gang roller and brush assembly also available.

Circle No. 257

**JACOBSEN**  
800/727-JAKE  
www.jacobsen.textron.com

The Aero King 1321 Verticuter-Seeder from Jacobsen, Racine, WI holds over a bushel of seed, allowing a seeding rate of 23,000 sq. ft. per hour. It has an extra-wide 21-

inch seeding width and operates at a speed of 2.5 mph. Seed outlets are 1.5 inches apart, giving good one-pass coverage. Regardless of the unit's ground speed, a uniform seed rate is maintained. Unit has a 13-hp Honda engine, overhead-valve design and 6:1 gear reduction. Front-mounted verticut blades allow verticutting and seeding one time.

Circle No. 258

**JRCO, INC.**  
800/966-8442

Electric front-mount Broadcaster Seeder/Spreader from JRCO, Minneapolis, MN, fits most commercial walk-behinds and riding mowers. Provides controlled 5- to 24-ft. spread. Hopper has a capacity of 2.2 cu. ft. (about 130 lbs.) and is ideal for spreading fertilizer, seed, fire-ant bait and ice-melting pellets. The Broadcaster attaches to the JRCO mounting bar with four clevis pins and is controlled from the operator's position.

Circle No. 259

**MARUYAMA**  
425/885-0811  
www.maruyama.co.jp

The MG-10 spreader from Maruyama, Redmond, WA, distributes dry seed or granular chemicals on difficult terrain. The spreader has a translucent tapered tank that constantly feeds material and allows the operator to monitor the 3-gallon, 15-lb. tank. Agitating foot keeps the spreader from clogging and the ribbed, contoured disk consistently delivers material over an 18-inch swath. Gear case is fully enclosed for long effective life.

Circle No. 260

**RANSOMES CUSHMAN RYAN**  
800/228-4444  
www.ransomes.com

Overseed, dethatch or do both at once with the Mataway Overseeder/Dethatcher from Ryan, Lincoln, NB. Model 544873 has a 0.8-cu.-ft. hopper which is fully adjustable for all types of common grass seed. There are 10 seed drops on 2-inch spacing, 1-inch hardened steel slicing reels and ten 8-point slicing blades spaced on 2-inch centers. Unit is powered by an 11-hp, 4-cycle Kohler engine. Seed flow

stops automatically when the reel is raised to cross cart paths or lanes.

Circle No. 261

**REINCO**  
800/526-7687  
www.reinco.com

A full line of HydroGrassers is available from Reinco, Plainfield, NJ. Ranging from the HG-5H for smaller seeding jobs to the giant HG-30GX which has up to 6-acre capacity, these units can be truck or skid mounted. The mid-sized HG-10GX has a 35-hp Ford gas engine or a 33.5-hp Kubota diesel. It has a standard 130-ft. discharge range, or 400 feet with hose.

Circle No. 262

**SPYKER**  
800/972-6130

Spyker of North Manchester, IN, has two new broadcast mulch spreaders. Model 296 is a 100-lb. walk-behind and the 297 is a 200-lb. pull-behind. With an eight-foot swath of material and a pattern for accurate application, they broadcast seed and fertilizer, as well as the new pelleted products on the market. These models also include Spyker's patented Accuway adjustment, to adjust the spread pattern from left to right on the fly to ensure a dead center spread.

Circle No. 263

**TORO**  
612/888-8801  
www.toro.com

The 205 Seeder from Toro, Bloomington, MN, allows seeding of a full 18-inches width, dropping seed at 2-inch intervals. The Delta Reel blades open a soil slit to receive the seed. A flap on back of the machine covers the seed with a thin layer of soil for better germination. The 205 is powered by a 5-hp Briggs & Stratton engine. For safety, it has a handle-mounted automatic safety clutch control.

Circle No. 264

**Visit**  
[www.landscapegroup.com](http://www.landscapegroup.com)  
to see our online LM Reports,  
with direct links  
to manufacturers and their  
products.

operator to install a 5,000-sq.-ft. lawn in under two hours. Used with a quality hydroseeding mulch, the unit has a seeding rate of 3,000 sq. ft. per hour. Built-in loading platform lets users fill the 15-lb. capacity hopper easily. Unit can also be used in flower beds for quick planting.

Circle No. 252

**CLASSEN MFG. CO.**  
888/252-7710

The multi-purpose TS-20 commercial turf seeder comes with a choice of 5-hp Briggs & Stratton or 5.5-hp Honda OHV engine with oil alert. Versatile unit can put in a new lawn, overseed an existing one or be used as a vertical cutter. Seed flow is adjustable for different types of seed and is activated by a single lever. One-eighth inch blades are set on 1.5-inch centers. Polypropylene hopper does not rust. Optional flail-blade assembly made by Classen, Norfolk, NE, will convert the unit into a turf rake.

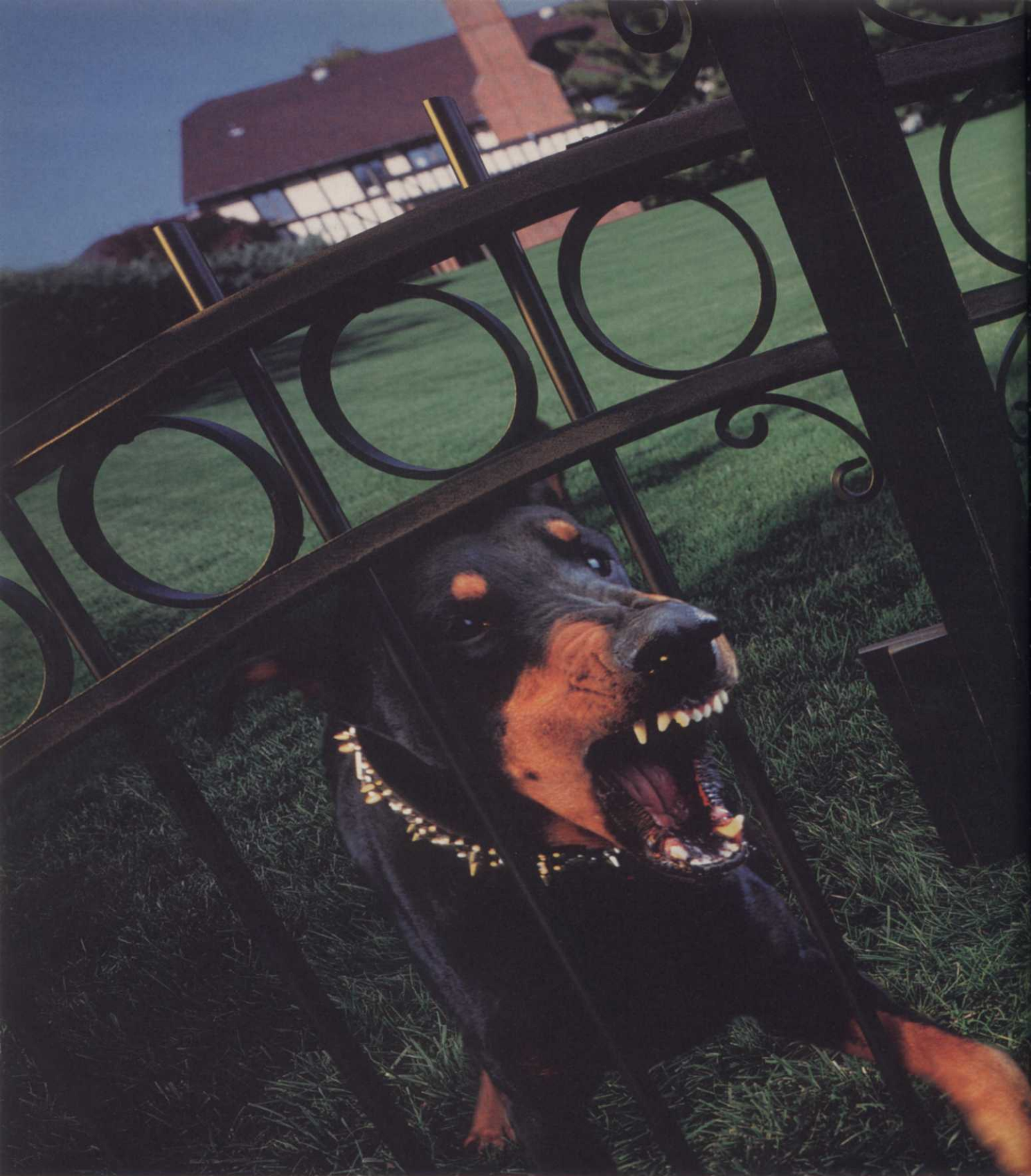
Circle No. 253

**DARION**  
717/288-9630

Renovate compacted soil, level and seed in one pass with the Rotadairon from Darion SA, distributed by Emrex, Kingston, PA. Models can be adapted to most standard tractors. The PTO-driven machine turns stones under the soil and creates a clean, smooth surface for seeding. The combi-seeder drops the seed, completing a one-pass operation.

Circle No. 254

**JOHN DEERE**  
800/537-8233  
www.deere.com



## If you really want to keep something

It takes two fierce herbicides acting side by side to keep crabgrass, goosegrass, spurge, oxalis and other weeds from breaking into your customers' property. Team<sup>®</sup> Pro preemergence herbicide combines Balan<sup>®</sup> and Treflan<sup>®</sup> herbicides into the most consistent, fast-acting, long-lasting crabgrass preventer available. Team Pro protects lawns better than pendimethalin without severe staining of spreaders, shoes or landscaping.



## out of a yard, unleash the Power of Two.

And Team Pro won't harm established ornamentals, turfgrass *or* your reputation for a good value. For information on fertilizers formulated with Team Pro, talk to your supplier. Or call us at 1-800-255-3726 or visit our web site, [www.dowagro.com](http://www.dowagro.com). Then stand back, and unleash the Power of Two. Always read and follow label directions.

 Dow AgroSciences  
**Team\* Pro**

\*Trademark of Dow AgroSciences LLC



# Satisfy the plant's demand

*Build your fertility program on the basis of soil and tissue tests, and give your turfgrass the right amount of nutrients to allow it to perform as you would like*

By WAYNE KUSSOW, Ph. D.

**A**turfgrass plant does not act like a sponge. The roots of grass plants do not take up soil nutrients in solution the same way that a sponge absorbs water. A generation ago, many agronomists thought this was so, but they were mistaken. We've learned that the plant's processes are much more complicated and precise than that. This is significant as we build our turfgrass nutrition programs.

One of our goals as landscape managers is to provide the turfgrass in our care with enough nutrients to achieve the results that we desire, and no more. These results, among others, may include greener color, a denser stand to crowd out weeds or faster recovery from traffic injury in the case of turf for sports. Their order of importance may be different, of course, depending upon the types of grass that we manage and the uses to which they are put.

For instance, our fertility program

would be different for the turfgrass of a busy youth soccer field than for a corporate office park. The soccer field, subject to more traffic and stress, is likely to require more nutrition — indeed, a much different total management program — than the office park where the goal is primarily to provide curb appeal, as in a home lawn. Likewise, a program for a warm-season turf would be different than a program for a cool-season turf.

Whether we're developing a fertility program for athletic turf or a home lawn, or for warm- or cool-season turf, we don't want to use any more nutrients than we need for the results we desire. That would be a waste of material and labor. That's why, we must understand the basics of how a turfgrass plant selects the nutrients that it needs. And, remember, it doesn't withdraw them from the soil solution as in the model of a sponge.

In fact, research has shown that a turfgrass plant tightly controls what it takes up.

The plant will "shut off" the roots or "turn them on" when it needs nutrients. The shoot of the plant communicates with the roots through the use of hormones, nutrient ion gradients and other plant processes. The shoot, in effect, tells the roots, "I need more potassium," or "I don't need more potassium." The root responds accordingly.

**Who's in charge?**

What controls this process? Plant demand controls it.

And what causes plant demand? Shoot growth is primarily responsible for plant demand.

So how can we affect shoot growth? Primarily, we stimulate shoot growth with nitrogen (N).

It has long been shown that as we increase the N rate we increase, in linear fashion, turf shoot growth. We can measure this by comparing clipping weights. Turf growth will peak and level off at a rate of about 12 to 15 lbs. of N/1,000 sq. ft. annually. But, turfgrass is a unique "crop." Unlike most agricultural crops, we're not seeking maximum biomass. We're managing it for aesthetics such as color and density and, in the case of athletic fields, for durability and playability. Therefore, the amount of N we apply to turfgrass is substantially less than what we would apply to encourage peak growth.

**Know your nutrients**

Nitrogen is one of the three major nutrients responsible for plant growth and health. The others are phosphorus (P) and potassium (K). There is a tight relationship between the amount of nitrogen, phosphorus and potassium that a turfgrass plant will use.

The challenge for managers is to find the right combination of nutrients to satisfy the demands of the plants under their care. This is not as simple as picking up a bag of product and applying it, even though there

is essentially a constant ratio of nitrogen, phosphorus and potassium (N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O) in turf clippings, a ratio of 4-1-3.5

Does that mean you should always use a fertilizer with nutrients in those proportions? Of course not. Soil samples may indicate that the soil of the turf we are managing already contains sufficient phosphorus and potassium to meet the demands of the turfgrass. We can only know this by taking soil samples.

**Playing with the numbers**

If soil tests indicate that P and K levels are low, we should use a fertilizer with enough of each element to correct the deficiency to meet the plants' demands. If they are already sufficient in the soil we want to maintain these levels, and if they are high, there is no reason to add additional amounts since the plant won't use them.

We can, however, increase the turf's "demand" to use greater amounts of P or K, for instance when we're establishing turf or we're seeking rapid recovery of athletic turf, by stimulating shoot growth with additional nitrogen.

Anytime we change the N rate, we're going to alter the demand for P and K. We demonstrated this on turf plots to which we had applied 2, 4, and 8 lbs. N/1,000 sq. ft. respectively. We applied no additional phosphate or potash to the plots. After three years we recorded that the plots that had received 2 lbs. of N showed a 6 ppm reduction in soil phosphorus and a 25 ppm reduction in potassium, the plots receiving 4 lbs. N showed reductions of 10 ppm P and 37 ppm K, and the plots receiving 8 lbs. N recorded a 19 ppm drop in P and a 57 ppm drop in K.

Anytime we change the nitrogen rate, we are going to alter the demand for phosphorus and potassium.

*Wayne Kussow, Ph.D. is with the Dept. of Soil Science at the University of Wisconsin*

**NITROGEN CREATES DEMAND FOR PHOSPHORUS AND POTASSIUM**

*Clipping nutrients*

Annual N lb./M	%N	%P	%K
2	3.8	0.42	2.4
4	4.3	0.44	2.5
8	5.2	0.48	2.9

**THE FUTILITY OF APPLYING P AND K WHEN THERE IS NO DEMAND**

*Clipping nutrients*

N-P-K Applied lb/M	%N	%P	%K
4-0-0	4.3	0.44	2.5
4-1-0	4.3	0.44	2.6
4-0-3	4.3	0.44	2.6
4-1-3	4.3	0.44	2.6

*cont. on page 38*

# You Can't Clean Up This Season If You Spend The Season Cleaning Up.



Dimension® turf herbicide. It's the best value because of what it *won't* cost you.

Like about thirty-five bucks to shampoo a fluffy white pooch. Or *eighty-five* to clean a white Berber carpet. What's it cost to repaint a white picket fence?

Scrub a concrete walk or driveway? You'll learn first-hand, if your turf herbicide stains those items. And that messy yellow stuff

could end up costing you even more: If the herbicide you use doesn't provide the best control of crabgrass and other weeds, you could be getting some unexpected calls from unhappy customers.

Dimension is labeled for use on ornamentals, so you can use it on the lawn *and* landscape. It doesn't

stain, so you can apply it with confidence right

up to concrete walks and driveways. Your customers won't be seeing any more of those little fringes of crabgrass along the edges of their turf. All they'll see is healthy, happy lawn...and all you'll see is happy customers and a healthy bottom line.

Clean up this season. Call 1-800-987-0467 or visit us at

[www.dimensionpro.com](http://www.dimensionpro.com) for complete information.



**DIMENSION**   
TURF HERBICIDE

ALWAYS READ AND FOLLOW LABEL DIRECTIONS. DIMENSION® is a registered trademark of Rohm and Haas Company.  
©1999 Rohm and Haas Company T-O-279

**ROHM  
HAAS**    
A member of  
**RISE**

Circle No. 119 on Reader Inquiry Card

# Set **your** company apart

*Differentiate yourself from your competition by targeting consumers interested in environmentally friendly fertilization methods*

By CHUCK PAULSON AND  
MIKE ARCHER

**I**t's relatively easy today to build turf programs capable of approaching perfection, at least for a while. But, even with customers' desire for high quality turf, there's also a desire for methods that are considered "environmentally friendly."

Many lawn care businesses are looking for ways to differentiate themselves from their competition in today's fast-paced world of new product development, and they are watching for opportunities in the area of turf management. One option is to focus on the

changes that follow in the wake of a maturing market and to take advantage of emerging opportunities for improving the quality of turf and the bottom line.

#### **A new approach?**

For many companies, an organically-based program is considered simply not feasible, and even a solid Integrated Pest Management (IPM) program has often been considered to be difficult to implement and sell. It can be difficult to explain the benefits to the clients and justify higher prices, compared to less expensive competitors.

Phil Catron of NaturaLawn of America, however, says that IPM is more than a program; it's philosophy and way of doing business. "It has to do with your decision-making process on whether you are treating the symptom or trying to solve the problem," he says, "and how you approach solving the problem through prevention, monitoring and control."

Continued progress in the area of IPM means new developments provide a proven range of effective active ingredients that reduce the impact they have on the environment. By bringing valid attention to a genuine desire to use safer products in reduced amounts, lawn care professionals can reduce the active ingredient load in the environment. This approach can be instrumental in gaining favor with the customer.

#### **Fertilizer options**

The basis of the lawn care programs of NaturaLawn of America are their organic-based fertilizers, blended by Spring Valley Turf Products. This is a good place to start in differentiating from the competition.

While NaturaLawn of America has its own

*cont. on page 40*





## Phocus on Phosphorus

As a landscape or grounds manager, shouldn't you know the basics about the products you use? Take phosphorus, for instance. See how well you do on this quiz, based on an article written by Dr. Peter Landschoot, Penn State University.

**1. Phosphorus is extremely important in:**

- a. encouraging plant color
- b. rooting, cell division and synthesis of chemical compounds
- c. enhancing water takeup in the plant

**2. Phosphorus cannot move from one portion of a plant to another**

- a. true
- b. false

**3. Turf that is deficient in phosphorus turns purple or red**

- a. true
- b. false

**4. Too much phosphorus may affect iron and zinc uptake**

- a. true
- b. false

**5. Phosphorus should be incorporated into the soil prior to seeding or sodding**

- a. true
- b. false

**6. Phosphorus can enter surface waters via erosion and runoff.**

- a. true
- b. false

**Answers:**

**1. B.** Phosphorus (P) is extremely important in seedling development, rooting, cell division and the synthesis of various chemical compounds used by plants.

**2. False.** Phosphorus is available to turfgrasses as  $H_2PO_4$  and  $HPO_4$  and is mobile in plants — meaning that it can move from one portion of the plant to another.

**3. True.** Deficiencies of this nutrient in turf are usually expressed as purple- or red-colored leaf blades and as reduced growth and tillering.

**4. True.** Excessive P concentrations in plant tissue (greater than 1.0% on a dry weight basis) may have adverse effects on iron and zinc uptake and metabolism.

**5. True.** Phosphorus is largely immobile in soils — meaning that it takes a long time to move from the turf surface into the root zone. It may take months to move just a few inches in soil.

**6. True.** Although P is not readily leached from soils into ground water, recent surveys have shown that it can enter surface waters via erosion and runoff. Avoid applying P fertilizer where runoff is likely — such as on frozen soils and paved surfaces.

# The Landscape Management Handbook

*This best single-source reference containing the most current and comprehensive information on the basics of turfgrass and landscape management available today!*

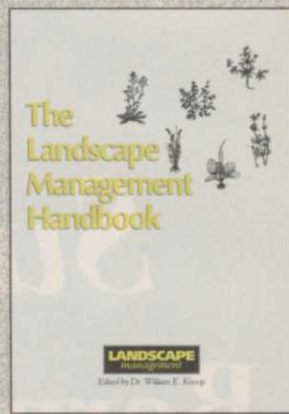
edited by

William E. Knoop

125 pages, softcover

Item #LSMB830

**\$24<sup>95</sup>**



- ☛ Provides an overall understanding of turf and landscape care and management and covers all the basics of the green industry
- ☛ Covers all the topics golf course superintendents and students of turfgrass and landscape management need to know
- ☛ Combines practical information with the tried and true basics of management to provide a single, practical, affordable and up-to-date text
- ☛ Features detailed information, charts, diagrams, figures and tables to illustrate key information points

**The Landscape Management Handbook** provides a unique, single-source reference of comprehensive information on a variety of turf and landscape topics. It's an ideal handbook for golf course and lawn care superintendents and crew members, and is also appropriate for schools that teach basic turf and landscape management.

**Call 1-800-598-6008**

Fax: 218-723-9146

Outside the U.S. 218-723-9180

Order on-line at [www.landscapegroup.com](http://www.landscapegroup.com)

ADVANSTAR MARKETING SERVICES  
Customer Service Dept. • 131 W. 1st St., Duluth, MN 55802

Shipping/Tax: UPS—add \$5 per order, plus \$1 per additional book. International, Hawaii, Alaska, Canada and expedited shipments—call for rates. Residents of CA, CT, GA, IA, IL, MN, NJ, NY, OH and TX must add sales tax. Price subject to change. CODE: 950574

cont. from page 38

specially blended products, which gives it the additional marketing tool of uniqueness, there is a range of products available to lawn care companies looking for a way to separate themselves from the pack. These include organic-based materials, a combination of natural-organic and synthetic-organic materials, which allows

for maximizing the benefits of fertilizer applications. Organic-based products can range from 25% organic material to 100% organic. Anything less than 100% is organic-based.

True, early organic products were often ineffective and costly when compared to the traditional approach. Many products

were dusty, possessed an offensive odor, had a limited shelf life or had use rates that were simply impractical for broadcast application. But now, some fertilizer formulators blend complete N-P-K fertilizers that contain both biological and traditional components. The customer's desire for high product quality, availability, competitive pricing and lower environmental impact are being met and often exceeded. To satisfy the needs of the turf professional,

# The Superior Bermudagrass.

Compared to Tifway, TifSport™ Certified Bermudagrass gives you:

- ▶ **Superior Cold-Hardiness**—extends growing area to the northern transition zone
- ▶ **Better Drought Tolerance**
- ▶ **Deeper Green Color**
- ▶ **Improved Traffic Tolerance**
- ▶ **Significantly Less Mole Cricket Damage**
- ▶ **Genetically Uniform**—will only be grown and sold as genetic certified sod/sprigs to ensure purity



Visit us at the GCSAA Show Booth #4470

For new or reconstruction, contact a TifSport grower in your area or call us at 1-888-584-6598.

Developed at the Coastal Plain Experiment Station, Tifton, GA by Wayne Hanna, USDA/ARS Geneticist.

©1999 TifSport. TifSport™ is a trademark of the Tift 94 Growers Association, Inc.

Circle 120

*Field studies indicate that there is better interaction between nutrients, turfgrass and plant microbes in soils that have adequate organic matter.*

manufacturers of these products must specify ingredients that blend well, do not degrade, are readily available and provide definite environmental benefits.

#### Here are the benefits

According to Catron, most fertilizers are designed to feed the turf. While this is necessary, feeding the soil is often overlooked. "It is old-fashioned agronomics. It is simply understanding plant nutrition and understanding that you're dealing with a soil environment that's full of organisms. And if you feed all these organisms, they, in turn, will feed the turfgrass."

Catron looks at it as an investment into the soil where you can get a healthier plant that "withstands disease and insect problems and reduces the overall use of any kind of controls, whether they're biological or synthetic."

Field studies indicate that there is better interaction between nutrients, turfgrass and plant microbes in soils that have adequate organic matter. As the nutrient program approaches this balance in the soil,

cont. on page 42