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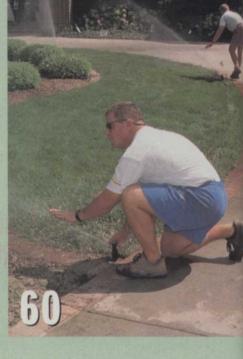
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LANDSCAPE MANAGEMENT (ISSN 0894-1254) is published monthly by Advanstar Communications, Inc., 131 W. First St., Duluth MN 55802-2065. Subscription rates: one year, \$39, two years \$58 in the United States & Possessions; \$66 for one year, \$99 for two years in Canada and Mexico, all other countries \$130 for one year, \$195 for two years. For airmail delivery, include an additional \$70 per order annually. Single copies (pre-paid only): \$4 in the United States; \$7 in Canada and Mexico, \$12 all other countries. Back issues, if available: \$8 in the U.S.; \$14 in Canada and Mexico, \$24 all other countries. Add \$5 per order for shipping and handling. Periodicals posstage paid at at Duluth, MM \$5806 and additional mailing offices. POSTMASTER: Please send address changes to Landscape Management, P.O. Box 6198, Duluth, MN 55806. Canadian G.S.T. number: R-124213133. Publications Mail Agreement Number 841919. Printed in the U.S.A.

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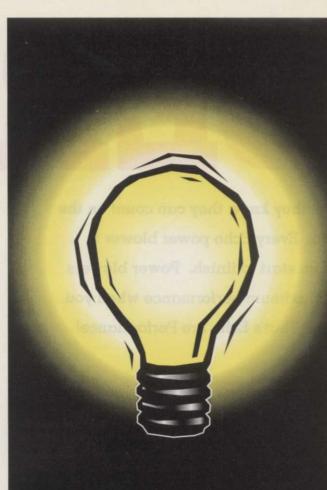
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his industry was built by the contractors and grounds managers who saw opportunities for themselves, and today is no different. Whether you lead a large landscape organization or are a newcomer, you are part of a tradition that started humbly and succeeded because of hard work and good business sense. Until now, the best and the brightest in our industry could pretty much claim this was their story. Our best and brightest are comfortable both in suits and jeans. They know about biology, equipment, operations and keeping customers happy. They also know a

lot about finance, profitability and productivity. And, they still get outside a lot.

But now we're seeing a change that's driven by our industry's consolidation. Despite all the fuss about consolidation overtaking our industry, we're told that only about 5% has been consolidated so far. Participants in a January seminar I just attended on mergers and acquisitions said there literally are "trillions" of dol-

lars in the investment world looking for a good home in an industry like ours.

So now we're sexy, just like others who are consolidating: real estate, construction and utility management, to name a few. At the conference, we met representatives of several new consolidation groups who will soon announce their debut into the green industry. And more will follow.

The big money coming into our industry comes in the pockets of a new breed of best and brightest. They're very smart, very educated and very savvy investors, deal-makers and advisors. They routinely handle transactions involving millions of dollars. They know due diligence, stock swaps, tax minimization, business valuation and all other aspects of mergers like they know the back of their hands.

Forget the fact that our best and brightest have years of experience in the landscape business and the new ones don't. Forget the fact that most of them rarely work outside. The new breed is smart enough to learn a lot about our operations and learn it quickly.

So how will this affect you? Will you learn about the consolidators as quickly as they've learned about you? Will you understand how these new consolidations will operate in your markets and how they'll affect your firm? Will you have enough savvy to make the right decision when someone invites you to sell?

Some of the contractors at the meeting said they liked this new breed because they bring "professionalism" to our industry. I think they also bring a whole new set of challenges and opportunities to everyone — established firms and beginners alike. And I'd recommend you learn as much about them as you can. Next month, we'll look more closely at consolidation and what it will mean to you. **LM**

Meet the new 'best and brightest'



Sue Gibson

SUE GIBSON Executive Editor

CONSOLIDATION CLIPS

Ruppert Moves On

Craig Ruppert, founder of Ruppert Landscape in Ashton, MD, has resigned his position as senior vice president of the TruGreen-ChemLawn Landscape Division, headquartered in Memphis. Chris Davitt, also formerly of Ruppert Landscape, has also left TruGreen-ChemLawn. Ruppert can be reached at Ruppert Nurseries, also in Ashton.

Another national player

HOUSTON — GrowScape LLC, based here, is the newest 'national' landscape company. This spring it will announce its seven founding companies, with estimated combined revenues of \$75 million. GrowScape will integrate 'vertically,' offering installation, maintenance, foundation, perennial plant materials, turf, irrigation, architecture and design. The company hopes to be in top 25 U.S. metropolitan areas within four years.



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Circle No. 114 on Reader Inquiry Card

Eldarica pine problems

I have about 12 Eldarica pines and about three or four are having branches dying out from the center to the base of the tree. Each year a few more branches die, which doesn't appear normal. There are no indications of insects or other obvious disease.

The pines are growing in a location in the mountains about 4,000 feet high. The soil is sandy to silt.

Trees are watered every two weeks during the hot, dry windy summer. I planted these pines as they thrive in heat, drought, wind and poor soil.

-CALIFORNIA

Dr. Len Burkhart, Davey's resident horticulturist and technical adviser in California, said that there is some confusion over the naming of Eldarica pine, both the common and the Latin names. Trees labeled Eldarica pine (Pinus eldarica) in a nursery may actually be Afghan pine (Pinus halepensis eldarica) or even mixed up with Brutan or Calabrian pine (Pinus brutia). Mondel pine also occurs in the nursery trade in the West and Southwest and is probably the true Afghan pine. Due to the confusion of these species in the nursery trade, the actual identity of your trees should be questioned.

In this situation, the importance of the specific species relates to ability of the trees to withstand cold. Calabrian pine can not tolerate temperatures below O°F, while true Afghan pine can. Trees planted in conditions to which they are not adapted are more prone to stress and environmental conditions, which in turn can make them more susceptible to disease and pest problems as well as simple decline.

The problem could be as simple as cold injury or the trees could be stressed and subject to increased branch loss. Other possible problems for pines in your area include pine rust, pitch canker and other cankers, bark beetles and various needle diseases.

It would help if you had confirmation of the species of pine on your property but, for now, removal of the dead and dying branches is recommended. Take photographs of the trees from several angles, including the trunk (especially if you see excessive pitching, holes, etc.). You should contact your local county personnel with the photos and a branch sample (preferably dying, not completely dead) or send your sample to a diagnostic laboratory for further diagnosis.

Dogwoods declining

Some of the dogwoods in our area show various degrees of decline. The affected trees have smaller, lighter-colored leaves and they often develop fall color early and curl or shrivel in the summer. On some trees, there are slightly sunken areas at the soil line. We cut open the area and found that the bark is discolored. In some, the bark is gone and the wood is exposed. What causes this? What can be done to control?

-PENNSYLVANIA

Based on your description, the problem appears to be related to crown canker disease caused by *Phytophthora cactorum*. This disease can weaken the affected plant and cause smaller and light-colored leaves which discolor prematurely, with slight distortion. As the disease progresses the problem may be on one side first and later spread.

Study the base of the trunk at the soil line. The sunken areas may be cankers produced by the fungus. These cankers can discolor and kill the cambium. In addition, when the bark sloughs off, it exposes the underneath tissue. If these cankers extend and surround the trunks they can girdle and kill the tree.

Crown canker is found mostly on newly planted plants because of basal bark injury or other type of transplanting wounds. Wounds can also result from improper mowing or trimming. Consider providing barriers or mulching to protect the trunks.

Avoid planting dogwood plants where there was incidence of dogwood mortality. Consider treating affected dogwoods with *Phytophthora* specific fungicides such as Subdue, Aliette or Terrazol as needed. In addition, examine the plants for possible dogwood anthracnose disease. This is also a potential destructive killer disease.

Follow label specifications, and treat as needed. **LM**



BALAKRISHNA RAO

Manager of Research and Technical Development for the Davey Tree Expert Company, Kent, Ohio

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on can spot the professionals

eing a "tree person," I have always noticed trees — to the point of obsession at times (at least according to my friends). And I'm often amazed at what people will do to their trees in the name of ... maintenance? ...art? ...goodness knows what?

But there are other things I notice as well, including hazardous trees, to the point where there are some places I won't park even my old beat-up pickup.

I also notice tree species — what is being planted and where. In street tree situations I have

noticed that many communities seem to pick a few preferences and stick to them. In our part of the world, maples, ashes and honeylocusts are favorites, with callery pears and crabapples running close behind.

There are a couple of problems with planting monocultures or a narrow range of tree species. One is that if a specific pest or disease strikes a narrow species range, it can drive up the cost of mainte-

nance of the trees, even threaten the survival of large numbers of them because the problem spreads so easily from tree to tree. Dutch elm disease is a perfect example since it virtually wiped out American elms in many communities.

The other concern that I have with planting a limited number of tree species, and it is not one which I have ever really heard discussed, is the continual expansion of our suburban areas (let's include developments including golf courses in this), particularly into formerly forested areas.

Very often, large tracts of land are essentially denuded of the variety of native trees and replanted with a limited and often unimaginative selection of species. This is not necessarily any one person's fault, since often these decisions are made by people who aren't all that familiar with

trees. Dealing with a tree nursery with a limited selection of choices or trying to maximize the number of trees by buying what is most common and least expensive are not unreasonable decisions; just short-sighted.

There are a lot of different species out there which are valuable landscape trees. Granted, not all native species will be appropriate to all aspects of a newly developed area. But I think it's important to begin thinking about this. I am not trumpeting using only native species BUT — there are species out there that we are not seeing being planted nor are they being left to reproduce in the landscape.

In my area in particular I am thinking of the hickories. They tend to be scarce in nurseries (but they are out there) and, with their fruits, are certainly not appropriate for street situations. But there are places where they can and should be considered, including park areas, natural edges and other places where maintenance levels tend to be lower.

You could make quite a list of neglected but attractive species that we will miss if we continue to limit our choices in the landscape. Sourwood, black gum (or tupelo) or sassafras are some of my personal favorites. And all have their place.

For those of you who do some tree planting, and where you have some choice in species selection, consider what is native to your area and not being planted. The architectural characteristics, fall color, bark and leaf textures and the wildlife use of these species are all valuable additions to the landscape. If you aren't sure, ask your extension agent what they would suggest and start asking the nursery you deal with for the species you want. If they can't get it, there are other nurseries that can.

This does take some extra effort on your part, but not a lot and it is well worth it. Internet searches are also very useful, as long as the source of the planting stock is from a close hardiness zone and elevation.

We aren't going to fall off the edge of the earth if you don't, but if you at least try, I give you permission to call yourself "visionary." LM

Agree/Disagree? Comments/Questions? Column Suggestions? Let Nancy Stairs know at 440/891-2623. Fax: 440/891-2675. E-Mail: nstairs@advanstar.com

What species of trees are you planting?



hanny Stairs

NANCY STAIRS
Technical Editor

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FQPA opened industry's eyes in '98

COLUMBUS, OHIO —Widespread industry concern this past year over implementation of The Food Quality Protec-

tion Act of 1996 (FQPA) had some positive effects, said Anne R. Leslie, a former official of the U.S. Environmental Protection Agency (EPA).

This concern, expressed in letters and meetings with federal office-holders, focused on the EPA's methods for review of pesticide residues on foods, and whether these methods were fair and accurate, said



Former EPA official
Anne R. Leslie

Leslie, a speaker at the Ohio Turfgrass Conference here in December. The greatest fear by pesticide-using industries

> like agriculture and turf/ornamental care is that the FQPA will result in the loss of popular chemical control products.

The climax of this concern in 1998 was a memo from Vice President Al Gore to the EPA in April. The memo instructed the EPA to:

- ensure that its decisions are made based on the best available science.
- ease the transition to new pest management strate-

gies for affected pesticide users.

- make the regulatory process transparent.
- ▶ consult with affected stakeholders. Also, it led to the establishment of the Tolerance Reassessment Advisory Committee (TRAC) in 1998. TRAC consisted of representatives from growers, pesticide registrants, food processors, environmental groups and medical professionals.

Although uncertainty remains about FQPA's effects on the green industry, she said that the EPA is trying to make its decision making process more transparent.

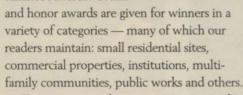
While the FQPA attracted much of the attention of professional pesticide

users, Leslie reported that the EPA nevertheless registered 27 new pesticides this past year. These included 14 "reduced risk" pesticides and 13 conventional chemicals. It also approved 12 biopesticides and 2 antimicrobials, said Leslie, who retired from the EPA this past summer and now consults on IPM and pesticide issues.

Playing the awards game

For 27 years, members of the Professional Grounds Management Society have celebrated the importance of top quality landscape and grounds management through a rig-

orous judging system, culminating in the Professional Grounds Maintenance Awards, Grand



To encourage industry participation in this award program and build a higher consumer awareness of the role of landscape and grounds management, *Landscape Management* has established a partnership with PGMS to become the exclusive sponsor for these awards.

As part of our sponsorship, Landscape

Management and Athletic Turf Maintenance &
Technology will promote the best our industry

has to offer in our magazines, on our Website (www.landscapegroup.com) and to the business and consumer press.

Entry is not limited to PGMS members. In fact, it is encouraged throughout the industry. Those who win will survive multiple rounds of judging by experienced, nonparti-

LANDSCAPE

san practi-

The first of several

award-winning landscapes is featured on page 66. Future issues of LM will include updated contest entry instructions, more award-winning landscapes, a guide on how to present your projects in the best possible light for judging and tips on how to get maximum marketing benefit from your efforts.

Updated entry guidelines will be available at www.landscapegroup.com or by contacting PGMS at 120 Cockeysville Road, Suite 104, Hunt Valley, MD 21030 or call 410/584-9754.

Visit www.landscapegroup.com to see our online LM Reports, with direct links to manufacturers and their products.

AgriBioTech takes cost cutting measures

Henderson, NV — AgriBioTech Inc. (ABT), late in 1998, shut down seven facilities in four states, a move that's expected to save the seed company \$750,000 per year. The action led to the elimination of about 20 nonsales jobs in units in South Dakota, Ohio, Kentucky and Missouri.

"We expect better customer service, increased operational efficiencies and reduced cost, to the benefit of our shareholders," president and chief operating officer Kent Schulze said in a statement.

Also, on Dec. 23, 1998, the company said that it had completed the sale of the chemical and fertilizer division of Willamette Seed Co., with about \$20 million in sales, to Wilbur-Ellis Co., San Francisco. ABT kept the seed division of Willamette Seed CO.

ABT announced that it had increased equity by about \$18 million through an \$11.2-million private placement and a \$6.7-million voluntary warrant exercise. It has also received commitments for at least \$25 million of long-term debt, which it expected to close before Christmas.

Repeat of hopper invasion in SW not likely in '99

A grasshopper isn't your everyday turf or landscape pest, but millions of them in a particular area can devastate plants, any plants. The summer of 1998 saw grasshopper populations rise so dramatically in some areas of the Southwest that they damaged turf and ornamentals.

"They'll eat anything green, killing grass, landscape plants, trees and shrubs," said Dr. Cliff Hoelscher, an extension specialist with Texas A&M University. "We've had 60 counties in Texas that have had an unbelievable problem." And Hoelscher wouldn't rule out similar problems in the Southwest this growing season, although conditions shouldn't be as favorable for infestations.

The El Niño, blamed for about every unusual weather occurrence last year, is getting the blame for the grasshoppers too — at least in part. Scientists theorize that the wet '98 spring in the Southwest in 1998 spurred plant growth and allowed the hungry hoppers to multiply.

"Grasshoppers are going to move around and find the greenest, most lush things," said Dr. John Jackman, an entomologist with the Texas Agricultural Extension. "As they move off dry pastures to find something to eat, they are concentrated."

There are ways to combat more localized infestations. One is to try to exclude them from a property or plant material. Since grasshoppers like tall vegetation to hide in, mowing a barrier 20 feet wide around a property will reduce their num-



bers significantly. Also, a plastic, small-mesh product called Row Cover can be used to cover valuable plant material.

For the few grasshoppers that cause more annoyance to property owners than landscape damage, Hoelscher suggested that landscape managers can prepare a bait made from Sevin XLR and wheat bran bait. Sevin XLR is labeled for turf and ornamentals, and the label lays out the bait recipe. Hoelscher recommended that molasses be added to the bait to keep it from drying out too quickly during hot, dry weather.

"The bait needs to be placed in open areas," says Hoelscher. "You can't put it in the grass because the hoppers can't find it. If you have open areas in ornamental beds it works quite well there."

For a more info on grasshopper control, obtain the pamphlet Grasshopper Integrated Pest Management, free from the U.S. Animal Health and Plant Inspection Service (APHIS), 4700 River Road, Riverdale, MD 20737. Ask for technical publication 1809. **LM**

Milliken teams up with Emerald Isle

SPARTENBURG, SC— Milliken Chemical, headquartered here, announced in January that it is acquiring the products and brands of Emerald Isle, Ltd., Ann Arbor, MI. The acquisition includes a long-term agreement to codevelop new products for the turf and ornamental market.

"It's a good strategic fit," said Lawrence Kind of Milliken Chemical. "Milliken Chemical and Emerald Isle can combine worldwide distribution and excellent quality products for strong future growth."

Added Bill Middleton, CEO of Emerald Isle: "We see this as an extraordinary opportunity to collaborate with really top-quality people."

For extended p

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Chrysler Financial. We also offer TRAC, Capital, and Municipal Lease options that allow customers to tailor-make a deal based on individual needs. Plus, depending on the model, you can choose from a \$300 cash

allowance, a 100,000-mile/5-year Powertrain Care Plus[™] service contract with Road Hazard Tire Coverage,* or select upfit package allowances.**

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select the right combination of upfit equipment to build a truck that's a cut above, too. Much like the way we help design the right finance plan. And this



can make all the difference when you're on the job. To learn more about the program that's built around you, call toll-free 1-877-ON-THE-JOB or visit our Web site at www.4adodge.com

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The New Dodge



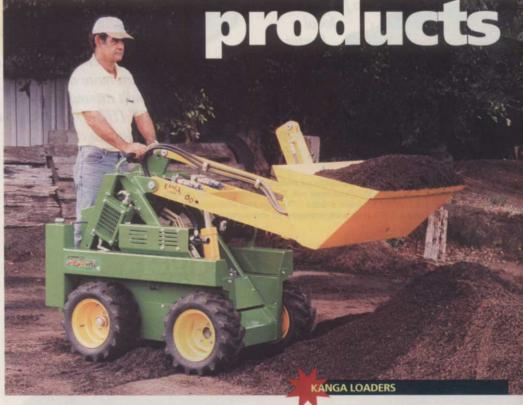


ces, or no-charge

Hot 11eV

In the world of information overload, it's hard to make an impression. Here are some of the products that caught our attention.

By RON HALL and NANCY STAIRS



e test-drove new tractors and mowers at the OPEI Expo '98 in Louisville. We cruised the show floor at the GIE in Nashville, and talked to dozens of suppliers at the outdoor demo. We wore out the carpet at the Ohio Turfgrass Show in Columbus, Ohio. We were on the prowl for new products that will catch your eye and help you be more productive this season.

A couple of trends jumped out and smacked us right between the eyes (don't get any ideas), including the incredible popularity, and growing number, of zeroradius-turn mowers, and the proliferation of the multipurpose, mini-workhorse machines like the **Dingo**. It was the first introduced into the United States and is now a part of the **Toro SiteWorks System**TM.

MOWERS THAT BITE AND GROWL

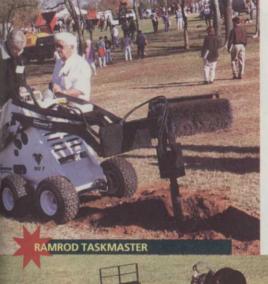
Exmark's Rick Curlett, on the show floor at GIE, showed us the new Lazer Z 72-in. mower, and explained the advantages of the new liquid-cooled 22-hp Kawasaki engine.

Encore's new front-cut Prowler features 52- or 61-in. decks, while Ferris Industries touts the new IS^{TM} independent suspension

on its ProCut Z mowers.

Steiner's new zero-turn-radius mower is the ZTM325 with a 61-in. cutting deck.
Gravely points to the new maintenance-free Gravely XL Spindles and tungsten carbidecoated blades on its 260Z unit, and BobCat's ZT 100 can finish off 20.4 acres in an eight-hour day.

Scag's new Turf Tiger, with the black stripes across its fenders, looked almost menacing on the GIE show floor, but the Tiger salesman assured us that it's "the smoothest running cat" on turfgrass. And how about these for names—the Great Dane Chariot and its compact brother, the





Chariot Jr.? Both bright yellow zero-radiusturn riders come with paw prints on their fenders. Buying a new mower in 1999 could be almost as exciting as buying a new car.

FUN, FLEXIBLE AND AFFORDABLE

Some contractors are going to smaller equipment to get jobs done. Smaller equipment is easier to store, easier to transport to job sites and, with an explosion of attachments, some of these units perform an incredible number of functions.

A number of mini skid-steer loaders meet the needs for carrying out work in smaller spaces, which, considering that lots are getting smaller and condominiums can often have fairly limited access, is valuable.

Kanga Loaders

The lastest model from Kanga Loaders, Bixby, OK, has improved lift capacity to 550 lbs. with overload protection; wider frame for maintenance accessibility; steel hydraulic lines; increased hydraulic reservoir capacity and fuel capacity; and 20-hp engines, either gas or diesel. Attachments include: carryall-leveller, trencher, post hole and tree-planting augers, 4-in-1 bucket, broom and two

new additions (an angle backfill blade and a stump grinder).

Hans Schurmann of Anthos
Landscape Co.,
has had the
Kanga Loader for
about two
months and is
impressed by its
versatility. "Its
smallness is actually one of the
advantages. Many
of the soul-destroying jobs —

like back-breaking digging — have suddenly disappeared and work has become more fun and less tiring."

For more information call 918/629-7230, fax 918/461-0996, on the web at www.kanga-loader.com

Circle No. 274

Ramrod Taskmaster

Ramrod, Minot, ND, promises a miniskid for any task, with its Taskmaster series. It offers over 20 attachment choices.

Tina Phillips of Landscape Connections, Harrison, OH, says that their Ramrod Taskmaster replaced a worker. "He was going back to college and instead of hiring somebody, we bought a Ramrod," she said. "We can unload the truck with the Ramrod and carry the material to a

specific spot in the yard instead of using a wheelbarrow."

Operating capacity ranges from 550 lbs. to 900 lbs., and most models are available in either gas or diesel. The 550 T-G, when equipped with 4-inch tires, is only 31 inches wide, which allows it to work in very cramped situations. The more powerful 900s are equipped with a dual hydraulic pump, which is ideal for high-output, multiuse attachments, but are still only 36 to 42 inches wide. A stabilizer kit is newly available as an option for the backhoe, as is a dozer blade which can be attached to the center of the backhoe.

For more information call 800/667-1581, email sales@ramrodequip.com, on the web at www.ramrodequip.com or Circle No. 275

Toro

Toro, Bloomington, MN, has the Site-Work Systems products, a line of rugged equipment, including the Dingo® compact utility loader and over 35 attachments. The 42-inch width can be reduced to a mere 33-inches when narrow tires are used and, with four-wheel skid steering, the Dingo can spin in its own radius.

It has been an exceptional investment for Paul Ocheltree at British Landscapes, Roseville, MN, who said their Dingo "reduced labor costs considerably and it reduced a lot of hand labor. It's allowed us to do certain projects that I wouldn't have tackled in the past."

Weighing in at 1,600 lbs. makes it gentle on established turf. And, one person can pull the Dingo up to a trailor, install a SiteWork Systems attachment in less than 60 seconds and be back to work. The Dingo features a two-pump hydraulic system and all the attachments fit on a specially designed trailor for easy transport.

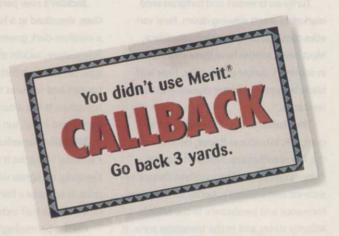
MORE, MORE, MORE

Some of the other products we noticed seem to be ideas whose time has come, or

cont. on page 26





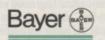


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The rules are simple. Keep your customers happy and you keep moving forward.

Otherwise, you go directly to a callback. And the more you go back, the harder it is to get ahead. But one application of MERIT*

Insecticide is all it takes to control grubs and callbacks. And fewer callbacks mean more time, money and labor you can use to move your business forward. Which puts you ahead of the game. For more information, contact Bayer Corporation, Garden & Professional Care, Box 4913, Kansas City, MO 64120. (800) 842-8020. www.protect-your-turf.com





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Circle No. 118 on Reader Inquiry Card

New turf varieties keep sprouting

Turfgrass breeders and turfgrass seed marketers aren't slowing down. New varieties continue to enter the marketplace. Most new varieties have these characteristics in common: darker green color, finer leaf blade texture and better disease and insect resistance.

The Roberts Seed Company, Tangent, OR, introduces Racer, developed at the Pickseed/Roberts Research Station.

Roberts claims it offers excellent disease resistance and showed superior summer performance and persistance in the Middle Atlantic states and in the transition zone. It will be available for use in Roberts' blends, and in mixes with Kentucky bluegrasses.

Pandora perennial ryegrass from **Western Productions**, Woodburn, OR, is a fast establisher. It has shown "outstanding" overseeding qualities in the transition zone, Western claims, although it also performs well in a variety of climates.

Jacklin's new perennial ryegrass is Top-Gun, described as a high-density turf with a medium-dark green color and mediumfine texture. Jacklin also offers Arabia turftype tall fescue, which is endophyte enhanced and features top-net blotch resistance. It has a dark green color and can be planted in full sun or moderate shade.

Medalist America says its Bluemoon Kentucky bluegrass is the darkest of any Kentucky bluegrass with a rich green leaf color. It features a fairway performance down to one-half inch mowing.

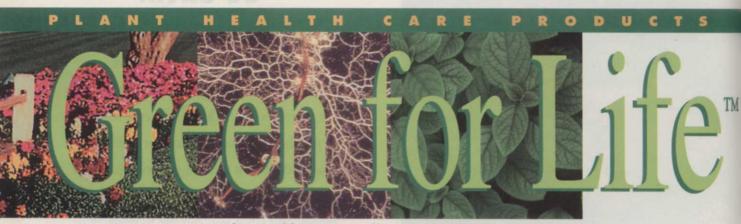
On the bermudagrass front, interest is building for **TifSport**, a new hybrid bermudagrass that's more cold tolerant than older hybrid varieties and more likely to resist mole cricket damage. A unique growers cooperative has been formed to produce and market the grass that was developed by Dr. Wayne Hanna's program in Georgia.

cont. from page 23

in some cases, a new take on a good old standby. We didn't have room for everything, unfortunately, but that is why we have a monthly Products Review section in Landscape Management.

Don't move flowers, McStack them

The McStack attracted a lot of attention at the GIE Show in Nashville this past fall. The McStack is a system of racks that fit on the back of a truck. The racks can be loaded with plants and stacked. Then the entire racks, or "McStacks" as they are called, can be lifted off at once with a forklift or a loader with forks, pallet jack or McStack dolly. The system was developed a couple of years ago as an alternative to loading and unloading nursery stock one plant at a time. Imagine how much time you could save at a big commercial flower job. Recently Bill Gerhardt, operator of Greenscape, Columbus, OH, has adapted the McStack for even more landscape uses.



Plant Health Care, Inc. offers a comprehensive line of mycorrhizal fungal inoculants, biostimulants, biopesticides, biofertilizers and water management products, specifically formulated to help maintain optimal growth and quality.

MYCORRHIZAL FUNGAL INOCULANTS



Mycor™ Palm Saver™ Inoculant

6-3-6 + Micros A palm fertilizer and organic soil

conditioner with beneficial mycorrhizal fungi and Nitrogen fixing/Phosphorus solubilizing bacteria to improve feeder root growth and survival of palms and related species. Used at planting or as a vertimulch.



Mycor™ Tree Saver' Transplant Inoculant

Spores of endo- and

ectomycorrhizal fungi mixed with Terra-Sorb™ planting gel, yucca extract, seakelp, and humate soil conditioners. Used to eliminate rework when planting landscape trees and shrubs.



Mycor™ Plant Saver™ 4-7-4 Planting Inoculant

Inocula Combines

Healthy Start™ Biofertilizer with endo- and ectomycorrhizal fungi, beneficial bacteria, biostimulants and humic acid to create ideal growing conditions when planting containerized perennials, shrubs, vines and small trees.



Healthy Start™ 3-4-3 Biofertilizer

A totally natural fertility system for new flower and sod

installation. Healthy Start™ contains NPK and a range of micronutrients derived from organic plant and animal proteins, combined with humic acids to recondition poor soils, and Nitrogen fixing and Phosphorus solubilizing bacteria.



Contact McStack at 800/646-2782 or visit its website at www.mcstack.com. Circle No. 276

Many uses for porous pavement system

Jeff Martella, manager of Homestead Village, Bellevue, WA, says that using Geoblock® for emergency vehicle access was a good move. "It looks like a putting green. It's nearly invisible, you can't tell it's there at all."

The porous pavement system has additional benefits: more pleasing aesthetically than pavement or cement, as well as slowing runoff and allowing rain to percolate into the

ground. The Geoblock system creates a flexible structural bridge within the topsoil layer, promoting turfgrass growth and protecting it from vehicular and pedestrian traffic. It provides the load support needed and also increases green space.

For more information call Presto Products Co., Appleton, WI, 800/548-3424, or try the web at www.prestogeo.com.

Circle No.277

For those hard-to-reach spots

The HM19S2 can get into places that other mowers cannot. The Hover-Mower™ won't take the place of riders and walk-behinds, but this unit from Eastman Industries, Portland, ME, provides an option for those hard-to-reach places, in-

cluding steep slopes and banks. The deck design virtually eliminates scalping and the constant cushion of air glides over the ground allows operators to mow in any direction at any time.

The aluminum cutting disc and three Zytel composite metal-edged blades cut a 16-inch swath with the HM16R2 and 19 inches with the HM19S2, and cutting



FOR THE LIFE OF YOUR PLANTS

lants already know how to grow. Our job as horticulture professionals is to create those conditions that best enable natural growth mechanisms to perform as desired.



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A Natural Systems Approach



PHC™ BioPak™ Biostimulant

A dry, water soluble biostimulant with beneficial bacteria for promoting root growth, branching and flowering of container, ornamental and bareroot plants. Contains spores of nitrogen fixing, phosphorus

solubilizing and growth promoting bacteria, together with vucca, seakelp, humic extracts, amino acids and vitamins.

New! PHC™ BioPak™ Plus Biostimulant

PHC™ BioPak™ Plus is a premium water soluble blend of beneficial rhizosphere bacteria, chelated micronutrients, organic biostimulants and yucca plant extract wetting agent. BioPak™ Plus improves the nutritional health, color and vigor of stressed plants and turfgrasses.



Yuccah™ Natural Wetting Agent

A natural based soil wetting agent and microbial stimulant for turf growing in dry,

compacted and hard-to-wet soils. Yuccah™ is derived from Yucca schidigera plant extract.

Terra-Sorb™ Hydrogel Products

PHC[™] is the sole manufacturer of Terra-Sorb[™] products. Terra-Sorb[™] hydrogel is used on sod, new grass seed, potted plants and flower beds to improve water retention.

TerraPam™ Tackifier



A polyacrylamide tackifier used to ensure effective hydroseeding by binding together the various components of the hydromulch, which improves water penetration and retention, and maintains a cool soil temperature. This results in optimum germination and soil stability. Also an effective binder on dirt roads, reducing erosion and dust problems.

BioPam™ Tackifier and Inoculant



A tackifier/biostimulant used to ensure effective hydroseeding by binding together the various components of hydromulch while improving seed establishment. Also contains BioPak™, a dry soluble biostimulant with Nitrogen fixing Phosphorus solubilizing and growth promoting bacteria.

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height is adjustable from 1 to 3 inches. In addition, a unique air-mulching system cuts and recirculates the grass and continues the mulching process, for a clean well-mulched lawn.

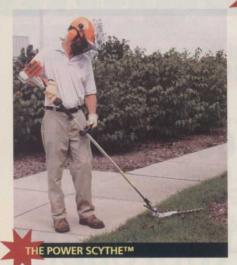
The HM16R2 has a Robin 2-hp, 2-stroke engine, a 12-inch impeller and weighs 19 lbs., while the HM19S2 has a Suzuki 3.8-hp, 2-stroke engine, a 15-inch impeller and weighs 37 lbs. For more information contact Eastman at 800/760-1680, fax 815/363-0933 or

Circle No. 278

Stihl Power Scythe

The new FH 75 Power Scythe from Stihl, Virginia Beach, VA, trims shrubs, grass and weeds in close proximity to cars, windows or people. It uses a "hedge-trimming" concept, and shrubs, weeds and grass simply "lay down" after being cut, as opposed to being scattered by a traditional string trimmer.

A unique gearbox protects the FH 75 from concrete sidewalks and roadways and the blade tip is protected. In addition, the



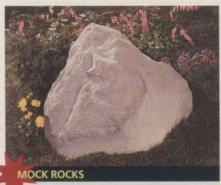
unit will articulate to provide versatility in cutting angles and application. It also features the 4137 family engine with interchangeable parts and is equipped with the Easy StartTM system consisiting of the ElastostartTM shock absorbing handle and a fuel prime bulb.

For more information call 800/GO-STIHL, visit www.stihlusa.com or Circle No.279

Hide more than your key under these

"It's easier than trying to move a big (real) rock and if you change your mind about the location you can move it somewhere else," says Jay Janosz, J&L Materials, Thousand Oaks, CA. He's talking about Mock Rocks, artificial landscaping rocks made by Deko-RRa Products LLC, Poynette, WI.

These rocks are functional as well as decorative. Mock Rocks have a hollow cavity inside to cover well/septic vent pipes and other unattractive items in the land-scape. The Thermostone™ material looks like natural rock, and is impact and abrasion resistant. Mock Rocks weigh only 8 pounds



and come in two styles and three colors: fieldstone, riverbed and quartzite.

The company is planning on broadening the product line by creating rocks suitable for unobtrusive lightscaping applications.

For more information call 888/635-8585 or visit the web at www.dekorraproducts.com or

Circle No. 280

Monster mulch mover

The Mulch Mule is the ultimate mulch-moving machine from Green Industry Innovators, Louisville, OH. Not only does this mean no more forking or shovelling to unload material, but the 15-yard capacity Mulch Mule can be used to haul leaves, snow and other landscape debris or materials. It can be pulled with a 3/4-ton pickup and has a dependable 11-hp Honda-powered electric start engine with charging system. All components are hydraulically operated. Material is moved by a steel-chain web system and can be unloaded into a

wheelbarrow/bucket out-front chute or out the back swing gate.

Todd Pugh of Green Industry Innovators points out, "It has a lot of practical engineering on it. The features on the device have been formulated directly by landscape managers in the field. It is not an engineer behind a desk who's designing this."

For more information call 330/875-0769. Circle No. 281

All you expect from Cat ... only smaller

One of our editors traveled to North Carolina this winter to learn more about the new Cat[®] Skid Steer Loader with a broad variety of work tools for nearly every application. She was impressed.

Features include a coupler system for quick secure work tool changes that is also compatible with work tools from other manufacturers; ease of accessibility and excellent visibility due to twin-tilt cylinders; grab irons and skid-resistant steps; ergonomic design for low effort controls using a joystick; both hand and foot throttles for additional engine power; and easy access for maintenance needs.

Six models will be available in 1999: the 216 and 226 with 1,350 and 1,500



CAT SKID STEER LOADER

rated operating capacity and 49 and 54 hp, respectively; the 228 and 248 High Flow models with 1,500 and 2,000 rated operating capacity and 54 and 74 hp, respectively; and the 236 and 246 with 1,750 and 2,000 rated operating capacity and 59 and 74 hp, respectively.

For more information contact your local Caterpiller dealer or Cat Rental Store or Circle No. 282



EKINSS RIDE A WALKER

T.

The Walker has been the finest, most profitable investment we've made in our business.

Whether your business is large or small, we invite you to join the growing Walker Mower family.

After eleven years in business, Arlan and Brenda King and their sons, Jared and Jordon, reflect on the progress of their company, Paradise Environments Inc. in Sun City, Arizona:

"Our company began in 1988 with a handful of small residential accounts we purchased from another contractor. We enjoyed slow but steady growth, Mowing with our 21-inch walk-behind was by far the most time and energy consuming chore.

Many Walker Mowers were used in our area but I felt we didn't have large enough accounts to justify the cost. As we grew, I realized how much time and energy a Walker could save us and increase our profits. We purchased a used

Walker in '94 and I was very pleasantly surprised to see how well the Walker performed in small, confined areas. I soon realized the Walker can be used virtually anywhere it can turn around. The Walker has been the finest, most profitable investment we've made in our business. We can't imagine operating without it."—Arlan King

For your Free video, call 1-800-828-8130, Dept. 027-5. (\$3.95 shipping charge. Visa/MC accepted.) Or send check or money order for \$3.95 payable to: Video Fulfillment Services, 027-5, P.O. Box 385070, Minneapolis, MN 55438. Allow 2-4 weeks delivery.



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Circle No. 125 on Reader Inquiry Card

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Agri-Fab, Sullivan, IL, manufactures both tow-mount and pushbehind spreaders for professional users.



Befco's Green-Rite aerator/overseeder aerates, seeds, agitates seed to the ground and compacts the seed in a single pass.



Finn Corporation's T30 HydroSeeder is an entry-level machine for establishing new lawns. It has a 300-gallon capacity.

SUCCESSFUL SEEDING

Units to plant the seeds of success

By CURT HARLER, Contributing Editor

Whether you're in the market for a simple push-behind seeding unit, a tractor-mounted machine, or you're looking for a hydro-seeder, the latest crop of seeders is blooming with units designed for every application.

Among the key statistics to check is the capacity of the hopper — the more seed the unit will carry, the fewer stops the worker has to make. The exception to this rule is push-behind units, where operator fatigue can become a factor if the machine becomes too heavy to maneuver handily. A good standard of reference when buying a seeder is the number of square feet or acres covered per hour.

It is possible to get two-for-one deals from a number of firms. Combination machines provide an opportunity to get more useful days out of one equipment purchase. Designed to do a couple of different jobs, these units either perform multiple functions on a single pass, or they can serve as backups to other single-function machines.

AGRI-FAB 217/728-8388 www.agri-fab.com

A 175-pound, rustproof poly hopper is available on the 45-0298 push drop seeder from Agri-Fab, Sullivan, IL. This push spreader will cover 40,000 sq. ft. in one trip. It can be equipped with marker wheels to assure accurate drop in difficult conditions. Several other push-behind and tow-mount seeders are also available.

Circle No. 250

BEFCO 800/334-6617 www.befco.com

The Green-Rite one pass aerator/overseeder from Befco, Rocky Mount, NC, comes in a 58-inch working width for use with tractors from 25 to 45 hp. In a single pass, it aerates, seeds, agitates seed to ground and compacts the seed. It has a single 7.5 cubic foot seed hopper and precise seed cups to meter seed. Optional front gauge roller kit is available.

Circle No. 251

BLUEBIRD INTERNATIONAL 800/808-BIRD

www.bluebirdintl.com

The new HS-15 SeedScaper from Bluebird, Englewood, CO, allows a single



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 MFGR. 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 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 hydromulching 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 Verticutter-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 21inch 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

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NUTRITION GUIDE



Satisty 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.

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.

What controls this process? Plant demand controls it.

Who's in charge?

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-P₂O₅-K₂O) 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

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Set your company apart

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

By CHUCK PAULSON AND MIKE ARCHER

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 organicallybased 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 organicbased 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

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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.
- 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.

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NUTRITION GUIDE

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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,

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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,

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MUTRITION GUIDE

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the quality and health of the turfgrass improves. Increased rooting and turf density reduce the reliance on pesticide use also.

Economic benefits?

The price difference between organicbased fertilizers and synthetic fertilizers has narrowed, but organic-based materials still tend to be more expensive. So can you justify a higher-priced product? Well, if a solid program means that you can reduce your use of other materials, the answer is yes.

Catron says that yearly comparative data at NaturaLawn of America data indicates that they use 80% less control materials than a traditional lawn care company, for weed and insect controls, and over 97% of the applications that they do make for insects are biologically based.

In addition, increases in earthworm populations, mixing of organic materials into the soil and decreases in thatch all contribute to the condition of the soil, and can only benefit the turf, which ultimately will impact the types and extents of treatments required.

How do you start?

Well, besides finding a supplier of organic-based products and updating your ad in the Yellow Pages, it is important to have a good understanding of the nutritional aspects of the turf you are dealing with.

Catron advises people to look down the road and see the long-term benefits.

Changing your materials is an easy step, he says. The tough change is adapting your approach and training, and involving your employees to make good decisions and not to treat a disease symptom as soon as they see it. If you are building soil as well as turf, you want to give the soil organisms and insects a chance to do their job.

Chuck Paulson is the National Sales Director and Mike Archer is Product Manager for Spring Valley Turf Products, Jackson, WI.

Fertilization and nutrition products

Emerald Isle's GroWin rootzone biostimulant produces an additive response over and above fertilizers and amendments.

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For more information call 800/628-GROW or Circle No. 283

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For more information call 800/526-2303, website www.jonathangreen.com or Circle No. 284

Harmony Products is offering Complete 14-3-6 1% Iron, 6-2-12 3% Iron Bridge Products and the new Complete 7-2-5 4% Iron.

New 7-2-2 4% Iron features secondary and micro-nutrients including 4% iron, seaweed extracts and humic acid. The Premium Organic Line includes the Bridge Products 4-2-0 Topcoat and 3-6-3 Turf Food.

For more information call 800/343-6343 or Circle No. 285

Howard Johnson's Enterprises launched its new line of products featuring HJCT-2, a patented coating process for nitrogen and potassium.

Thirteen layers of ultra-thin coating protect the nutrients from moisture and temperature more effectively than the thicker, less accurate coatings. This polymer-based coating technology will provide greater control over turf color, growth and quality.

For more information call 800/298-4656 or Circle No. 286

Lange-Stegmann Co. offer a variety of products.

The products include AgricoTurf II Stabilized Nitrogen, Polyon Polymer Coated Nutrients, Nutralene and Nitroform Nitrogen, as well as Sulfur Coated Urea and Super U. Lange-Stegmann will also be offering fertilizer products with Mach 2 Turf Insecticide Grub control in early 1999.

For more information call 800/279-9531 or Circle No. 287

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Nutramax Laboratories, Inc. offers Macro-Sorb radicular and Macro-Sorb foliar amino acid-based fertilizers and Quelant-Ca calcium chelated with amino acids.

Quelant-Ca is tank-mix compatible with herbicides, soluble fertilizers, insecticides, fungicides and plant growth regulators.

For more information call 800/925-5187, website www.nutrimaxlabs.com or

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For more information call 800/525-2803 or Circle No. 293

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If All financing offers are for commercial use only at participating dealers and expire 31 May 99. Subject to approved credit through John Deere Credit. Installment Plan. Equipment financing is at 8.4% up to 60 months except as follows: the Commercial Cutter package is 36 mo., Commercial Walk Behind Mowers are 36 mo., the 2-Trak is 48 mo. A 20% minimum down payment is required on all equipment except as follows: the Commercial Cutter Package is \$99, the 790 tractor is \$2,251, 4500 tractor w/460 loader, 6.16 rotary cutter is \$7,598, Commercial Walk Behind Mowers require no down payment and no interest until 1 May 99 and no payments until 1 June 1999. No down payment is required on 2-Traks. Dealer set up, freight, taxes, and other miscellaneous charges (if any) are not included in prices and monthly payments. *Lease term is 36 mo. and lease amount and monthly payments do not include insurance, dealer set up, freight, or any applicable taxes or fees. For commercial use only; capital cost reduction is required. See dealer for details.
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Commercial Cutter Package Sale

For this package, the price *is* right. The thirteen-hp GS30 gear-drive mower with 36-inch deck, 250-mph backpack blower, fast-cutting commercial hedge trimmer, and industry-best XT120 gas line trimmer all mean business — lots of business, for you.

When you test-drive any commercial equipment in this brochure, you'll receive a FREE John Deere mesh trash bag. Empty, of course.

Offer available at participating dealers only.

deal with a really long string attached. Buy a John Deere comments of the string attached at participating dealers only.

A deal with a really long string attached. Buy a John Deere commercial walk-behind (36-in. or larger) before May 31, 1999, and you'll receive a free, next-generation commercial-grade line trimmer (plus get zero-down financing).** Besides enjoying the advantages of superior decks and fully enclosed transmissions, on our hydrostatic models, you'll also get the opportunity of a ten-day test drive.***



GS30 Gear Drive With 36-Inch \$78/month* Deck or just \$2,450*

> *HD45 Hydrostatic *116/month** With 36-Inch (or just \$4,677*) Deck

New XT Series Trimmers

Deere M-Series engines set the tone for power and sound quality. Their extreme durability, reliability, and power make these new handhelds the best way to arm yourself.

3 YEAR

limited warranty on
HD & GS transmissions

Perhaps the most vital part of a commercial mower, John Deere wide-area walk-behind transmissions come with the assurance of a three-year limited warranty. So they'll be part of your crew for a long time to come.

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with purchase of commercial walk-behind 36-in. or larger

The XT120: A cool-running, highly efficient M-Series 1.2-hp engine. Shock-absorbing grip. Noise-reducing intake silencer and low-tone muffler. Advanced throttle control. Large capacity tap-for-cord line head. And lifetime ignition and shaft warranties.

*Manufacturer's suggested list price. Price may vary by dealer.

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It's an advance on your future. Pay nothing for 90 days for the John Deere commercial parts, service and handheld products you need to build your business now. Offer good through October 31, 1999.***

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or just \$8,255*

790 Tractor \$10,995

lowest price in its class***

(30hp / 25 PT0hp)

Lowest list price of major manufacturers in the 20-to 30-PTO-In class.

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A great first impression. Most John Deere decks are pressed from a single sheet of heavy steel, lending them a strength welded-together rivals simply can't match. Underneath, a high-lift design, maximum blade overlap, and a wide-discharge chute provide you the precision cut that impresses the first time — and every time.

The original workhorse: Now with more horses. Hitching to implements in under five minutes is just one of this 30-hp tractor's abilities. Others include easy starts, and restarts, with direct injection and an auto-bleed fuel system. Standard transmission is a smooth sliding gear. Package includes 4WD. (8.4% financing available.)

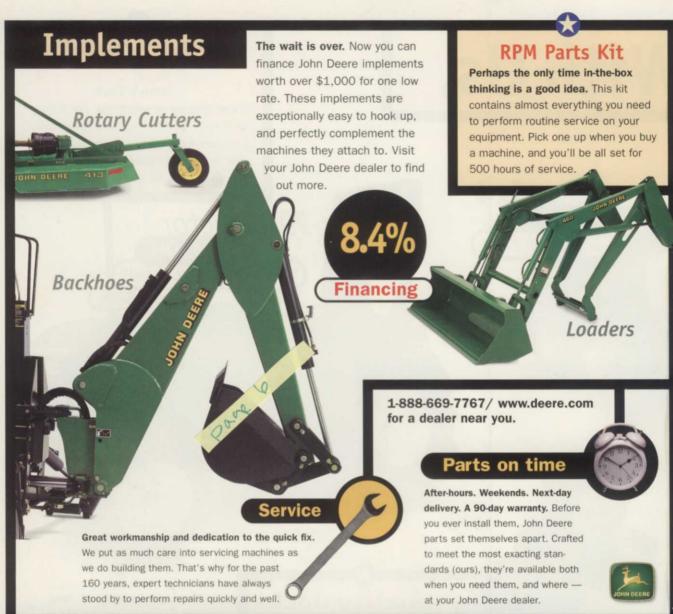
The best financing around.

These 20-hp zero-turning-radius mowers with a choice of 48-, 54-60-inch decks already set the ser-friendliness and ease-of-service. option of buying one with no money by 31, 1999)††, their financing is e same.

It's Nowhere Nea

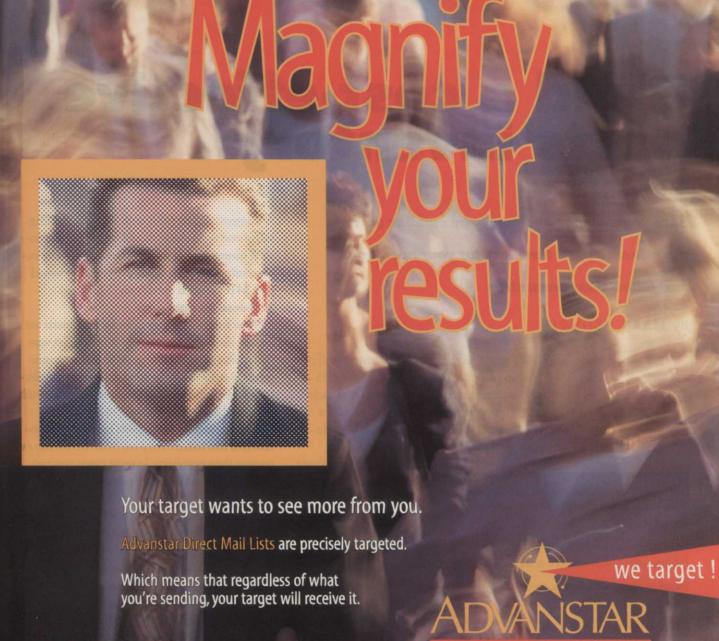


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Build a cost-effective parts inventory

Save yourself time and money by building the right maintenance parts inventory for your operations.

Just follow these seven steps

By MARK NEIDICH

f you think the cost of an inventory is all parts and supplies, think again. Parts are 30% of equipment maintenance costs (not including operating costs). Labor constitutes most of the balance, although miscellaneous costs may be as high as 10%.

UNDERSTAND CARRYING COSTS

The breakdown of a typical inventory carrying cost is below:

Cost of storage, rent, building
depreciation, maintenance & repair4%
Cost of inventory supplies, shelves,
bins, record, taxes1%
Cost of insurance2%
Employee costs, salaries11%
Obsolescence, damaged or
nonreturnable parts, pilferage,
time spent returning parts for
credit and warranty claims5%
Money costs, lack of return on
inventory and control investments
that otherwise produce income

(opportunity costs)......10%

These figures do not reflect average downtime of equipment, the time spent getting replacement parts when breakdowns occur or other data which would indicate the effectiveness of the inventory control system.

The carrying costs of an average inventory are about 34% of the total inventory value.

1. Understand the carrying costs

The figures in the chart at left will vary somewhat, depending on your fleet. Accounting figures estimate that it will take between

11% to 15% of a company's annual parts expenditure to support the employee costs. If the annual inventory is \$2,500, expect those costs to total from \$300 to \$375. This includes ordering, receiving, pick-ups and delivery.

Support dollars for shelves, heating, lighting, telephone and vehicle should be 25% of the onshelf inventory. For a \$2,500 annual parts inventory, turned over six times per year, this would give \$416 on-shelf maximum (\$2,500/6).

2. Choose the right parts

New parts — Factory manufactured parts are usually the highest quality, best fit, longest warranted and most expensive. Aftermarket manufactured parts can be as good as factory manufactured ones, but are often the equivalent of rebuilt parts, and sometimes worse.

Rebuilt parts — These parts have been reconditioned and tested. They are 30% to 50% less expensive than new parts. In most cases, you can get good service from such parts, but they have been used and therefore, to a certain extent, are fatigued. Although they are less expensive than new parts, the service life is considerably less.

The cost to consider here is the repeat labor cost of installation associated with the shorter component service life. One rule of thumb seems to cover most rebuilt parts: They make sense when you can expect to get 75% of the original life out of the rebuilt unit, but at 50% or more below the cost of a new one.

A major drawback of a major use or rebuilt part is that the components don't wear at the same rate, thus increasing the frequency of unscheduled repairs, since the unpredictability of the parts makes scheduled maintenance difficult.

Premanufactured parts — These are rebuilt parts, repaired to original factory specifications. They cost more than rebuilt, but less than new. Again, labor costs are a significant consideration.

Your goal should be to plan for scheduled repairs, thus saving the extra cost inherent in unscheduled repairs. Good quality parts replacement helps you reach your goal. Poor quality parts means more frequent failures and low equipment availability.

3. Understand price vs. cost

Too often, price and cost are used interchangeably and in error. *Price* is what we pay in dollars to acquire a product or service. *Cost* takes into consideration all the factors that add up to return on investment. We can spend a varying number of dollars on similar types of products, but real costs have a wide variation depending on the benefits we receive in terms of life, economy and quality of performance.

Ease of installation and frequency of service, labor required and safety are only a few of the considerations in determining cost. In essence, if we are to justify the high initial price of a product, we will have to do so on the basis of its cost.

4. Balance inventory vs. downtime

Anything that can be done to reduce the spare parts inventory without sacrificing equipment availability reduces your costs. However, as equipment availability increases, inventory costs rise sharply. If a large inventory is aimed at having many vehicles available, cost reductions just won't happen (although downtime costs drop and maintenance and labor costs remain about the same).

Parts should be replaced in inventory to minimize equipment downtime. Because of the cost of warehousing and maintaining our inventory, the best theoretical policy would be no inventory at all. But this is unrealistic because we know we can't get parts instantly.

5. Buy wisely

There are several categories of discounts available to fleets. Most owner/operators don't know what sort of discount they can reasonably hope for or how favorable each one is.

Fleet — This is the best price small operators can obtain with no inventory. It usually runs 5% off walk-in prices.

Jobber — If you are going to stock some inventory, this category will give you 15% off.

Distributor — This price is 25% to 35% off counter, but will constitute a \$2,500 to \$3,000 monthly purchase of inventory.

Manufacturer — Purchase from the manufacturer usually is only possible when it is a fairly small company, but the manufacturer can offer 50% to 75% savings. This would be vehicle parts only. Small equipment manufacturers' parts usually will be higher than aftermarket suppliers.

Basic Items to Stock

Oils:

Engine — Universal fleet oil 15W-40. Uses from small four-cycle to heavy truck.

Automatic transmission fluid — Dextron III/Mercon Universal ATF.

Hydraulic — Hydra/Trans Universal in all AW32 through AW68 and tractor

Note: Most small equipment hydraulic systems call for engine oil 10W-30, 10W-40 or a synthetic.

Miscellaneous supplies: Nuts, bolts, washers, pin clips, clamps, electrical terminals, wire tape.

Parts: Relative to your brand of equipment, your dealer will be able to help you in the most commonly used parts to stock.

Note: Small equipment — backpack bit mers, hedge trimmers, etc. are units that you can double-up on to allow rotation for repair and maintenance. Also, this will give you extra equipment for weather-related increased production.

6. Control your inventory

All inventories need some type of control system. The simplest system would be to restock when the bin is empty. This system works poorly because it leaves you without parts when you most need them.

Establish an economical quantity that works for your operations. This will reduce the cost of purchase-order transactions, while also leaving you with inventory.

7. Understand volume

Look at the item cost vs. the inventory volume. Fast-moving items will account for 65% of your inventory. This is where you should concentrate your purchases and management to reduce downtime or out-of-service units (which are often caused by inexpensive parts).

Although oil filters and lubricants are not considered parts inventory, they are part of the purchased inventory and vital to your truck and equipment operation. It is these items that will give you purchasing power at a warehouse distributor and allow you to start price negotiations to reduce your cost on all items purchased there.

Mark Neidich is fleet manager at Groundmasters, Cincinnati, OH, where he is responsible for 45 trucks and 400 pieces of equipment.

Is your service mix costing you money?

Add-ons can mean added expenses, not just added profits. If your services aren't up to snuff, use careful analysis to find out why

By ED, TODD AND AARON WANDTKE

ou operate Mixed Mowing & Maintenance Company, and you know something isn't right. Although you've added new services, it hasn't worked out as you hoped. You're not alone. Many firms have expanded their service mix, but not all have found this means better profitability.

It's time to do some serious analysis to help you decide if you need to drop the unprofitable services. How can you determine if your service mix is delivering enough profitability? What can you do to return your business to the profitability it had before? If labor is tight, should you keep the current service mix?

We used a sample profit and loss statement for a company that we consulted with previously. It may be like your operation. Here are the symptoms:

- It experienced significant growth in volume but, for two years, the owners didn't seem to make more money.
- •They borrowed more money and it took longer each year to become profitable.
- The company bought more equipment, which caused the complication of moving to a new location.

Go back in time

By looking back at Mixed Mowing's last three years (Exhibit 1), we can see that the company was making money then, but as it experienced growth, profits remained constant and even dropped. What was the problem?

We examined the revenue from years 1 to 3 and observed it increased 26% in year 2 and 27% in year 3. The core business, mowing, was barely growing, but the new services were growing rapidly.

On the other side of the ledger, total operating expenses as a percentage of revenue declined in year 2 and rose in year 3. This suggests we need an analysis of the component costs. Administrative expenses rose 3% in year 3. We need to identify the expenses directly attributable to the services. Finally, profit increased from year 1 to year 2, but dropped in year 3.

Look at each service

After we identified costs by service, a profit and loss statement was developed (Exhibit 2). You can see that cleanup and lawn care made money for the company, while irrigation lost money — \$52,150.

Next, we determine if any revenue was a function of another service being performed. (One relation was established: Cleanup would not be a service center if the company wasn't already doing the mowing services.)

We asked the owners how they provided the services in prior years. Surprisingly, they had subcontracted one service and started another because many of its customers seemed to need it.

cont. on page 54

Under the microscope

To analyze Mixed Mowing's services, we separated the revenue into operating service columns (Exhibit 2). This was done on the basis of the employees that performed the services. To understand how the services affect profitability, we:

- Combined mowing maintenance with miscellaneous service, as these services are performed by the same people, with the same vehicles.
- Identified clean up, irrigation and lawn care as separate cost centers.
- Identified payroll by the individuals who performed each of the applicable services.
- Separated subcontract cost, material purchases, taxes and other expenses by service cost centers.

Honda Proudly Announces Some Dramatic Reductions.

No, this isn't a closeout sale. It's a brand new line of string frimmers from Honda. And thanks to some dramatic reductions, now you really can do more with less. Noise Reduction Honda's new trimmers take advantage of their 4-stroke engine's combustion format to dramatically decrease noise. Emissions Reduction 4-stroke engines are well known for producing fewer emissions than comparably sized 2-stroke engines, making them very environmentally friendly. In fact, Honda's trimmers meet all EPA and CARB emission standards. Maintenance Reduction Honda's trimmers use straight gasoline, eliminating the hassle of mixing gas and oil. And they can run two times longer than comparable 2-stroke engines on the same amount of fuel! Effort Reduction

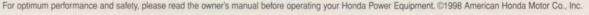
The engines also suppress spark plug carbon buildup and carburetor clogging, maintaining like-new starting ease. Price Reduction Starting under \$320,

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		The same of the same of	the later like			
evenue	Year 1 \$	Year 2 \$	Year 3 \$	Year 1%	Year 2%	Year 3%
awn Care	\$0	\$0	\$122,000	0.%	0.%	12.01%
lowing & Maintenance	475,000	520,000	550,000	74.80	65.00	54.13
rigation	0	65,000	167,000	0	8.13	16.44
roperty Cleanup	0	40,000	92,000	0	5.00	9.06
fiscellaneous Services	160,000	175,000	85,000	25.20	21.88	8.37
otal Revenue	635,000	800,000	1,016,000	100	100	100
perating Expenses						
ayroll	245,000	250,000	308,022	38.58%	31.25%	30.32%
ubcontract Labor	65,000	118,000	32,000	10.24	14.75	3.15
Materials	0	0	140,000	0	0	13.78
asoline	12,000	16,000	22,450	1.89	2.00	2.21
ehicle Maintenance	30,000	35,000	48,000	4.72	4.38	4.72
ayroll Taxes	36,750	37,500	46,203	5.79	4.69	4.55
mployee Benefits	8,000	10,000	18,000	1.26	1.25	1.77
perating Supplies	10,000	12,000	28,400	1.57	1.50	2.80
niforms	5,000	6,000	7,625	.79	.75	.75
epreciation	6,000	12,000	24,000	.94	1.50	2.36
otal Operating Expenses	417,750	496,500	674,700	65.79	62.06	66.41
iross Profit	217,250	303,500	341,300	34.21	37.94	33.59
dministrative Expenses						
ayroll Administration	85,000	99,000	145,000	13.39	12.38	14.27
ayroll Service	2,200	2,400	2,700	.35	.30	.27
ues & Subscriptions	1,200	1,500	2,000	.19	.19	.20
ducation	1,500	2,000	2,600	.24	.25	.26
uilding Rent	15,000	15,000	15,000	2.36	1.88	1.48
ayroll Taxes	12,750	14,850	21,750	2.01	1.86	2.14
mployee Benefits	5,100	6,500	9,600	.80	.81	.94
nsurance Auto/Gen Liability	9,000	14,000	20,000	1.42	1.75	1.97
elephone	3,500	4,800	6,000	.55	.60	.59
Office	12,000	14,000	20,000	1.89	1.75	1.97
rade Shows			2,000	0	0	.20
dvertising/Promotion	5,000	15,000	12,000	.79	1.88	1.18
ehicle Depreciation	6,000	10,000	12,000	.94	1.25	1.18
ehicle Expense	1,200	1,800	2,400	.19	.23	.24
ravel	4,000	6,000	8,000	.63	.75	.79
ntertainment	2,000	4,000	6,000	.31	.50	.59
rofessional Services	12,000	13,000	15,300	1.89	1.63	1.51
nterest	12,000	16,000	22,000	1.89	2.00	2.17
otal Administrative Expenses	189,450	239,850	324,350	29.83	29.98	31.92
Operating Profit	27,800	63,650	16,950	4.38%	7.96%	1.67%

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This simple comparison laund

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Ants

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Chinch Bugs

Cutworms

Fleas (Adult, Larvae)

Imported Fire Ants (Adult, Mounds)

Leafhoppers

Mealybugs

Millipedes

Mole Cricket (Adult, Nymph)

Pillbugs

Sod Webworm

Sowbugs

Ticks



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hed a sudden rise to the top



Talstar PL Granular and Talstar Lawn & Tree Flowable.

The rising stars of the lawncare industry.

Circle No. 108 on Reader Inquiry Card



cont. from page 52

We also learned that their irrigation services covered installation, service and lighting repairs. Analysis of this cost center showed that Mixed Mowing should get out of the irrigation business. However, on closer look at the revenue and costs, we learned that *installation* was the prime cause of the operating loss in this cost center.

Based on the analysis, we asked the following questions:

- Does Mixed Mowing need to market installation of irrigation systems?
- If the company only offered irrigation and outdoor light service work, would there be enough revenue possible for one individual or would another trained individual be needed?

Based on our discussions, we learned that the individual who designed irrigation systems would not remain if the company only remained in the service business. Mixed Mowing chose to exit the irrigation business.

Pick the winners

That decision led to a new picture. Mixed Mowing's owners realized that by realigning services, they could make more than \$50,000 more per year (operating profit of \$16,950 vs a new operating profit figure of \$69,100).

It's possible your company may be losing money in one service but it is not evident, based upon the way you are keeping the records. By following an analysis like ours, you can see if there is an opportunity for improving your profitability. Not all businesses can be analyzed as quickly as this, but you will learn more about the financial contribution from each service center.

This is a good time to analyze the income statement for your company for last year. You may find that you can improve profitability if you eliminate services that are not improving your overall financial performance.

The authors provide green industry consulting services for Wandtke & Associates Inc., 614/891-3111.

MIXED MOWING & MAINTENANCE CO. EXHIBIT 2 PROFIT & LOSS STATEMENT

Revenue	Total	Mowing	Cleanup	Lawn Care	Irrigation
Chemicals	\$122,000	Wowing	Cleanup	\$122,000	irrigation
Mowing & Maintenance	550,000	550,000		\$122,000	
Irrigation	167,000	330,000			167,000
Property Cleanup	92,000		92,000		107,000
Miscellaneous Services	85,000	85,000	32,000		
Total Revenue	1,016,000	635,000	92,000	122,000	167,000
Operating Expenses	1,010,000	033,000	32,000	122,000	107,000
Payroll	308,022	172,022	26,000	42,000	68,000
Subcontract labor	32,000	20,000	5,000		7, 000
Materials	140,000		21,310	26,840	91,850
Gasoline	22,450	11,950	1,500	3,500	5,500
Vehicle Maintenance	48,000	38,500	3,000	3,500	3,000
Payroll Taxes	46,203	25,803	3,900	6,300	10,200
Employee Benefits	18,000	9,840	1,560	2,520	4,080
Operating Supplies	28,400	22,200	1,500	1,200	3,500
Uniforms	7,625	4,375	750	500	2,000
Depreciation	24,000	18,750	1,500	1,750	2,000
Total Operating Expenses	674,700	323,440	66,020	88,110	197,130
Gross Profit	341,300	311,560	25,980	33,890	197,130
	33.6%	49.1%	28.2%	27.8%	-18.0%
Administrative Expenses					
Payroll Administration	145,000	125,000		8,000	12,000
Payroll Service	2,700	2,700			
Dues & Subscriptions	2,000	2,000			
Education	2,600	2,600			
Building Rent	15,000	15,000			
Payroll					
Taxes	21,750	18,750		1,200	1,800
Employee Benefits	9,600	8,400		480	720
Insurance Auto/Gen. Liabili	ty 20,000	14,000	2,000	2,000	2,000
Telephone	6,000	5,500			500
Office	20,000	19,100	200	200	500
Trade Shows	2,000	2,000			
Advertising/Promotion	12,000	10,000		1,000	1,000
Vehicle Depreciation	12,000	12,000			
Vehicle Expense	2,400	2,400			
Travel	8,000	6,000		1,000	1,000
Entertainment	6,000	4,000		1,000	1,000
Professional Services	15,300	15,300			
Interest	22,000	17,900	1,200	1,400	1,500
Total Administrative	324,350	282,650	3,400	16,280	22,020
Operating Profit \$	16,950	28,910	22,580	17,610	(52,150)
Operating Profit %	1.67%	4.55%	24.54%	14.43%	-31.23%

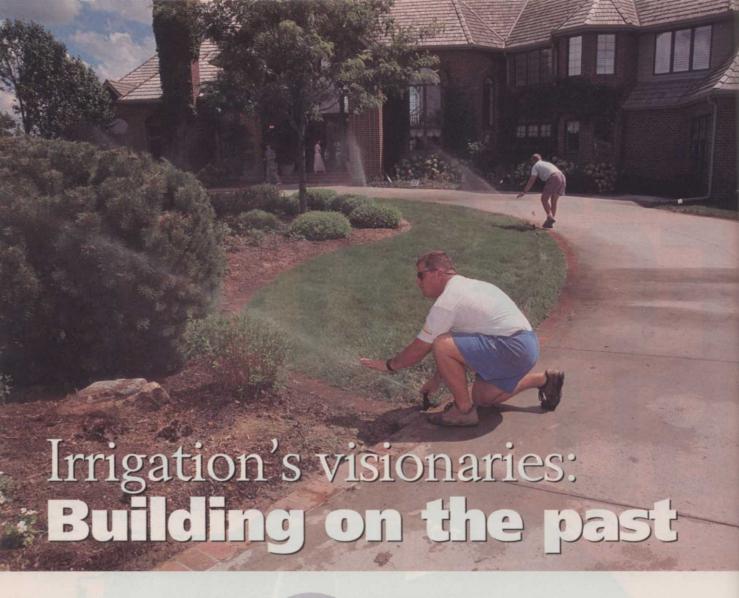




For those of you out there whose job it is to make things grow, UD TRUCKS has some enrichment in the form of a truck. The UD1200 light-duty truck to be exact. It comes with a very efficient 145hp turbocharged and intercooled engine, a cabover design for a tighter turning radius for some of those difficult residential and city streets, and is built for long lasting durability. The UD1200. A truck built to help some other things grow: like your business. For more information about UD TRUCKS, Western U.S. call 800-272-4831, Eastern U.S. call 888-680-8060.

Circle No. 126 on Reader Inquiry Card





Yesterday's smart landscape managers knew that irrigation was critical to landscapes. Today's trendsetters understand how to make it critical to their businesses. This three-part series explores past trends, today's irrigation contracting business models and tomorrow's technologies

By BRUCE F. SHANK

he landscape industry really is a package of industries working together to provide the plants, hardscape, chemicals and equipment that make our nation green. Each segment has developed under the leadership of visionary men and women, largely in the last 50 years of the 21st Century.

People like Ben Warren in the sod industry, Dick Duke in lawn care, Harry Gill in sports turf, Eb Steinegger in the golf course superintendent profession, Arden Jacklin in the lawn seed business, O.J. Noer in the fertilizer industry, and turf researchers like Jim Watson, Jim Beard, Bill Daniel and Fred Grau made our industry a multibillion-dollar business. It's time the landscape industry "Hall of Fame" included the leaders in landscape irrigation.

Unlike the lawn care industry, which matured in less than 40 years after Duke started ChemLawn in Columbus, OH, in the 1960s, the irrigation industry has taken nearly a century to develop into a billion-dollar business. Irrigation innovators did not create a common path on which others could build. Instead, they developed the market regionally. Only recently has consolidation started to pave a highway for rapid growth for manufacturers, distributors and contractors.

Learn From the Past

To get a true perspective of how irrigation has grown, we've included some of the people who helped create today's irrigation industry. It is by no means comprehensive, but hopefully, it will inspire you to respect their progress and to make your own legacy in irrigation.

History records that John D. Ross of

Pasadena, CA, in 1904 was the first person to design and sell sprinklers for lawn and garden use. He was followed in 1907 by W. Van Thompson, founder of Thompson Mfg. Co., now located in Ohio. A big name in early irrigation was Charles Skinner, who designed a simple, multi-nozzled, above-ground system in 1908. Lewn Nelson, George Moody, Max Snoddy, W.A. Buckner, Edwin Hunter and Karl Kah were among the inventors who pioneered the permanent subsurface irrigation systems of today.

John R. Brooks was the first recognized landscape irrigation contractor in the country. From an office in Detroit, he designed, constructed and installed irrigation systems for Henry Ford, the Chicago Parks Department and other wealthy industrial barons of the 1920s. Thirty years later, Burt Sperber's Valley Crest Landscape Company installed irrigation for the film industry and the California Transportation Agency.

Every region has its tales and early irrigation stories. Irrigation grew up largely on a regional basis. Some manufacturers remain regional to a large extent, choosing to serve the customers they know best.

From a national perspective, irrigation seemed to gel in the 1950s when Rain Bird, Toro, Hunter, L.R. Nelson, Weathermatic, Buckner and others gained momentum. On the West Coast, manufacturers had to install their own products at first. Irrigation distributors didn't exist until after World War II, but they are the ones who built the foundation that enabled the market to nationalize and take off — people such as Ewing, Hodas, Moffet and Tiglio.

Irrigation in a Nutshell

Today, four United States manufacturers represent more than \$600 million in irrigation sales — Rain Bird, Toro/Irritrol, Hunter and Orbit. This is approximately half of turf and landscape irrigation sales by manufacturers in the United States. There are midsized manufacturers on the move

as well, including Weathermatic, Storm and K-Rain. In addition, some manufacturers do considerable international business.

Three distributors have built substantial chains, doing in excess of \$300 million per year in sales — Century Rain Aid, Ewing Irrigation and United Green Mark. Like manufacturing, acquisition and consolidation in the middle ranks of distribution are also taking place. Meanwhile, retail hardware outlets are selling irrigation components wholesale to contractors in some areas. Service to contractors by distributors and manufacturers selling direct to large contractors are concerns that threaten conventional distribution.

Finally, we have large, multiple-branch landscape firms installing irrigation across the country — Environmental Care/Valley Crest, Brickman Industries and Service-Master's TruGreen-ChemLawn group. So, in a sense, irrigation has caught up with the landscape industries in the past decade. Yet, most of us know little about irrigation. Catching Contractors' Attention

Contractors have a sixth sense that alerts them to peculiar things normal people miss, such as lines on a mowing pattern that aren't straight, trees that were pruned improperly, fading color in an annual bed, a lawn suffering from a high grub population or mulch that needs to be refreshed. Contractors are now becoming sensitized to irrigation symptoms, such as dry spots caused by poor uniformity, overspray, wetness resulting from poor scheduling and sprinklers that operate during rainstorms. The fact that irrigation is becoming part of the consciousness of contractors is a significant matter.

Although water shortages should be worrisome enough to generate interest in efficient irrigation to defend our valuable landscapes, they are not the main reason people invest in irrigation. More often, the justification for irrigation is better control and reliability of performance by the land-



The main reason people invest in an irrigation system is to protect and improve their landscapes. Photos courtesy: Rain Bird



Contractors will need to strengthen their understanding of hydraulics and system design as they compete for irrigation business.

Expect the demand for certified irrigation designers to jump in the coming decade. Check with your local distributor about setting up training in your area.

Cover the world

Irrigated Acres in the World:

- ➤ World 600 million acres
- ➤ China 123 million acres
- ► United States 70 million acre
- ▶ United Kingdom 267,000 acre
 - ➤ Europe 62 million acres
- ➤ South America 24 million acre
 - ➤ Japan 7 million acres
 - ➤ Australia 6 million acres

nents. This will
become increasingly important
as more irrigation systems
not low-volume irrigation,
sprinklers and
weather-reactive
sensors and controllers. You won't be
able to figure it out in the
aisle of a mega-hardware store.

Only a handful of states currently license irrigation contractors. Most of these states have used the help of the Irrigation Association when building their tests and requirements. But you don't have to depend upon state licensing to become certified. The classes are taught by the best in the business, and your local distributor can ask the IA to help set up training in your area.

Those who fail to study history are doomed to repeat it is a famous phrase that applies to any business. Many painful lessons can be avoided by talking with those in your area with irrigation experience. Do surveys of your existing customers about irrigation. Hire trained individuals and reward them for performance. Be inventive when necessary. One size fits all doesn't work in irrigation.

There is a rich history to the irrigation industry. It belongs as part of the history of the landscape industry. It's time to make irrigation a valued member of the landscape family.

Next month: Thinking of entering the irrigation business or expanding into larger, more comprehensive accounts? LM will look at two models for success. LM

—Bruce Shank owns Irricom, a publications consulting firm in Palmdale, CA, and Austin, TX. He can be reached at 800/455-4320 or irricom1@earthlink.net.

Inc.

It's not hard to get

our attention when the
value of irrigation in a landscape project exceeds 25 percent, according Jon Ewing, president of
LandTrends in San Diego, CA. "You have
to take it seriously." LandTrends has an irrigation division for minor design work, installation and maintenance.

Segments of the industry

scape as an investment and source

of enjoyment, ex-

plains Kurt Mal-

oney, director of

Netafim Irrigation

landscape mar-

keting for

Contractors — As large contracting firms acquire landscape companies with irrigation divisions, they assume a greater involvement in irrigation. To compete with large national chains, smaller contractors will need to increase their level of involvement in irrigation.

Suppliers — In turn, more contractors will seek services such as technician training and rudimentary design from distributors. Retail outlets mimicking wholesale suppliers won't be able to provide these services.

Experts — Meanwhile, irrigation consultants, the engineers who design complicated irrigation systems, are tempted to focus on the big jobs of large chain contractors. This could leave the midsized and small contractor without the design assistance he or she needs as irrigation grows in popularity. You can expect the demand for certified irrigation designers to jump in the coming decade.

Certification for irrigation contractors can moderate some of the demand for design at the lower levels. Learning how to use AutoCAD isn't enough. Contractors should understand hydraulics and the physical limitations of irrigation compo-

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weeks of residual on Kentucky bluegrass and perennial

tically and reduces the number of cuts. familiar with this concept.

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Illinois State's Central Quadrangle

This complex campus was a 1998 Grand Award Winner for the Professional Grounds Management Society

isitors and students know the Central Quadrangle of Illinois State University in Normal, IL, an eight-acre area of turf, harboring more than 400 trees of 80 different species. About 300 shrubs and more than 6,000 annuals (totaling 5,600 sq. ft. in the Quadrangle alone) also challenge the grounds crew. The Quadrangle itself includes several perennial beds and a native Illinois prairie garden.

Each tree receives annual fertilization, aeration, pruning and shaping, plus scouting for insects. Several varieties of annuals are grown in the Grounds Services' greenhouses. Plant varieties are labeled; watering and weeding is done by hand.

The staff keeps turf at a three-inch height throughout the season and IPM is used to control grubs and other pests. Turf is fertilized twice a year, with supplemental applications as needed.

A major element of this project was the redesign of campus walkways to replace existing asphalt ones with concrete, installed in a 5-ft. x 5-ft. pattern. Other renovations include landscaping to enhance pedestrian gateways, add attractive seating and encourage visitors to study and explore the trees and plantings.

Trees have been inventoried, cataloged and tagged by species and new species have been added. A tree map of the Quadrangle was developed for those taking a walking tour of the area.

Upcoming projects include "In Exchange," an 80,000-sq. ft. area nearby, combining sculpture, colored concrete and plant material on a seasonal theme.

For more information about this project, contact the Professional Grounds Management Society, 120 Cockeysville Rd., Suite 104, Hunt Valley, MD 21030, 410/584-9754. Or contact ISU Dept. of Facilities Management, Box 9100, Normal, IL 61790, 309/438-2032.

Property at a glance:

Location: Illinois State University Central Quadrangle, Normal, IL

Staff: ISU Grounds Services

Category: Urban University

Year site built: 1857

Total acres maintained: 125 (total campus)

Acres of woody ornamentals: 20 (total campus)

Acres of display beds: 25,000 sq. ft. (total campus)

Total man-hours/week: 788



Recent major projects include replacing 128,000 sq.ft. of concrete surface, as well as walls and seating.

Maintenance Challenges

- ▶ Busiest spot for pedestrian flow on campus
- ► High-use area for public events
- ► Deteriorating infrastructure: How to preserve or repair existing structures without damaging 100-year-old trees?

Winter is good for hort oil

(Smite mites before they strike)

Dormant-season applications of horticultural oil only work for certain mites and scale species

By DOUG CALDWELL, Ph.D.

pplications of 2% horticultural oil (two gallons of oil in 98 gallons of water) are used from late fall through early spring to control certain pests. This is an "offensive strike" opportunity on overwintering stages of pests that takes them out before they become active next spring and damage plants during the growing season.

Oil applications work by suffocating, rather than poisoning, the pest. The oil plugs up the breathing pores and soft tissues of targeted mites and scale insects.

PLANT SPECIES PRONE TO DAMAGE BY FALL AND WINTER OIL APPLICATIONS

Species

Coniferous

Junipers

Spruces (blue, white,

'Dwarf Alberta')

Type of Injury **Deciduous**

Beech* Branch dieback (dead cambium) **Butternut*** Branch dieback (dead cambium)

Citrus Occasional leaf and flower drop and "water spot" of rind

Hickories* Branch dieback (dead cambium)

Maples*, sugar and silver Stunted and reddened leaves to branch dieback

(dead cambium)

Oaks, red and black Occasional branch dieback (dead cambium)

Redbud Late leaf emergence and branch dieback (dead cambium)

Walnut* Branch dieback (dead cambium)

Arborvitae Needle browning, defoliation and branch dieback

Chamaecyparis Needle browning and defoliation

Cryptomeria Needle browning, defoliation and branch dieback

Hemlock Needle browning and defoliation

Turns blue cultivars to green (alters wax layers that create

the blue color); occasional needle drop and branch dieback

Alters wax layers that create the blue color; needles turn purple brown then brown, defoliation and branch dieback

Occasional marginal browning of leaves

*High risk plants are noted. Fall-winter oil applications are NOT recommended for these species.

NOTE: Injury is not always going to happen. Occurrence of injury tends to vary depending on plant dormancy stage, degree of plant stress (vigor), moisture stress, sudden temperature drops and high humidity following application. But most often it is due to an application procedural-related error or an overdose mistake.

What you hit is what you get!

It is important to remember that horticultural oils are a contact treatment. But, while thorough coverage is important, soaking or saturating plant tissue can cause phytotoxicity. These applications may not be as effective on certain pest species as you may think and should not be used as a general dormant "cover spray."

Know your mites

If you believe you can control two-spotted spider mites with winter oil applications, guess again. The two-spotted spider mite overwinters as a female in litter, mulch or other protected areas and is not normally found on the plant. Therefore, this pest is not controlled with the dormant oil strategy. However, the spruce spider mite overwinters on its evergreen hosts (arborvitae, juniper, hemlock, pines, etc.) in the egg stage, which makes it quite vulnerable to oil sprays. Be aware, and notify clients, that the oil will temporarily turn those prized Colorado blue and specimen blue Moerheim spruces green, but that new growth will not be affected.

The honeylocust spider mite overwinters on its host as a mature female in bark and bud crevices. Again, it is another prime target for dormant applications.

Other species that are vulnerable to dormant season sprays are the *southern red mite* and the *boxwood mite*. Both species overwinter on their respective hosts in the egg stage. The southern red mite can be targeted on its broadleaf evergreen hosts, Japanese holly, azalea, *Pieris*, certain *Viburnum* spp., etc., on the underside of leaves.

Soft and armored scales

Oil is an excellent product to reduce overwintering stages of scales; primarily, the first and second instar nymphs of *soft scale* species (magnolia, lecanium and cottony maple scales, etc.). A follow-up spray of 2% oil in late August or September is needed to reduce surviving populations.

Overwintering armored scales can be more difficult to control, especially those species that overwinter in the egg stage beneath the scale covering. This group includes oystershell, elm scurfy, elongate hemlock and pine needle scale. Achieving acceptable control of these species is difficult because the eggs are often stacked on top of one another and the oil may only contact the bottom layer of eggs. Target these species during the growing season to get acceptable results.

Other armored scale species overwinter as 2nd instar or mature females and are more readily controlled with



Pine need scale overwinters as eggs pile under the "shell" of the female. Oils are not effective for this scale during the late fall to winter.

November through March applications of oil. These scale species include euonymus, juniper, white peach and obscure scale.

Beware of phytotoxicity

Remember, winter identification of plants is critical because phytotoxicity can occur when oil is applied to a sensitive species. Species that should be avoided include arborvitae, beech, Cryptomeria, hickory, maple (especially sugar), spruce and taxus. For maple and spruce, sensitivity varies with location; more problems seem to occur in the Midwest than further north. Branch dieback or death of these species has been reported.

Usually phytotoxicity occurs with higher rates of oil (three gallons of oil per 97 gallons) and early fall (before dormancy) or late spring (at budbreak) applications. There are fewer problems when

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applications are made in late October through February, when the plants are "completely" dormant. A good guideline is to wait until 24 to 48 hours of below-freezing temperatures have passed during October before spraying, and start the applications, usually in mid- to late-November.

Use agitation and a clean tank

Avoid phytotoxic effects with agitation. Recirculate the oil solution in the hose be-

fore spraying each property. These oils are quick-breaking emulsions, which means the oil separates, or "floats" to the surface in three to four minutes. Otherwise, you might spray concentrated blobs of oil solutions, which could injure the plants.

This overwintering Euonymous scale has been flipped out of her teste or "shell."
This stage is vulnerable to winter oil applications.

Tests have shown that fertilizer residue in the tank, when combined with the oil solution, can cause a synergism that increases the chances for plant injury. Make sure that the fertilizer residue is completely rinsed out of the tank before adding the oil solution.

When applied properly and for the appropriate pests, horticultural oil offers an opportunity to use a "soft" pesticide when we have time to make applications, as well as increase revenues during a slower time of the year.

Doug Caldwell is the Landscape Entomologist for the Davey Institute, a division of The Davey Tree Expert Company.



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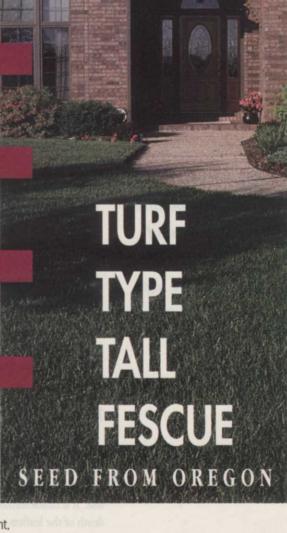
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Solve the Worst Problems

Identify and treat problems in palms before they become serious because the cost of producing and installing large specimen palms can be high

By TIMOTHY K. BROSCHAT, Ph.D.

alms are an important component of the landscape in areas having mild climates. They impart a distinctly tropical look that few other plants can provide. Unfortunately, because most palms have

only a single terminal bud or growing point, diseases or physiological disorders that might merely weaken broadleaf trees are often fatal in palms.

1) Fusarium Wilt

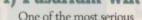
diseases of Canary Island date palms in California, and more recently Florida, is Fusarium wilt. It is characterized by death of the leaflets on one side of an older leaf or the leaves on just one side of the crown. Symptoms typically

of the leaf, progressing along one side of the leaf to its tip and back down the other side to its base. Once the majority of leaves in the canopy have died, the remaining green leaves will wilt and the bud will die. Unfortunately, there are no effective chemical controls for this disease and reducing the

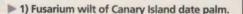
> rate of spread to healthy palms is the best strategy.

Fusarium oxysporum f. sp. canariensis can survive for years in the soil and can readily infect new replacement palms. Similarly, transplanted field-grown palms from infested fields can spread this disease. However, the primary means of spread is via contaminated pruning tools.

Infected palms should only be trimmed once per year to minimize spread, and all tools used should be disinfected before moving on to the



One of the most serious begin on leaflets near the base



next palm. Research at the University of Florida has shown that soaking tools for 10 minutes in 25% chlorine bleach, 50% isopropyl or denatured alcohol, or 25% Pine-Sol disinfectant are all effective in eliminating this fungus from pruning equipment. When pruning, avoid cutting into green leaf bases.

2) Lethal Yellowing

Lethal yellowing (LY) is one of the most serious diseases of palms in Florida, but it also occurs in the Brownsville, Texas area, and parts of Mexico, Central America

and the Caribbean. This microbe is spread only by phloem-feeding insects such as the leafhopper, *Myndus crudus*. Approximately 30 species of palms are susceptible to LY.

Symptoms of LY in most coconut palms may begin with mid-canopy or older yellow leaves that drop down against the trunk, but in some species such as Christmas palm these collapsing older leaves may not show any yellowing. In Malayan Dwarf coconut palms, leaves appear

wilted, with little or no yellowing evident. Blackening of the flowers and premature fruit drop are also characteristic symptoms of LY in coconut palms.

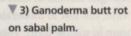
Lethal yellowing is best prevented by planting palms resistant to the disease, but it can be prevented in susceptible species by trunk injection with oxytetracycline. If the disease is diagnosed at a very early stage, antibiotic injection results in recovery for about half of the treated palms. Common palms known to be resistant to LY include paurotis palm (*Acoelorrhaphe wrightii*), pindo palm (*Butia capitata*), European fan palm (*Chamaerops humilis*), areca palm (*Dypsis lutescens*), thatch palms (*Coccothrinax* and *Thrinax* spp.), royal palms

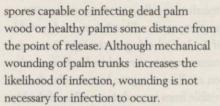
(Roystonea spp.), sabal palms (Sabal spp.), queen palm (Syagrus romanzoffiana), and Washington palms (Washingtonia spp.).

3) Ganoderma Butt Rot

Ganoderma butt rot is probably the most devastating palm disease in the south-eastern United States. Its range corresponds roughly with that of the sabal palm (Sabal palmetto) and extends from South Carolina to Florida. Although this disease has only been documented on about 40 or 50 species, it is believed that all palm species are probably susceptible.

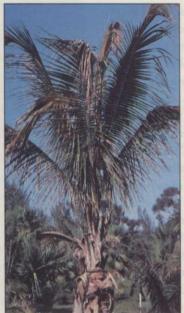
2) Lethal yellowing of coconut palm.





Ganoderma zonatum, the causal organism, can also spread through the soil, living on dead palm roots and wood. One of the most common means by which Ganoderma infects clumping palms is when mature canes of these palms are removed. The resulting dead stump is quickly invaded by Ganoderma spores. Once established on the stump, this disease invades and kills healthy living canes until the palm is killed.

Any palm tissue infected with Ganoderma should be hauled to a landfill or incinerated, but never chipped for mulch, as this has been shown to transmit the disease





Ganoderma butt rot is primarily a disease of mature palms in the landscape. Symptoms appear as wilting and death of the oldest leaves, but it gradually progresses up through the canopy until the bud is killed. Unfortunately, there is no chemical control for this fungus and fumigation of Ganoderma-infected stumps or root systems is not effective in eliminating this fungus.

One of the earliest and most diagnostic symptoms for this disease is the presence of the fungal fruiting structure (conk) on the lower portion of the trunk. These conks start out as small white lumps but quickly mature into brown woody brackets up to 1 foot across, releasing millions of

to healthy palms. Stumps remaining after palm removal should be dug out. Also, any new conks should be promptly and regularly removed to prevent the production of additional spores.

4) Potassium Deficiency

Potassium deficiency is probably the most widespread and serious nutrient deficiency of palms throughout the world. Palms have rather high requirements for potassium and since they often grow in highly leached, sandy or nutrient-poor soils, this element is deficient to some degree in virtually all palms in the landscape.

Deficiency symptoms vary among palm species, but usually begin with small

translucent yellow to orange or necrotic spotting on the oldest leaves, readily visible if the leaf is held up to the light. As symptoms progress, these older leaves may take on a yellow-orange to bronze color that is visible from some distance. One of the key symptoms on most species is the presence of necrosis along the margins of the leaflets of older leaves. As this becomes more severe, entire leaflet tips become withered or frizzled in appearance, yet upon close examination, the midrib of the leaf will remain alive, though perhaps discolored. The gray frizzled old leaves typically found on royal palms (Roystonea spp.) and the golden-orange foliage of areca palms (Dypsis lutescens) are common examples of potassium deficiency.

Potassium is considered a "mobile" element within plants. Under conditions of deficiency, potassium will be removed from older leaves and retranslocated up to



▲ 4) Moderately severe potassium deficiency on areca palm showing frizzling of leaflet tips.

newly expanding leaves where it will be incorporated. Thus, potassium deficiency symptoms are always most severe on the oldest leaves and decrease in severity in younger leaves. On a single older leaf, deficiency symptoms are most severe at the tip, but may be minimal near the base.

Since the palm removes potassium from older leaves in order to continue new growth, premature removal of discolored, symptomatic older leaves by landscapers results in potassium being removed from progressively younger leaves that were previously symptom-free. If this practice continues, the palm will quickly run out of old leaves from which to remove potassium for new growth and the palm then enters a state of rapid decline. At this point, the trunk diameter tapers to a point, all new leaves emerge stunted, chlorotic and frizzled and death of the bud soon follows. This late stage of deficiency is extremely similar in appearance to manganese deficiency and only close examination of the symptoms of an individual leaf will reveal which problem is present.

In addition to poor soils, one of the primary causes of potassium deficiency in palms is the use of fertilizers having high nitrogen content in controlled release form, but low to moderate levels of potassium in soluble form. This combination forces rapid palm growth, yet provides in-

sufficient potassium to do so. Thus, the use of turf fertilizers in the vicinity of palm roots is a major cause of deficiency in palms.

Treat severe deficiency by broadcasting sulfur-coated potassium sulfate under the canopy at a rate of 1.5 lbs. per 100 sq. ft, every three months for a year or more. To prevent a

K-Mg imbalance from occurring under these circumstances, it is also necessary to apply a 100% coated palm maintenance fertilizer at the same rate and frequency starting six weeks after the first potassium fertilizer application. (Mild to moderate potassium deficiency can usually be corrected by using only the maintenance fertilizer.) A good palm maintenance fertilizer should have an N-P-K-Mg ratio of about 2-1-3-1 and also contain essential micronutrients such as Mn, Fe, Cu, B and Zn. In order to prevent rapid leaching loss, all N, K and Mg should be in controlled release form.

Injecting Palms Made Easy

For many years, arborists have faced numerous palm tree problems: nutritional deficiencies, borers and lethal palm yellows, to name a few. Recently, many professionals have turned to chemotheraputant treatments. Many in the industry are using one of the many microinjection technologies that are available.

One problem in treatment exists, however, and this stems from the difference between the anatomy of palms and all other trees. Palm trees are monocotyledons. This fact makes them more closely related to grasses than to other types of trees.

The configuration of the vascular tissue is unlike that of any other type of tree. Instead of a ring of conductive tissue under the bark, the vascular tissues of palms are made up of tight groups of conductive cells known as bundles. These bundles contain both xylem and phloem tissue and are connected radially to other bundles by live and woody, noncambial structures. Because of this vascular tissue orientation, palm trees translocate fairly evenly throughout their entire cross-section at any given point up or down the trunk.

When you need to microinject a palm, you must take into account:

- height of the palm tree when calculating the dose of the chemotheraputant;
- diameter of the microinjection holes to be as small as possible;
- microinjection feeder tube to be long enough to allow the material to penetrate the spongy outer husk of the palm tree;
- injection holes of palms to be made to a depth of up to 1/3 the diameter of the palm tree;
- injection sites to be made no lower on the trunk than 2 feet above the ground;
- spacing of injection holes to be made as far apart as possible;

cont. on page 76



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<u>Combinations</u>, such as **IMISOL** and **ABASOL**, two powerful newproducts. In one single application they control a variety of insects, including Bronze Birch Borer and Mites and over 31 tree diseases. **IMICIDE** and **ABACIDE**, have each been formulated with **FUNGISOL**. These two unique combination products are only available in the **MAUGET** micro-injection system.

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TREATMENTS

cont. from page 74

• spacing to also include offsetting of the vertical alignment, resulting in a spiral type placement of the injection sites.

Unlike other trees, palm injection holes remain active for up to one year, allowing for multiple injections using the same hole. Palm injection holes do compartmentalize, but the holes do not callus over and it is possible to use an existing inactive site by drilling the hole deeper. However, the total depth of the hole should not exceed more than 1/3 the diameter of the trunk.

Remember: Because of the anatomical differences between palms and other trees, understand that what is good for other trees may be quite bad for palms.

Marty Shaw is a Certified Arborist, a Certified Nursery Professional and President of TIPCO, Inc. in Knoxville, TN. His email address is treeguru@treedoc.com and the website is www.treedoc.com.

5) Manganese Deficiency

Unlike potassium, Manganese is "immobile" within a palm, so deficiency symptoms occur on the youngest leaves. New leaves emerge chlorotic, with longitudinal necrotic streaks on the leaflets. As the deficiency progresses, most of the leaflets appear withered or frizzled and the entire leaf is greatly reduced in size. Leaflet frizzling symptoms are more severe at the base of the leaf than at the tip, the reverse of potassium deficiency patterns. If not promptly treated, the next leaf may emerge as only a necrotic petiole stub with death of the bud quickly following. Old leaves of Manganese-deficient palms will usually remain full-sized and green.

Manganese deficiency is usually caused by high soil pH, since manganese solubility decreases sharply with increasing pH. It can be treated by soil applications of manganese sulfate (TechMangam) every three months or so. Foliar sprays with the same product



▲ 5) Manganese deficiency of queen palm.

will also give good short-term results, but will require frequent re-applications if soil applications have not been made.

Timothy K. Broschat is Professor of Tropical Ornamental Horticulture at the University of Florida at Ft. Lauderdale.

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Events

FEBRUARY

20-24 Western Canada Turfgrass **Association Annual Conference &** Show Penticton Trade and Convention Centre, Penticton, BC, Canada: 604/467-2564; fax 604/467-0500

20-24 ALCA Executive Forum Weston Mission Hills, Rancho Mirage, CA; 800/395-2522; www.alca.org

22 NYSTA Southeast Regional Conference Holiday Inn, Suffern, NY; 800/873-8873; fax 518/783-1258

23-25 Athletic Field Construction & Maintenance Rutgers' Cook College Office of Continuing Professional Education, NY; 732/932-9271; www.aesop. rutgers.edu~ocpe

23-25 Western Pennsylvania Turf Conference & Trade Show Pittsburgh Expo Mart; Monroeville, PA; 814/863-3475; www.psu.edu

24-27 OPEDA Annual Meeting Caesar's Palace, Las Vegas, NV; Julie Thane, 215/564-3484; 215/564-2175; www.opeda.org

25 OSU Extension University Turf School Tom's Country Place, Avon, OH; Charles Behnke, 440/322-0127

26 Ecology & the Managed Landscape Boxborough, MA; Cheryl Lowe, 508/877-7630 x3401

MARCH

2-4 New England Regional Turfgrass Conference Rhode Island Convention Center, Providence, RI; 401/848-0004; www.nertf.org

4-7 Association of Professional Landscape Designers Winter Conference Ramada Plaza Hotel, San Francisco, CA; Jack Lagershausen, 312/201-0101; www.apld.com

9-12 ASCA Arboricultural Consulting Academy Rhode Island Hotel Viking, RI; ASCA 301/947-0483

11-12 Cemetery Grounds Mainte-

nance for the Millennium Melville Mariott, Long Island, NY; Maria Cinque at 516/842-1009

18-21 ALCA Student Career Days University of Kentucky, Lexington, KY; Elise Lindsey, 703/736-9666

20-25 American Society of Golf **Course Architects Annual Meeting** Charleston, SC; Chad Ritterbush,

312/372-7097; www.golfdesign.org

22 Plant Health Care Seminar

University of California Extension-Riverside; Jan Crump 909/787-5804, ext.1621; 909/787-2456; www.unex.ucr//ns/ns.html

23 Basic Turf Management Seminar University of California Extension-Riverside; Jan Crump 909/787-5804, ext.1621; 909/787-2456; www.unex.ucr//ns/ns.html LM



SUPPLIERS CORNER

Karl Kisner has joined Agrevo as product manager for the Green Industry Group, Kisner will focus on promoting the company's new DeltaGard® brand of insecticides (pyrethroids) as well as its full line of products for the Green Industry.

Barenbrug USA has appointed Bryan Muntz as turf salesman, responsible for sales of Barenbrug's professional turf products in the US market.

Becker-Underwood has acguired full ownership and control of Sprint and Sequestrene product lines from Novartis. Both brands use iron chelate products to correct soil and foliar iron deficiencies. Sprint is sold in the turf and ornamental markets, Sequestrine in citrus, agricultural and other specialty markets.

Century Rain Aid has purchased the turf irrigation division of Koonz Sprinkler Supply, a major New England distributor. This new acquisition will allow Century Rain Aid to provide service and supplies to irrigation professionals throughout the southeast coastal areas of New Jersey and Monmouth County, PA.

Dow AgroSciences has named Keith Roach as communications manager of Turf, Ornamental and Technical Products and Bruce Miehle as general manager. Tony Brown is the marketing manager for turf, ornamental and retail products.

EPCO Products, producer of the Zero-Leak Gold Plugs and Fittings, has appointed Roger Metz as sales manager of the Zero-Leak line.

www.epcoproducts.com

Growth Products, "The Liquid Solutions Company," has a new website that has helpful tips, detailed product information and university studies of

their products. www.growthproducts.com

Horizon and Automatic Rain have announced the merger of the two companies, effective Jan. 1, 1999. The company will be headquartered in Phoenix, AZ, and will have locations in Arizona, Nevada, northern California, Oregon, Washington and Mexico.

HCC. Inc. has received ISO 9001 certification for design production and service from American Quality Assessors. HCC has spent the last two years establishing the ISO 9001 Quality System and plans to continue to improve quality.

MacKissic has appointed **Newton Distributing Company** to cover Kentucky and western Tennessee as a full-service distributor.

Milliken Chemical has entered into an agreement to acquire the existing products and brands of Emerald Isle, Ltd. of Ann Arbor, Michigan, and into a long-term agreement to codevelop new products for the turf and ornamental market.

PBI/Gordon has been issued marketing rights to Velocity® Insecticide by Valent. The fire ant product will be marketed through PBI/Gordon's farm store brands.

Plant Health Care, Inc. has established the PHC™ Education Center in Beaufort, SC. The facility is dedicated to the practical understanding of the physical, chemical and biological requirements of plants in urban landscapes and other manmade environments. Four to six workshops will be held yearly.

Shindaiwa has named Carmelo Grenier as its new Western Regional Sales manager for the western states and Bertil Albing as the Technical Services Representative for the company. www.shindaiwa.com

The Textron Turf Care and

Specialty Products facility at

Johnson Creek, WI, has received registration to ISO 9001, the quality assurance standards developed by the International Organization of Standardization. The design, manufacture and distribution of products, such as Bob-Cat and Bunton mowers, fall under the umbrella of ISO 9001 registration. The registration is part of an ongoing plan by Textron to align its entire organization with international quality standards for all its products. LM

VIDEOS AND LITERATURE FOR THE GREEN INDUSTRY

THE VALUE OF IRRIGATION ... is presented in a series of brochures, created by The Irrigation Association and aimed at informing decision makers. Each brochure outlines the benefits and advances of irrigation for Agriculture, Landscape and Golf, with a common format but with individual ideas expressed in each brochure. The brochures are free to IA members. For more information contact The Irrigation Association at 703/573-3551, fax 703/573-1913 or on the web at www.irrigation.org

ENVIRO-SAFE WASHING FACILITY GUIDE ... from Landa is directed toward the golf/turf industry. The full-color brochure illustrates how to set up wash facilities as well as how to reuse, recycle, treat or evaporate the water so that none is put down the drain. For a copy of the free brochure "Guide for the Golf Course & Turf Industry on How to Set Up an Environmentally Safe Wash Facility" call Landa at 800/64-LANDA.

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he reason they never showed up? Because PENDULUM® herbicide is a highly effective preemergent turf herbicide. Compared to the competition, PENDULUM demonstrates a higher level of control across a broader spectrum of weed species. With PENDULUM, weeds won't ever see the light of day. For the PENDULUM herbicide distributor nearest you, call: 1-800-545-9525, Ext. 1676.



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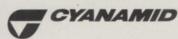
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ANNOUNCING: The Third Annual LANDSCAPE MAN-AGEMENT "Emerald Awards." LANDSCAPE MANAGEMENT magazine is offering a \$500 first prize to the winner of a random drawing to be held on July 1, 1999. Second prize is \$300 and third prize is \$200 in cash. To be eligible for the drawing, simply fill out the questionnaire at right and return it

to our editorial offices.

Answers to the questions will determine our "1999 Emerald Awards" winners, to be revealed—along with the contest winner—in our August issue.

> CONTEST REQUIREMENTS: Contestants must be owners or employees of landscape main-

tenance companies, lawn care companies or landscape contracting firms; or an athletic field manager or member of an athletic field maintenance crew; or manager or member of a facility landscape management crew. Product selections must be currently used by entrant.

Employees of Advanstar Communications or their families not eligible.

All questions on this entry form must be completed, and all blanks filled. One entry per person. No more than five entries from any one employer will be allowed. Entry forms will appear in the February through June, 1999 issues of LANDSCAPE MANAGEMENT.

Completed questionnaires should be mailed to: Emerald Awards, LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130. They must be received by noon, July 1, 1999.

A random drawing of all eligible entry forms will be held July 1, 1999. Winners will be notified within 24 hours.

OFFICIAL ENTRY FORM

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45 C O Other (please specify) My primary business at this location is: (fill in ONE only)
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 256 Lawn Care Service Companies
 255 Custom Chemical Applicators
 270 Tree Service Companies/Arborists 06 0 275 Landscape Architects
07 0 280 Land Reclamation and Erosion Control
08 285 Irrigation Contractors
0 Other Contractors/Service Companies (please specify) 4a. Do you specify, purchase or influence the selection of landscape products? 75 \bigcirc Yes 76 \bigcirc No 4b. If yes, check which products you buy or specify: (fill in ALL that apply)

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 295 Parks
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 305 Schools, Colleges, Universities
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24 365 Dealers, Distributors, Formulators & Brokers
25 370 Manufacturers
Other (please specify)

Other (please specify)_ Which of the following best describes your title? (fill in ONE only)
 Executive/Administrator - President, Owner, Partner, Director, General Manager, Chairman of the Board, Purchasing Agent, Director of Physical Plant
 O Manager/Superintendent - Arborist, Architect, Landscape/Grounds Manager,

Superintendent, Foreman, Supervisor
28 30 Government Official - Government Commissioner, Agent, Other Government Official
40 Specialist - Forester, Consultant, Agronomist, Pilot, Instructor, Researcher,
Horticulturist, Certified Specialist

30 O 50 Other Titled and Non-Titled Personnel (please specify)

5a. If so, how often do you use It?
79 A Daily 80 B Weekly 81 C Monthly 82 D Occasionally 101 113 125 137 149 161 173 185 197 209 221 233 245 257 269 281 293 305 102 114 126 138 150 162 174 186 198 210 222 234 246 258 270 282 294 306 103 115 127 139 151 163 175 187 199 211 223 235 247 259 271 283 295 307 104 116 128 140 152 164 176 188 200 212 224 236 248 260 272 284 296 308 105 117 129 141 153 165 177 189 201 213 225 237 249 261 273 285 297 309 106 118 130 142 154 166 178 190 202 214 226 238 250 262 274 286 298 310 107 119 131 143 155 167 179 191 203 215 227 239 251 263 275 287 299 311 108 120 132 144 156 168 180 192 204 216 228 240 252 264 276 288 300 312 109 121 133 145 157 169 181 193 205 217 229 241 253 265 277 289 301 313 110 122 134 146 158 170 182 194 206 218 230 242 254 266 278 290 302 314 111 123 135 147 159 171 183 195 207 219 231 243 255 267 279 291 303 315

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The Spade is a reasonably priced, versatile attachment for any brand skid loader. This unique, patented design is ideal for a variety of tasks. Digging trenches for drain pipe installation or irrigation, transplanting trees and shrubs and even retaining wall construction are all within the ability of this simple attachment. The boom-like design and chain attachment also allows easy unloading of planting stock from trailer to planting site.

For more information contact Triple D Enterprises at 800/478-7077 or

Circle No. 265

EZ dispensing systems

CCI Products, Inc. introduces a family of products for the small equipment, power tool industry. The EZ Oiler and EZ Pumper containers measure and meter two cycle oil/gas ratios using a patented ratio/ounce dial and pumping system for no math and no mess. Crankcases and gas tanks are filled with exact amounts from 2/10ths to 6 oz. The one-gallon containers also



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For more information contact Sharon Suffolk, CCI Products, Inc., at 248/486-6901, fax 248/486-6945, email ccipro@aol.com or

Circle No. 266

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toxic animal repellent that of- Plantskydd is available in fers up to six months of 2.2 lb. dry powder packages protection against browse which is combined with 1.5



gallons of water. The solution is applied by dipping the plant in or spraying, and it will stick, even under severe snow/rainfall conditions, for six-plus

months over winter or four-plus months with a spring or summer application. Also available in a premixed 1-L spray bottle.

Forest companies, nurseries and landscapers find Plantskydd to be effective for trees, flowers and

Distance® Fire **Ant Bait**

Valent introduces this newly approved fire ant bait that stops the queen from reproducing. When Distance is applied around the fire ant mound, workers take the bait granules back to the colony where the gueen and immature fire ants feed. Degeneration of the reproductive organs causes sterility in the queen and developing ants. Within three to four weeks there is substantial colony mortality and within eight weeks the majority of the colony has been eliminated.

Suitable for a variety of locations, application can begin in early spring or summer at the first sign of fire ant activity. Distance works best as a broadcast treatment but can also be used as a mound treatment

For more information contact Valent at 800/89-VALENT, on the web at www.valent.com or

Circle No. 267

shrubs. For more information contact Claude Boisvert, Tree World, at 800/252-6051, fax 604/885-3535, email treeworld@sunshine.net or

Circle No. 268

Biofertilizer products from PHC

Plant Health Care, Inc. (PHC, Inc.) introduces Healthy Start™ biofertilizer planting tablets. The 12-8-8 macro tablets contain spores of nitrogen-fixing and phosphorus-solubilizing bacteria together with a blend of slow-release nitroform fertilizer, natural organic nutrients and humic acid to enrich the soil and promote healthy, consistent plant



growth. They will not burn or damage tender plant roots. Healthy Start tablets can be used in existing landscapes, on balled-and-burlapped, bareroot and containerized plants and on seedlings, and are available in 21-, 7- and 3-gram sizes that last up to two years.

BioPak and BioPak FE biostimulant products with beneficial bacteria are specifically designed to stimulate root growth and reduce stress on trees, shrubs and ornamental plants. They were developed to provide the beneficial bacteria, humic acids, amino acids, vitamins and sugars naturally found in healthy soil ecosystems. BioPak improves water and nutrient uptake and stimulates beneficial microbial activity in the soil. BioPak FE is specifically recommended for lawns, trees and shrubs which display iron deficiencies, with 10% chelated iron.

For more information, contact PHC at 800/421-9051, fax 412/826-5445 or

Circle No. 269

Biostimulants from PBI/Gordon

Two new biostimulant products are now available: Focus®, formulated to enhance the vigor and stress tolerance of turf exposed to intensive use or maintained at a high quality level; and Launch®, for ap-



plication where seeding, sodding or sprigging are used to establish or renovate turf.

Focus contains cytokinins and auxins from cold water kelp, humic and fulvic acids, triple-chelated iron and organo-mod-

ified siloxane surfactant. Launch is a manure-based product with the same biostimulants ingredients as Focus.

For more information call PBI/Gordon at 800/821-7925 or

Circle No. 270

Update your older skid steer loader

The "Uni-Hitch" Hitching System from Kasco allows "universal hitch" attachments to be used on older Case, Gehl, John Deere, Mustang and New Holland skid steers. The original attaching plates stay in place so that the original attachments can still be used.



For more information contact Kasco Manufacturing Company at 800/458-9129, on the web at www.kascomfg.com or

Circle No. 271

Growth Products for plant growth

A variety of choices for crystalclear liquid fertilizers from Growth Products, Ltd., includes recent introductions:

- Starter Plus 8-32-5 (with 50% Slow Release Nitrogen), a high phosphorus solution, ideal for newly seeded areas and for hydroseeding.
- All Season K 8-4-24 (with 50% Slow Release Nitrogen and 0.25%



Iron) is formulated for year-round fertilization and provides a high potassium to nitrogen ratio, immediately available for uptake, and is good for problem turf areas.

- Organic Iron 5% (Sugar Acid Chelate) is derived from a naturally fermented chelation process, is extremely stable and more effective than EDTA in higher pH soils.
- pH Reducer (citric acid solution with wetting agent) is for soil and water applications where the pH needs to be lowered to an acidic range,, is natural and environmentally and has no adverse effects on microflora.

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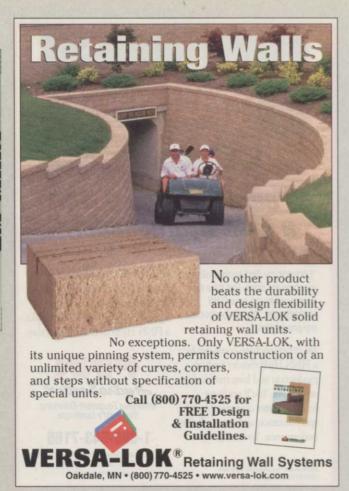
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Grab Bag

Dr. Pat Cobb takes new path

Dr. Pat Cobb retired in mid-January as Professor of Extension Entomology at Auburn University, Auburn, AL, but she probably won't be slowing down. Pat had been in the position for 21 years.

"I've had the best of all worlds," Pat told LM a week before her retirement from Auburn, where she had also earned her masters and doctorate degrees. "I've gotten to teach some and get back into the classroom a little bit. I've gotten to research and I've gotten to do extension and the reason I've gotten to do that is because I didn't have a research counterpart and I was afraid that I wouldn't have something to tell folks."

Dr. Cobb insisted she's going to remain in the industry. In fact, most of her first month of retirement promised to be busy, including a stint helping out at Penn State University and a speaking engagement for the Florida Turfgrass Association.

"I'm a bug person and I want to get back to being an entomologist," said Pat, who insisted she's going to remain very active in the green industry—at least for a few more years.

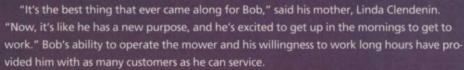
Have mowers, will work

Mark Silva has paraplegia; Bob Clendenin and Steve Ford have quadriplegia. All three are successful landscape professionals through the use of modified zero-radius mowers.

Clendenin's career started several years ago when he approached Larry Boellner of A.J. Boellner, Inc., a Grasshopper mower dealer in Maumee, Ohio. Boellner hesitated to sell Clendenin a mower, but he relented after Clendenin insisted on a test drive which he accomplished with surprising efficiency.

"After we made sure he could operate the controls properly, he took off," remembered Boellner. After a few modi-

fications to the mower, Bob Clendenin was off and running.



Inspired by Clendenin's success, longtime friend Steve Ford is also realizing his dream of owning and operating a custom lawn mowing business in northwest Ohio. Ford was selected as the subject of the program to modify a Grasshopper zero-radius mower for use by an individual with quadriplegia. The mower was equipped with a five-point harness, a dry chemical suppression system in the engine compartment, a modified seat and extended control arms.

In North Attleboro, MA, Mark Silva is a common sight operating his zero-radius mower. Silva, who has paraplegia, mows with a 48-inch cutting deck in season, loads and removes leaves in the fall and plows snow in his neighborhood in the winter. "I'm able to transfer onto the (mower's) deck from my wheelchair easily," said Silva.



Mark Silva and his modified mower

GIE Emerald Awards Draw

Your votes really do count. The two days of the GIE Show in Nashville brought in a lot of entries for our Emerald Award choices for 1999. As promised, we drew one name for each day of the show, for a \$150 prize. The winners are:

• Thomas Tarbox of Tarbox

Landscaping, Yorktown, NY

 Kenny Sprague of Sprague's Lawn Service, Inc. of Ligonier, IN.

Thanks to everyone for their votes. For those of you who weren't at the show or didn't fill out a ballot with your Emerald Award choices, check out the ballot on page 80 of LM and mail or fax it in. We're offering even more money — \$500. You could be a winner too!

Grab Bag features brief observations and prognostications throughout the green industry. If you have an unusual photo or comment you'd like to share with us, please send it in...

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