

Lawn & Landscape MAINTENANCE

MORE THAN 48,000 SUBSCRIBERS MONTHLY

JULY 1995 • \$3.00

THE PERSONAL TOUCH

*The Kennedy Nursery
builds good customer
relationships through
quality work.*

In this issue:

***Equipment Regulations
Good Safety Practices
Backflow Preventers
Empowering Employees***

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BEARD
COLLECTION



The Difference Between Alfalfa Biscuits The Difference Between A Great Truck



In your business, making the wrong decision can have some pretty dire consequences. Well, here's one that's a cinch: the Chevy K2500 4x4 Cheyenne Pickup. With a choice of six engines and a wide variety of model configurations, it matches up perfectly to

jobs of every size and shape. It's rugged, too. A steel ladder-type frame, double-wall cargo box, 2-tier loading

For more information and the name of the CSV dealer nearest you, call the CSV Express line at 1-800-759-5550.

*Dependability based on longevity: 1984-1993 full-line truck company registrations. Excludes other GM divisions. The Chevrolet Emblem and Cheyenne are registered trademarks and Chevy



is And The Poison Oak Is Easy To Spot. k And An Okay Truck Is Just As Easy.

and 4-wheel ABS all put in a full day's work. And towing capacities can reach 10,500 lbs. when properly



equipped. Little wonder Chevy Trucks are the most dependable, longest-lasting trucks on the

road.* So see the Chevy dealer in your area that proudly carries the CSV sign of quality. It means

they're more likely to have the inventory, parts, service and trained staff that can offer

you a full maintenance program. The Chevy K2500 4x4: You've got the itch; scratch it.

**Chevy Trucks
 LIKE A ROCK**



NEW VIBRATION DAMPENING SYSTEM



The entire upper shaft section, including the handle assembly and harness couplings, is completely insulated from both shaft and engine vibrations.

ERGONOMIC-DESIGN CONTROLS



The angle of the handle is easily adjusted for the best working position. The comfortable grip and easy-action trigger throttle mean less fatigue and better control.

RUGGED REDUCTION GEARBOX



Clearing heavy grass and weeds is tough going for any brushcutter, so we designed the transmission to run in "second gear", with high-torque cutting power.

ADVANCE-DESIGN ENGINES



These engines are specially developed to run at high speed, under full load for long periods, with a flat torque-curve for good power at all rpm.

An all-new design creates more efficient combustion, greatly reducing emissions and fuel consumption.

JONSERED

NEW GR 36/32 GRASS AND BRUSHCUTTERS



IT'S TIME TO STEP UP TO A BETTER MACHINE

Introducing two all-new brushcutters for grounds maintenance professionals that meet and exceed demands for rugged reliability, durable high-performance and unsurpassed operator comfort. We've used our many years of experience building professional forestry clearing saws to bring you the most advanced machines in their class.

Once you've experienced the new GR 36 or GR 32, you'll realize that using an ordinary brushcutter would be like turning back the clock!

Jonsered

Imported & Distributed by: Tilton Equipment Company. St. Paul, MN. Rye, NH. Alpharetta, GA. Little Rock, AR. 1-800-447-1152.
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Lawn & Landscape
MAINTENANCE

1995

COMMERCIAL PRODUCT GUIDE

*Use this product guide as
a quick and easy reference to some
of the leading products in the lawn and
landscape maintenance industry.*

Finally!

A mower that cuts and trims at the same time.

- 
- Five gallon capacity fuel tank.
- Engine, transmission and operator weight pivot over axle for superior performance on slopes and hills.
- Wheels behind deck ensure an even cut.
- Large discharge chute prevents clumps.
- Six-way fully floating deck for an even cut on uneven turf.
- Fully welded deck for superior strength and durability.
- Zero turning radius saves trimming time.
- Dual steering levers for superb maneuverability in small spaces and around obstacles.
- Cut more acres in less time because of high ground speed and deck width.
- Tilt-up deck for easy maintenance.
- Change blades in less than five minutes.
- Forward deck position. Easily cuts under fences, shrubs and bushes for minimal trimming time.
- Deck height and three high-lift blades produce the optimum airflow to lift grass for an even cut.

Sound impossible?

Not with a Grazer. Because it's the only mower that gives you more cutting hours per day while it trims maintenance costs and downtime.

The path to clear cut profits begins with investing in a Grazer.



For the name of the Grazer dealer nearest you please call 1-414-582-5000.

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Circle 524 on reader service card

The Next Move Is Yours. . . Make It With AgrEvo™

Experienced turf and ornamental pros know Mother Nature is a formidable adversary. Grounds management is complex. Climate, geography, weeds, disease and the environment can affect your game plan. Experienced grounds managers rely on AgrEvo's complete product line of herbicides, insecticides, fungicides and fertilizers — all designed to provide you with a strategic edge. It's your move. Checkmate your turf and ornamental problems with knowledge, experience and AgrEvo.

Circle 500 on reader service card



Heavy Duty Spreader Gives Precise Widths



The durable Super-Flo spreader is available from **Central Parts Warehouse**. The Super-Flo features a 1/4-hp, epoxy-sealed motor, electronic speed control that provides precise spread widths from 3 feet to 50 feet and a 9-inch stainless steel spinner disc with flighted auger.

The hopper holds six cubic feet, with a 650-pound capacity. The Super-Flo includes a heavy duty mounting kit and one year parts warranty. Optional items include the new Class III quick disconnect mounting kit and Par 36 spreader light.

Circle 501 on reader service card

Chevrolet Improves the Durability of Its Kodiak

The **Chevrolet Kodiak** offers GVWRs ranging from 18,000 to 61,000 pounds. Kodiak is also available in regular and LoPro configurations.

Improvements for 1996 in the Chevrolet Kodiak include gas engine changes to improve reliability and durability, a new Delco PG 260 gas engine starter, improved automatic transmission cooling plumbing and an improved turning radius. Extended life coolant will be standard, providing a five-year, 100,000-mile change interval.

Other Kodiak enhancements will include drivetrain components, maneuverability and operating systems. An electronic, Caterpillar 3116 diesel engine will be an available option.

Circle 502 on reader service card



Banner Fungicide Provides Effective Systemic Control



Banner[®] fungicide from **Ciba Turf & Ornamental Products** protects plants and turfgrass and delivers effective systemic control for a broad range of important diseases. Banner's plant protection includes diseases such as red-tip photinia leafspot, dogwood anthracnose, crabapple scab, crape myrtle powdery mildew and others.

Banner's low prescriptive rates also provide superior and economical control against many turfgrass diseases, including dollar spot and brown patch. Banner works systemically inside plants, moving into the new, vulnerable parts of plants and their foliage as they grow. Depending on the species and disease, Banner works for up to 30 days.

Banner is available in liquid formulation and a gel formulation in water-soluble bags (Banner GL).

Circle 503 on reader service card

Primo Regulates Growth, Reduces Clippings by Half

Primo® from Ciba Turf & Ornamental Products regulates turf growth and reduces clippings by approximately 50 percent for four weeks. It regulates turf growth by reducing the size of plant cells, which results in a more efficient, compact turfgrass plant that may require fewer nutrients and less water. Research indicates that Primo treatments enhance turf color and increase turf density. It is rainfast in one hour and breaks down to carbon dioxide and water.

Primo is foliarly absorbed for more consistency than most other PGRs. It has no effect on ornamentals or nontarget organisms and comes as an emulsifiable concentrate or wettable powder in water-soluble bags. Circle 504 on reader service card



Creative Automotive Presents Handy Verti-Fold Ramp

Do you need to load a variety of equipment into different trucks and trailers several times a day? The "Verti-fold" from Creative Automotive will do the job:

- Easily loads mowers, aerators, slit seeders or three-wheel ATVs (anything with a wheelbase of 36 inches or less).
- No installation kits needed - simply rests on trailers, flat beds or pickup truck beds.
- Opens like a book from 18 x 78 inches to 36 x 78 inches.
- All-steel ramp has a capacity of 1,250 pounds, yet weighs only 85 pounds.
- Sanded nine-gauge expanded metal surface provides positive traction in sun, rain or snow.



face provides positive traction in sun, rain or snow.

- 100 percent parts and materials made in U.S.A.

Call today to order at 800/783-1069. Only \$199.95 delivered. Creative Automotive Products, 435 Wilson St. N.E., Minneapolis, Minn. 55413.

Circle 505 on reader service card

Encore's Pro-Line Mowers Are Easy to Maintain

The PRO-Line mower from **Encore Manufacturing Co.** has many standard features built in, providing reliability and ease of maintenance. The PRO-Line features taper lock pulleys, reinforced deck, six-inch brake drums, matched dual V-belts to each wheel and bolt-on rim pulleys and drum.

Other standard features include a five-speed transmission with reverse assist, parking brake, durable front bumper, radial-cut high-lift blades, a 10-gauge steel deck with seven-gauge wear strips and welded seams, top access to the grease fittings, yoke-style casters and an easy shift bar.

Circle 506 on reader service card



Patented Transmission Gives Mowers the Ferris Advantage



Ferris Commercial Equipment offers a complete line of mowing products for the lawn and landscape contractor, ranging from 12.5-hp, 32-inch walk-behind mowers to 22-hp, 72-inch riders. Ferris mowers are characterized by a rugged, innovative design and made for heavy duty use. Ferris builds extra strength into all high wear areas and offers the best commercial warranty in the industry, up to five years on our "zero/turn" dual-drive hydro walk mower transmissions. All Ferris hydro drive machines feature a cooler running drive system. High pressure and heat are the major cause of hydro drive system failures and our patented systems

run on lower pressures and generate less heat to perform better and last longer. Contact Ferris Industries, P.O. Box 910, Vernon, NY 13476 or call 800/933-6175. Circle 507 on reader service card

GMC TopKick Boasts New Features for 1996

Lawn care and landscape users of the GMC TopKick will benefit from several new features in 1996 that provide outstanding overall value in advanced medium duty truck design. These features include: gas engine changes to improve reliability and durability and a new Delco PG 250 starter for gas engines. The TopKick will also include improved automatic transmission cooling plumbing and an improved turning radius.

Extended life coolant becomes standard providing a five-year, 100,000-mile change interval. The electronic Caterpillar 3116 diesel engine becomes an available option. Additionally, there will be enhancements in drivetrain components, maneuverability and operating systems.

The TopKick offers GVW ratings from 18,000 to 61,000 pounds. TopKick is also available in regular or LoPro configurations.

Circle 508 on reader service card



Walk-Behind Features Two-Year Warranty, Low Price



The GreenStreek commercial walk-behind from **Greenline** is a 36-inch model with a two-year commercial warranty for the unheard-of price of \$1,995 (48-inch model shown is \$2150). The heavy-duty GreenStreek is powered by a 14-hp Kohler engine that is easy to handle and easy on the pocketbook.

Greenline has been passing on significant savings by offering equipment and parts factory-direct to the lawn and landscape contractor for eight years. Our catalog offers savings of up to 60 percent off retail prices. For more information, call 800/356-0171.

Circle 509 on reader service card

Multi-Purpose Spreader Has Year-Round Uses

The **Grotech MPS-125** spreader allows lawn and landscape contractors to handle fertilizer, seed, ice melters and sand with one piece of equipment. Corrosion-resistant features include thermoplastic, no-rust hopper; a 12-volt, high-torque motor mounted inside a sealed housing; a stainless steel flow adjuster; and a heavy duty, weatherproof connector.

The MPS-125 mounts on any utility vehicle, front mower, tractor, etc. The variable speed spinner adjusts from 4 to 40 feet, and features a single lever that controls the spreading pattern from the operator's seat. For more information, call 800/725-8377.

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Highway Equipment Offers Groundskeeper Line

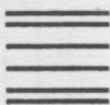
Highway Equipment Co. has introduced a complete line of leaf vacuum equipment under the Groundskeeper trade name. The trailer-mounted AG-18 features a fully hydraulic, twin cylinder dump system, 18-foot-long hose and 18-hp vacuum. It can also be installed in any standard pickup bed. The Dump "E" dump body will convert a 3/4-ton or larger pickup into an all-season dump body.

The AM-23 and AM-30 "tow-behind," axle-mounted Groundskeeper units generate between 7,500 and 10,000 cubic feet of suction. The flatbed or dump body mounted FRP-23 and FRP-30

Groundskeeper units are constructed of fiberglass-reinforced plywood and customized to fit end-user specifications in body lengths from 8 to 14 feet.

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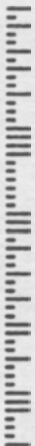
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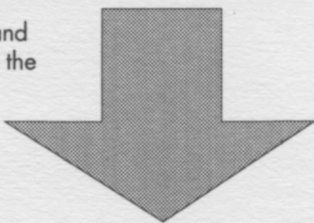
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Use this card to receive FREE information on the products and services featured. We'll rush your requests to the appropriate companies.

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- Landscape Contractor (maintenance & installation)
- Chemical Lawn Care Company (excluding mowing maintenance service)
- Lawn Maintenance Contractor
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- Irrigation Contractor
- Landscape Architect
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- 515 531

PRODUCT ADVERTISERS

AgrEvo	3,16	Highway Equipment Co.	8
American Cyanamid	15	H. H. Holdings	9
Central Parts Warehouse	3	LeMeur Welding & Mfg.	9
Chevrolet	4	Otterbine Barebo Inc.	8
Ciba Turf & Ornamental Products	4	Rain Bird	8
Ciba Turf & Ornamental Products ...	5	Rain Bird	9
Creative Automotive	5	S & R Industries	9
Encore Manufacturing	6	Scag	10
Ferris Commercial Equipment	6	Snapper	10
GMC	7	Turfoo Manufacturing Inc.	11
Grazer Division, Ingersoll	2	Valley Manufacturing	11
Greenline	7	Walker	12
Grotech	8	Woods	12

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- Manager, Director, Supt.
- Agronomist, Horticulturist
- Foreman
- Foreman, technician
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- Scientist, Researcher
- Other (please specify)

Name _____ Title _____

Company Name _____

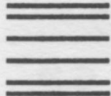
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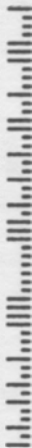
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Come Into The Future of Pesticide Application



Injecto-Matic chemical injection systems manufactured by **H.H. Holdings** are recommended by some of the industry's leading companies. Here's what the customers are saying:

- Barefoot Grass — Metering of the technical material has been perfect, odor problems are solved, gives us peace of mind.
- P.C.O. Pest Control — Very operator friendly, we have increased confidence in application rates.
- Orkin Pest Control — No mixing of chemicals, less exposure, a big hit with technicians, reduces time spent on jobs.

For more information, call 905/850-2353.
Circle 512 on reader service card

LeMour Enclosures Protect Controllers

LeMour Welding & Mfg. offers a full line of heavy steel protective enclosures for irrigation controllers and backflow preventers, pump shelters, meter enclosures and custom boxes. Pry-resistant doors and lock covers keep vandals out.

Special features include heavy duty steel construction, choice of finishes and weather-resistant metal treatments, specialty locking devices and a template for quick bolting and installation. On-site power/interior light and cooling fan/thermostat are two available options.

For more information, contact LeMour at 909/822-5100.

Circle 513 on reader service card



Manage Water Quality with Pond and Lake Aeration

The Concept₂ surface spray aerators from **Otterbine Barebo Inc.** bring together the best of both worlds — a beautiful, fountain-like spray pattern and effective water quality management. Concept₂ surface spray aerators are constructed of stainless steel and thermoplastics, offering beauty and function.



A new addition to the Otterbine line is the Fractional Unit, a 1/2-hp water feature that is maintenance-free and comes in three interchangeable spray patterns, 100 feet of power cord, a power control center with GFI, a 24-hour on/off timer and a protective screen.

Otterbine also offers a full line of water quality management products, including aspirating and diffused aeration systems, Ottershield lake dye and the Otterzone ozone generation system with subsurface aerator that sets up massive horizontal circulation patterns.

Circle 514 on reader service card

Rain Bird's "Old Reliable" Sprayhead Gives Long Wear

Whether you're installing a new system or maintaining an old one, use the best selling sprayhead in the world. The **Rain Bird 1800 Series** has the strongest retract spring, a patented, pressure-activated wiper seal and outstanding nozzle performance. It's little wonder that the 1800 Series is preferred by professionals worldwide. For more information, call 800/458-3005.

Circle 515 on reader service card



Kit Gives Control of Low-Volume Systems



The Control Zone Kit from **Rain Bird**, which controls the flow and pressure of water in low-volume irrigation systems, now gives customers a choice of two different valve systems, depending on the customer's needs.

The Control Zone Kit can be ordered with either the DV Series electronic remote valve, or the newest version, the ASVF Anti-siphon valve, a combination of an electronic remote valve and an atmospheric backflow preventer. Both DV and ASVF valves are available in a 3/4-inch inlet and outlet model.

The Kit operates in a low flow application to 0.2 gallons per minute when the filter is installed upstream. The kit is constructed of curable, heat-resistant plastic and is easy to assemble and operate. It is available for both new and retrofit installations, and easily converts an existing sprayhead zone into a drip zone.

Circle 516 on reader service card

S & R Chippers Offer Self-Feed on Models

S & R Industries' line of commercial quality wood and brush chippers include trailer-mounted, self-powered units and PTO units available in two sizes. Smaller units accept limbs up to four inches in diameter and the larger units chip material up to six inches.

The S & R Pro-Chip chippers are a fly-wheel type chipper and feature a synchro-feed self-feed system on all models, unique in this size chipper. Designed for the professional, these chippers are rugged, easy to service and easy to operate. They can do the work of many larger, more expensive machines.

Additional information and video are available by calling 503/523-5952.
Circle 517 on reader service card



Scag Offers a Full Line of Commercial Mowers

In a recent independent survey sponsored by a leading industry publication, 600 commercial cutters and landscapers were asked to rate the best commercial mowers in the industry. The answer by a wide margin was **Scag**.

Visit your Scag dealer today and get the complete story about Scag's preferred line of walk-behinds, riding mowers and zero-turn riders. You can't beat the value.

Circle 518 on reader service card



Snapper to Introduce Great Dane Series



Snapper's Commercial Products Division developed a new line of hydro walk-behinds and an all hydro rider for 1996. The new line will be called the Snapper Great Dane series, named for Snapper's own Dane Scag.

The walk-behinds will feature 14- and 16-hp engines, plus an 18-hp engine with electric-start. The series also features a

new floating deck with easy height-of-cut adjustment. Decks are available with 36-, 48-, 52- and 61-inch cutting widths.

A field-serviceable spindle assembly has been developed for the cutting decks, which are made of seven-gauge steel for increased durability.

Also new this year is the Snapper Great Dane Hydro Rider with a 33-hp Kubota diesel engine and a 61-inch cutting deck, or a 40-hp Kubota diesel engine with a 72-inch cutting deck. Hydraulically driven cutter blades give a high quality cut at mowing speeds of up to eight mph. Riders are controlled by a single lever joystick, offering zero-turning radius.

Circle 519 on reader service card

Heavy Duty Aerator Converts to a Sod Roller

The Aerator from **Turfcro Manufacturing Inc.** is designed with durability and flexibility for the commercial lawn and landscape contractor. A steel drum can be installed in minutes to convert The Aerator into a sod roller and be used all summer long.

The Aerator operates at a fast 26,000 square feet per hour. Heavy duty features include covered chains, solid steel axles, service-free sealed bearings, rigid steel pipe lift linkage, sturdy box frame, separate clutch and throttle for ease of operation and a choice of a Honda or Briggs & Stratton engine.

Circle 520 on reader service card



Valley Manufacturing Makes It Easy with EZ Dumper

Everything about the E-Z Dumper from **Valley Manufacturing** is easy, including installation and operation. It operates hydraulically, eliminating long hours and hard work associated with manual unloading. Open the tailgate and turn the key or push the button, and E-Z Dumper lifts and unloads in seconds.

E-Z Dumper for pickup trucks can hold and unload up to 4,000 pounds, depending on the weight carrying capacity of the vehicle. E-Z Dumper Trailers are also available in sizes ranging from 3,000 to 14,000 pounds (GVW). Call 800/233-5532 for more information on E-Z Dumper products.

Circle 521 on reader service card



Walker's Mid-Size Rider Is Compact

The **Walker Rider** is one of the most compact zero turn radius mowers available. The tractor's size and maneuverability are designed to fit and do the work of mid-size walk-behind mowers with the increased productivity of a rider.

Five tractor models are offered, from 11- to 25-hp with either gas or diesel engines. Five mower deck sizes ranging from 36 to 62 inches are available, featuring grass collection, side discharge or mulching capability. See us at the Power Equipment EXPO Booth 4290.
Circle 522 on reader service card



Woods Riding Mower is Built for High-Productivity Work



Woods 6000 Series Mow'n Machine™ riding mower is built for high-productivity turf care. Its zero turning radius gets around obstacles without reversing, and its wide, front-mounted deck reaches easily under shrubs and low-hanging branches. Plus, user-friendly controls and a high-back cushioned seat make the Mow'n Machine exceptionally comfortable and easy to operate.

Available with gas and diesel-powered engines from 14 to 25 horsepower, mowing decks from 48 to 72 inches wide, and an array of mulching and grass-

catching options, the Mow'n Machine mower is engineered to meet the demands of lawn and landscape professionals.

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LOOK OUT FOR NUMBER ONE THIS SEASON



PENDULUM[®], AMDRO[®] AND IMAGE[®]

THE PROFESSIONAL'S CHOICE FOR TOP TURF PERFORMANCE.

PENDULUM Herbicide with pendimethalin. Now for turf!

PENDULUM provides proven turfgrass tolerance and excellent season-long preemergent control of crabgrass, goosegrass and other troublesome weeds. PENDULUM also provides gentle over-the-top control of 45 annual grassy and broadleaf weeds in over 260 labeled ornamentals for up to 8 months.

AMDRO Fire Ant Bait: Kills the Queen. Kills the Mound.

AMDRO is easy, because the worker ants do the killing for you. No other fire ant bait treatment works as fast and effectively to kill the mound. Which is why AMDRO is the undisputed market leader.

IMAGE Herbicide: Control the Uncontrollable.

IMAGE controls previously uncontrollable summer weeds like purple and yellow nutsedge, field sandbur, and dollarweed in warm season turfgrasses as well as winter weeds like wild onion and garlic.

PENDULUM[®], AMDRO[®] and IMAGE[®]. The professional's choice for top turf performance.



For more information or for the name of the Cyanamid distributor nearest you, call 1-800-545-9525.

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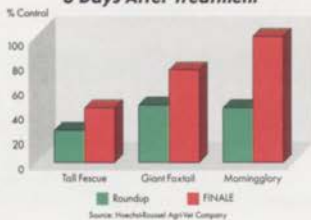
NEW FINALE[®] HERBICIDE WORKS.



FINALE. KILLS WEEDS IN 1 TO 4 DAYS

Seeing dead weeds proves its effective control. FINALE[®] gives results in as few as 1 to 4 days, versus the 7 to 14 days required with Roundup[®]. So why wait when you can use FINALE?

Fast and Effective Weed Control 3 Days After Treatment



FINALE. EFFECTIVE BROAD SPECTRUM CONTROL

A nonselective herbicide, FINALE provides effective control of broadleaves, grasses, sedges, and woody species.



TWICE AS FAST AS ROUNDUP[®]!



FINALE. ECOLOGICAL FEATURES

FINALE degrades rapidly* in the soil into naturally occurring compounds. It has no soil residual activity and there is no root uptake.



FINALE. BECAUSE RESPONSIBLE VEGETATION MANAGEMENT INCLUDES THE ENVIRONMENT

IMPORTANT: Please remember always to read and follow carefully all label directions when applying any chemical.

*Under natural conditions the half-life of FINALE in soil and water (DT50) is between 7 and 20 days, depending on temperature, aerobic conditions and microflora.

Roundup is a registered trademark of Monsanto Company.



A company of Hoechst and NOR-AM

AgrEvo USA Company
Little Falls Centre One 2711 Centerville Road
Wilmington, DE 19808

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Lawn & Landscape MAINTENANCE

VOLUME 16, NUMBER 7

JULY 1995

FEATURES

Cover Photo:
Bob Capazzo
Photography,
Greenwich, Conn.

24 Cover Story: The Personal Touch

Good customer relationships and a devotion to detail have earned The Kennedy Nursery an excellent reputation and healthy, long-term business.

30 Power Equipment Issues Test Patience, Ingenuity

While industry and the EPA debate the next round of emissions standards, manufacturers search for technology that lowers emissions without breaking the bank.

40 Good Safety Programs Are No Accident

A serious investment in money, time and effort are necessary for a safety program to be successful.

46 OPEI EXPO Spreads Its Wings

As the market for lawn and landscape equipment grows, so does interest in the International Lawn & Garden EXPO, to be held this month in Louisville, Ky.

50 Engine Burnout Blues: Are Replacements the Cure?

When an engine goes, you're faced with a tough choice. Should you short block, recondition or replace it?

60 Backflow Preventers: Gatekeepers of Irrigation Water

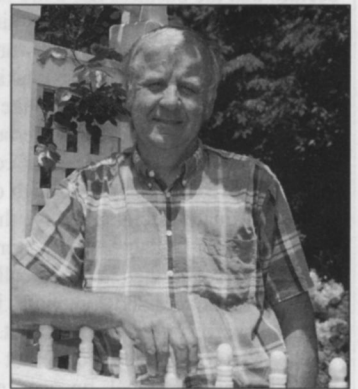
Prevent costly and possibly dangerous contamination of water systems by using backflow preventers on an irrigation system.

64 Tracking the Fate of Nitrogen in Turf

Research shows that nitrogen applied to a dense turf is used up quickly.

67 Business Management Series Part 7: The Challenge of Empowering Employees

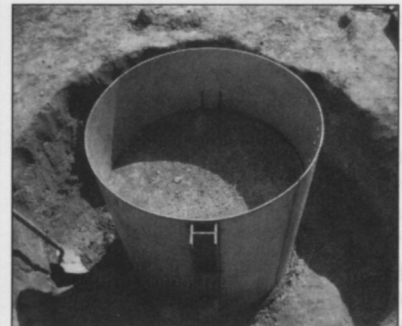
Employee empowerment can mean more profits and productivity, but the road to success takes a lot of time and effort.



p. 24



p. 46



P. 64

DEPARTMENTS

90 Advertisers' Index

84 Calendar

6 Editor's Focus

74 People

18 Association News

88 Classifieds

10 Environmental Forum

78 Products

8 Business Watch

70 Compost Digest

12 News in Brief

20 Seed Basics

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Editor's Focus

THE REAL THING. I've always wondered where the point of no return is, in respect to a business owner taking the business seriously. By this, I mean the moment when the owner decides that the business has a life of its own beyond just "making a living." In his or her mind, it becomes a "real thing," worthy of effort and commitment and risk-taking.

Each year in a young industry like ours, with so many startup firms, numerous owners go through this process of commitment. It's like standing on the high diving board and finally deciding to take the plunge. Once a lawn or landscape contractor makes the commitment, other steps logically follow: you hire employees and sometimes borrow money for investment in equipment.

When you realize that you are not an expert in accounting, personnel, finances, employee training, government regulations, benefits or even technical areas of the business, a real live professional in those areas looks pretty good. Using a consultant in these areas, even on an occasional basis, is a major step toward building a long-term business.

These acts change the dynamics of a startup business dramatically: employees can handle twice as much work but there are issues of wages and personalities to handle; loan payments put tremendous pressure on the business to perform consistently; the experts' advice is invaluable but also seems as costly as a new diamond for Elizabeth Taylor.

In many cases, the business starts to roll along smoothly and you learn to juggle the pressures of people and financial obligations. It's when the business has growing pains that things really get complicated.

Experienced owners tell me that growing pains are periodic, and are felt when a business grows just a little too fast for its organization. The systems in place for production, maintenance and personnel are not quite up to snuff in terms of the pace of growth. More astute owners will notice the effects of this phenomenon quickly: quality can slip, customers may drop off, profits could dip slightly, employees might complain of too many production demands.

At this point, the wise owner realizes that it's time to hire someone to fill the gap, re-establish contact with customers or otherwise "re-engineer" the company. Because business changes constantly, you may have to rethink the company in this manner several times over the life of your firm.

Eventually, as your business grows, you may have to do something that by nature, is difficult. To help the company grow and improve, you will have to relinquish power and authority and give it to your employees.

It's more than just delegating, trusting or freeing your employees to use their brains. In today's business circles, it's called "empow-



ering," giving both power and responsibility.

I realize that many of you may have already heard this term too many times, but it's still the best description available for the act of allowing your employees to act on their own.

Entrepreneurship demands a sense of independence, fortitude, self-confidence and risk. And anyone with those qualities usually has a difficult time letting someone else make decisions — and mistakes — on their own. It's kind of like letting your child take over at the wheel of the family car. You've learned to live with your mistakes, but it's very hard to watch others make them.

That's the price of growth and success, however. Owners who have empowered their employees tell us that it isn't easy and it takes time and hard effort. Empowerment also takes the right people. Let's face it — some employees really are happy to just do the work and go home. But many people want to use their brains along with their brawn, and they can be invaluable to a growing, vital contracting firm.

If you think it's time to share some of the power of ownership, as well as the rewards of better customer relations and more profits, turn to page 67 and read Part 7 in our *Business Management Series*. Then contact the industry experts for the details.

I know that as a business owner, you've taken your share of risks. This step may be one of the scariest, and also one of the best.

SAFETY COSTS, TOO. Landscape contractors contacted for our article *Good Safety Programs are No Accident* (page 40) agree that any safety program worth its salt will cost time and effort to establish with success.

My hat's off to the contractor who manages to juggle high quality landscape work with the costs (in money and distractions) of building workable management systems. ■

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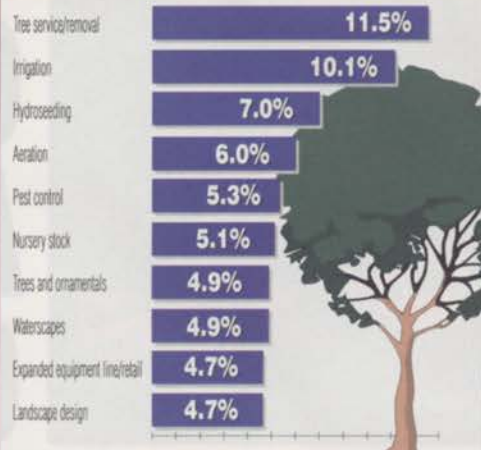
CONTRACTORS ESTIMATE GROWTH OF NEW SERVICE AREAS

Last April, we reported on the current service offerings throughout the lawn and landscape industry. The results, based on an independent survey of a sampling of our 48,000 readers, showed that pruning/trimming and turf fertilization were the two most popular services currently being offered.

The survey, conducted by Research USA, also asked contractors to list the services they plan to offer within the next three years. Again, tree service/removal ranked first, with 11.5 percent of the response. Irrigation was second with 10.1 percent, and hydroseeding was third with 7.0 percent. Other growth areas include aeration at 6.0 percent; pest control at 5.3 percent; nursery stock at 5.1 percent; trees and ornamentals at 4.9 percent; and waterscapes at 4.9 percent.

Several more possible growth markets include: retail equipment and landscape design (tied at 4.7 percent); landscape installation (4.5 percent); mowing services and fertilization (tied at 3.7 percent); landscape lighting (3.4 percent); and consulting services (3.1 percent). Sod farming, parking lot or cleanup services, excavation work and snow removal also were mentioned by some contractors.

TOP 10 SERVICES TO BE ADDED



WHY REMAIN A LONG-TERM INVESTOR?

Part 1

IF THE CURRENT performance of your investments is not what you had anticipated, you may ask, "Should I sit in cash?" or "Should I sell specific holdings?"

These concerns are normal, but they are often driven by emotion. An emotional decision could adversely affect your portfolio. An article in the October 25, 1994 issue

of *The Wall Street Journal* addressed six questions investors should ask before changing their investment strategy in a down market cycle:

1. Why are you investing? Review your original plan. Has your investment time horizon changed? Are there lifestyle changes that necessitate a new game plan? Has your risk tolerance changed? If your answers are no, don't focus on the short-term performance of your portfolio.

2. Look at your whole nest egg. How is

your portfolio performing as a whole?

3. Think in percentages. You may look at dollars as a loss, but evaluate your performance relative to appropriate benchmarks to see whether or not your portfolio is performing in line with current investment cycles.

4. Invest regularly. By regularly investing a fixed dollar amount, you get the benefit of dollar cost averaging (and can buy more shares when prices are down).

5. Rebalance your portfolio. Review your original objectives and current asset allocation with a financial services professional. Focus on the long term.

6. Rethink your investment time horizon. If you have 10 years or more to invest, use any market downturns as opportunities to find value.

If you are still not sure about long-term investing, consider a study conducted by Dalbar Financial Services Inc., which showed that the behavior of investors has a significant impact on investment performance. In that study, equity fund investors held investments for an average of 17 of 48 months during the period from January 1, 1984 through September 30, 1993.

Their returns ranged from 70 percent to 90 percent. Compare that to the S&P 500, which earned a total return of 293 percent over the same 10 years. In other words, equity investors who move in and out of investments based on short-term changes in the market under-perform investors who stick with a long-term strategy — by a margin of 3 to 1 during a 10-year period. — *John Houlahan, Dean Witter Reynolds Inc., Melville, N.Y.*

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Environmental Forum

SUIT SETTLED. After determining it wasn't worth the fight, members of the lawn and landscape industry voluntarily settled a lawsuit that had been levied against it by the state of California.

The state's Attorney General filed suit against the industry regarding alleged dangers of certain chemicals that are contained in the emissions of power equipment. Citing California's Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, the state was mandating that the industry provide warnings about the potential dangers of breathing engine exhaust from lawn and landscape maintenance equipment.

"Although we believe the Attorney General's claims are unfounded, the cost of litigating cases like this one is astronomical. Faced with paying huge sums in legal fees — which would ultimately be passed on to the consumer — our members and other companies in the industry decided it was better to settle," said Dennis Dix, president of the Outdoor Power Equipment Institute.

"Our industry is committed to providing consumers with safe and high quality products," he continued. "We always stress the importance of using and maintaining our products safely. The safety instructions and warnings for outdoor power equipment in the owner's manual and on the product should always be read and followed."

Exhaust from lawn mowers and other gas-powered lawn equipment contain carbon monoxide and other chemicals, some of which are among the more than 500 listed by the state of California as causing cancer or reproductive harm at certain levels. The existence of these chemicals precipitated the suit.

The settlement involves more than 160 industry members, who agreed to contribute to a statewide consumer education program emphasizing the importance of operating and maintaining lawn equipment safely.

The program includes a series of advertisements in eight California newspapers, advising consumers about the hazards of breathing engine exhaust and the importance of reading all safety information in the owner's manual. Industry members will also make a contribution to the California Public Health Foundation.

The settlement also contained a statement where the named companies denied they committed any violations of Proposition 65 or any other safety standard applicable to their products.

GOOD DEMOS. The 1995 Gallup survey conducted for several green industry groups



provides some insight into the types of individuals that rate highly the benefits of a well-maintained lawn and landscape.

The survey was jointly sponsored by the Associated Landscape Contractors of America, the Professional Lawn Care Association of America, the American Association of Nurserymen, the International Society of Arboriculture and the National Arborist Association.

"The Gallup Organization has supported, with statistical evidence, what service providers have been hearing from their customers," according to a joint statement by ALCA and PLCAA. "People not only want aesthetic benefits from well maintained lawns and landscapes, but are also concerned about how landscape serves to improve the environment, protect their real estate investment and enhance the appearance of their communities. It also demonstrates that consumers realize the services that professionals can provide to meet these needs."

The demographic groups that rated the benefits of a well maintained lawn and landscape highly are actively working, over 30, college-educated home dwellers with business or professional occupations. Their earnings tend to be over \$30,000, and they live outside the center city.

These demographics are in line with last year's survey, although the median income dropped from \$40,000 to \$30,000, indicating a greater number of people comprehend the benefits of quality landscaping.

MAJOR GREEN. The green industry has been aware of the environmental benefits of healthy turf for years. Now, there's proof that it also can promote a healthy economy.

A recently completed survey by the University of Florida, commissioned by the Florida

Turfgrass Association, estimated that the total value of the turf industry to the state in 1991-92 was \$7.4 billion.

With a goal of providing tangible evidence of the impact of turfgrass on Florida's economy, a research team set out to thoroughly evaluate turf-related expenditures in the public and private sectors during the 1991-92 fiscal year. The work structuring mail questionnaires and detailed household surveys began in early 1993, and was completed last fall at a cost of nearly \$140,000.

The researchers employed a value-added methodology which calculated the difference between the value of sales and the costs of inputs from suppliers. The survey evaluated the overall turfgrass industry, as well as its individual sectors: sod farms, turf product management, wholesale and

retail distributors of turfgrass products, turfgrass vendors, commercial institutions, golf courses and residential households.

Of the \$7.4 billion, golf courses accounted for \$2.6 billion, or 36 percent of the total, and single-family residences accounted for \$1.5 billion, or 20 percent.

The survey also determined that the total turfgrass maintained in Florida is 4.4 million acres, with single family homes accounting for \$3.3 million.

Cash expenditures for the production, distribution and use of turfgrass products and services in Florida totaled \$7.25 billion in 1991-92.

In addition, the contribution of employment in the turfgrass industry to the Florida economy is significant. Some 185,346 individuals worked in the Florida turfgrass industry, including 134,822 full-time employees.

WATER BILL. AAN, as well as 44 other agricultural organizations, sent correspondence to the United States House of Representatives in strong support of H.R. 961, the Clean Water Act Amendments of 1995. The bill is sponsored by Rep. Bud Shuster of Pennsylvania, who serves as chairman of the House Transportation and Infrastructure Subcommittee.

The bill would shift authority to address remaining water quality concerns down to the state and local levels and also establish voluntary, incentive-based solutions to non-point source and stormwater, pollution and watershed planning. It will also provide an improved definition of wetlands.

AAN was instrumental in the formulation of the bill. If this legislation passes the House, it would move on to stiffer opposition in the Senate. ■

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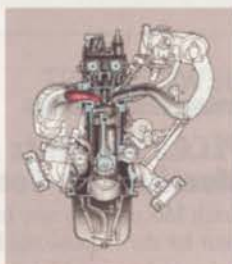
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
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NEWS DIGEST

PLCAA Appoints New Membership Coordinator

Heath Moore is the new membership coordinator for the Professional Lawn Care Association of America, Marietta, Ga. He will oversee membership programs, benefits and services, recruitment campaigns and related duties.

DowElanco Expands Herbicide Production

To meet increased demand for oryzalin, the active ingredient in Surflan™ pre-emergent herbicide, DowElanco has expanded plant production. John Peterson, product marketing manager, attributed much of its 15 percent rise in demand to landscape contractors' desire to reduce weeds as part of their IPM programs.

Cornerstone Partners Wins Blackhawk Park Contract

Cornerstone Partners Inc., a full-service landscape contracting firm in Wheeling, Ill., was appointed to renovate and maintain property at the million-square-foot Blackhawk Industrial Park in West Chicago, Ill. The renovation, which may continue for three to five years, will include partial redesign, extensive annual plantings and on-going maintenance.

Malco Products Acquires Kenyon Tool Line

Specialty hand tool manufacturer Malco Products Inc. of Annandale, Minn., recently acquired Kenyon Manufacturing Inc. of Corona, Calif. Malco will operate Kenyon as an additional sales division with landscape and irrigation tool manufacturing facilities to remain in Corona.

Seed Research Supplies Big League Seed

In a recent agreement with SMA Services Corp., Seed Research of Oregon, Corvallis, Ore., became the official seed supplier for the Stadium Managers Association. The group manages more than 100 stadiums across the country, including Yankee Stadium, Mile High Stadium, R.F.K. Stadium, Candlestick Park, Soldier Field and Wrigley Field.

Sarlo Manufacturing Celebrates 60 Years

The company that invented the rotary high-wheel lawn mower, Sarlo Manufacturing, recently celebrated its 60th anniversary. The Fort Myers, Fla., company continues to be a family operated business, according to Joe Sarlo, marketing manager.

California Contractors Head Off Proposed Ban on Long-Handled Tools

A CALIFORNIA BILL that would have banned the sale of long-handled, conductive hand-held tools was laid to rest recently, according to the California Landscape Contractors Association.



The State Assembly in California recently tried to ban the use of long-handled, conductive tools.

Through the efforts of the CLCA, who lead the charge in killing the proposed legislation, Assembly Bill 1015 failed passage in the Assembly Public Safety Committee and is, in all likelihood, "dead" for the remainder of 1995.

The bill was sponsored by the San Diego Gas & Electric Company, who had implicated the tools in two California electrocution deaths from high voltage lines during a five-year period.

CLCA lobbyist Diane Colburn argued that the bill, which would have banned the sale and manufacture of aluminum telescoping long-arm pruners and long-handled power pruners, was unnecessarily broad and overly restrictive. CLCA pointed out that although many long-handled power pruners have fiberglass handles, some are made with aluminum drive shafts that could be considered conductive.

While the bill defined a long-handled tool as having "a handle that is, or may be extended to be, six feet or more in length," it was ambiguous as to what would be considered a "conductive" tool. In addition, the bill would have applied to the entire state, despite the fact that many communities have buried high-voltage lines underground to eliminate the hazard.

The group's Legislation Committee tracks proposed laws and lobbies for CLCA's benefit. LandPAC, CLCA's political action committee, raises funds for use in this kind of lobbying effort, as well as for support of candidates for statewide office.

Hillary Clinton Honors NLA Award Winners

First Lady Hillary Rodham Clinton met with winners of the 32nd National Landscape Awards program on May 31 at the White House. This was the 16th time in the history of the event that a First Lady has honored the efforts of commercial and industrial landscape firms, municipalities and institutions for landscape design and improvement.

The American Association of Nurserymen sponsors the program, which recognizes both landscape design and installation.

This year's winners for landscape design include: Smallwood Design Group, Naples, Fla.; Sasaki Associates Inc., Watertown, Mass.; Robert E. Marvin & Associates, Walterboro, S.C.; EDSA, Durham, N.C.; EDSA, Ft. Lauderdale, Fla.; the Office of William B. Kuhl, New York, N.Y.; Edward E. Stone Jr. & Associates, Orlando, Fla.; Carol R. Johnson Associates Inc., Cambridge, Mass.; Foster, Conant & Associates Inc., Orlando, Fla.; and Miceli Kulik Williams & Associates, Rutherford, N.J.

Landscape installation winners were: Southern Vistas, Columbia, S.C.; Chapel

Valley Landscape Co., Woodbine, Md.; Ruppert Landscape Company, Ashton, Md.; Landscape Services Inc., Birmingham, Ala.; Florida Landscaping & Gardens, Winter Springs, Fla.; Scenic Landscape, Ho-Ho-Kus, N.J.; and Parker Interior Plantscape, Scotch Plains, N.J.

Revised Industry Forecast Released by OPEI

New data gathered by the Outdoor Power Equipment Institute forecasts increased 1995 shipments for all categories of outdoor power equipment except rear engine riders. Highest growth is expected for tillers, with a 15.4 percent increase to more than 363,000 units.

Shipment increases are also expected for garden tractors, up 12.7 percent; lawn tractors, up 10.9 percent; and walk-behind lawn mowers, up 4.6 percent. OPEI's forecast looks for a decline in rear-engine rider shipments of 6.9 percent.

Looking ahead, OPEI expects more modest increases in 1996 shipments, with the exception of rear-engine riders, which are forecast to show less of a decline at -4.2 percent shipments. OPEI noted that real disposable income in the United States grew 3.6 percent

in 1994 and housing starts increased 11.7 percent, figures which have an impact on current and future sales.

Mid-Am Elects New Board Members

The Mid-America Horticultural Trade Show appointed Bliss Nicholson, Bruce Company of Wisconsin, Middleton, Wis., to a three-year term as director. He will represent the Wisconsin Landscape Federation.

Peter Grathoff, Thornapple Landscape Maintenance in Geneva, Ill., was reappointed to a fourth term on the board, representing the Illinois Landscape Contractors Association. The board re-elected the following members: Don Groth of Don Groth Landscaping, Greenfield, Wis., president; Thomas Hoerr of Green View Companies Inc., Dunlap, Ill., vice president; Platt Hill of Platt Hill Nursery, Bloomingdale, Ill., secretary; and Frank Mariani of Mariani Landscape, Lake Bluff, Ill., as treasurer.

Deere Collectible Cards Highlight Products, Events

The second series of baseball trading card-sized collectible cards from Deere &



Company, Moline, Ill., are available through dealers in 10-card packs or boxed sets of 101 cards. This year's cards highlight historical and current equipment from Deere's product lines, including the 60th anniversary of the John Deere Model B tractor.

Historical events such as the formation of the John Deere Battalion during World War II and factory war production efforts 50 years ago, are honored. NASCAR racer Richard

Petty and baseball star Reggie Jackson, both John Deere equipment owners, also have their own cards. Each boxed set includes a metallic card featuring the company's most recent tractor model.

Cal Poly Collection Highlights Training

In-service landscape installation and maintenance training videos, slides, books and CD-ROM sets are the focus of a 24-page catalog available from the California Polytechnic State University at San Luis Obispo.

Listings describe each product and ordering instructions on a number of topics, including pruning, landscape installation steps, estimating for maintenance, design, irrigation methods, equipment handling and maintenance, pesticide use, plant and disease identification and others. To receive the catalog, call 800/235-4146.

Green Industry Generates Greenbacks

The nursery and landscaping industry in Pennsylvania reported total gross receipts of \$726.3 million for 1994, which is a 66 percent increase over the most recent figures from

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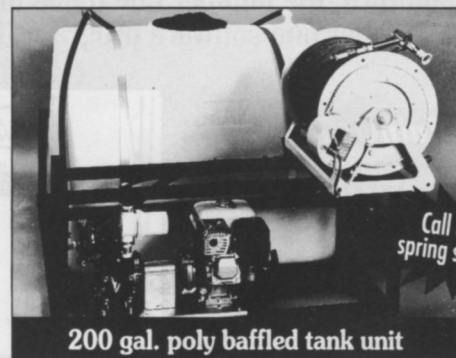


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USE READER SERVICE #76

1989. The Pennsylvania Agricultural Statistics Service conducted the industry wide survey at the request of the Pennsylvania Landscape and Nursery Association.

The survey also showed that 28,200 workers were employed by the industry in 1994, which paid out \$249.5 million in wages and salaries. Of those employed, 48 percent are full time workers.

Certified nursery product operators made up the growers portion of the survey, while garden centers, landscape contractors and chain stores were categorized as dealers. The survey also noted that the percent of products purchased from out of state grew significantly.

System Supports Epcot's Garden Festival

More than 2,000 miles of plastic pipe and 50,000 sprinklers provided undercover duty to keep 3,500 acres of landscapes and gardens lush during the Epcot International Flower & Garden Festival, which opened at Lake Buena Vista, Fla., in late April. According to the irrigation supplier, Rain Bird Sales of Tucson, Ariz., the normally lush grounds at Epcot were enhanced by additional flowers, to a total of 30 million.

The Festival included a 5,000-square-foot

outdoor floral display inspired by French Impressionist artists, a variety of topiaries formed as Disney characters, display gardens and environmental systems focusing on water conservation through xeriscape and other irrigation controls.

LLM Receives Four TOCA Design Awards

The Turf and Ornamental Communicators Association recently honored *Lawn & Landscape Maintenance* magazine with four first-place awards for design at its annual meeting in Chicago.

TOCA, which was formed in 1989, is an association of editors, writers, photographers and public relations practitioners covering the green industry.

LLM won first place awards for the second consecutive year in the Best Overall Magazine and Best Design/Magazine Cover categories. The awards went to LLM Group Publisher/Editor Cindy Code, Art Director Charlotte Turcotte and illustrator Bob Novak. LLM Staff Artist Tracy Green also received first-place awards in the Magazine Design: Single Page category and Overall Newsletter Design for the "Leadership Forum" newsletter.



Participants at "Post Properties Day" stand before a 200-year-old tree.

Atlanta Honors Tree Preservation Practices

The city of Atlanta recognized the land development and preservation efforts of Post Properties by declaring May 22 as "Post Properties Day." Post develops and operates upscale multifamily apartment communities in several parts of the Southeast.

Atlanta's proclamation stressed Post's "responsible community" practices in planning, construction and landscape, particularly in the preservation of historical, landmark trees during construction. Spence Rosenfeld, president of Arboguard Tree Specialist, Atlanta, presented the dedication speech.

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AFTER SOME MONTHS of planning, **The Associated Landscape Contractors of America** held its first **National Landscape Technician Council** meeting in Portland, Ore., earlier this year. The group is in charge of developing a national certification program for exterior landscape technicians.

Currently, five states and two Canadian provinces have signed on to become licensees of the program. These include: California, Maryland, Illinois, Wisconsin and North Carolina, as well as the provinces of British Columbia and Alberta.

The program is based on a program that was purchased from the **California Landscape Contractors Association**, which is currently in use in that state and in Oregon, Colorado and Washington. The NLTC will take the California examination and standardize it for national distribution, while accounting for regional variations from state to state. Start-up for those states currently signed on will be a minimum of 12 to 18 months.

ALCA reports that at least six other states have expressed an interest in joining, and are currently reviewing the program.

In related news, ALCA announced that Dr. Gerald Faust of Faust Management Services, San Diego, will deliver the keynote address, "Managing in the 90s," at the 1995 Interior Plantscape Conference. The event is scheduled for Sept. 29 - Oct. 2 at the Fairmont Hotel in New Orleans, La.

Entries are now being accepted for the **Professional Lawn Care Association of America's** third annual Community Service and Environmental Improvement awards. These national awards recognize lawn care professionals for their achievements in the green industry. Award winners are announced during the Green Industry Expo, Nov. 12-16, 1995 in Ft. Worth, Texas. Entrants must be members, and entries must be submitted to PLCAA by September 1.

In other news, PLCAA's 1995 Regional Workshops in August and September will focus on risk communication and customer service issues. A DowElanco representative will be conducting the risk communication portion of the day-long seminar, and Bob Andrews, past president of PLCAA, will present a session called, "What Can You Do For Your Customers Today?" Workshops are scheduled for Ames, Iowa on Aug. 30, Portland, Ore. on Sept. 20 and Columbia, S.C., on Sept. 27.

The program for the **Professional Grounds Maintenance Society's** 84th conference is set. The keynote presentation will feature ex-POW Charlie Plumb. Educational session topics are planned to cover a wide range of areas and will include the following: Residues: Chemicals in Runoff; Sub-Contracting vs. In-House Landscaping; Top 40 Trees in Zones 4, 5, and 6; Broad Introduction to Computers; Seek Control With New Herbicides on the Market; and Multiple Ways of Preventing Compaction in Turf.

Other sessions will cover: Leaf Blower Noise; White Collar Crime in Small Business; Pruning Challenges; Winning Through Change; Growing Trees That Will Grow in the Landscape; Earth-kind Landscape Maintenance; Ground Rubber as a Means to Prevent Turf Compaction; Efficiency in the Workplace; and Compost: Landscape Waste and Usage.

The Conference will be held in conjunction with the Green Industry Expo in Ft. Worth, Texas on Nov. 12-16.

The **American Society of Landscape Architects** recently announced the inaugural members of its Corporate Support Council. The Council was created to offer manufacturers and suppliers of products and services an opportunity to become more active in the Society and more visible to its 11,000 members.

Besides enjoying discounts on exhibiting at trade shows, advertising and other sponsorship opportunities, Council members are involved in joint research projects that will track trends and market developments for the profession. Inaugural members are New Worldwide Resources, Vitricon, James Hardie Irrigation, B-K Lighting, Aquamaster Fountains and Aerators, Terracast, Sitecraft and Omega Fence Systems.

Greg Petry, superintendent of parks in Waukegan, Ill., is the new president of the **Sports Turf Manager's Association**. He will serve a one-year term replacing Gil Landry of the University of Georgia, who will continue to serve as immediate past president.

Joining Petry in the newly-elected board serving a one-year term include: President-elect Mike Schiller, Schaumburg Park District, Schaumburg, Ill.; Eugene Mayer, O.M. Scott & Sons, Marysville, Ohio, commercial vice president; Henry Indyk, Turfcon, Horsham, Pa., secretary; and Stephen Guise, Guise & Associates, Fullerton, Calif., treasurer.

Other new board members are L. Murry Cook, stadium manager, West Palm Beach, Fla.; and Mary Owen, extension turf specialist, University of Massachusetts, Rochdale.

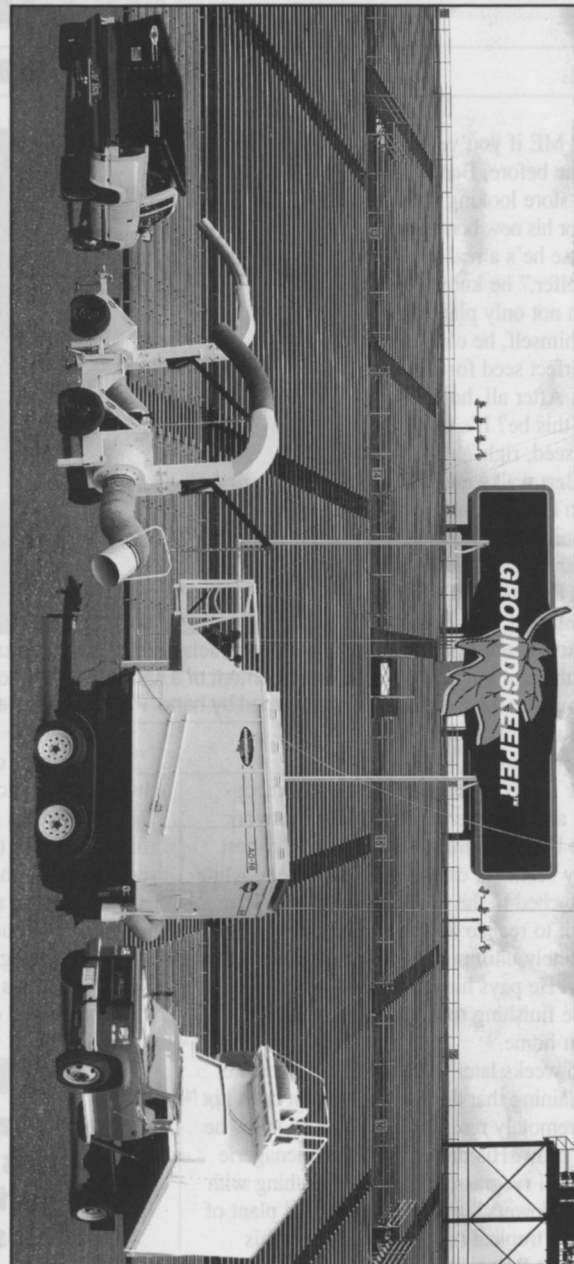
The **California Landscape Contractors Association** recently appointed Maria Abero to fill the position of full-time membership programs coordinator. She will be working to coordinate the development of a membership recruitment and retention strategy, and to develop materials for use by the state, the chapters and individual members in their promotion of CLCA membership.

In related news, CLCA announced the awarding of \$19,950 in scholarships to 24 students through its Landscape Educational Advancement Foundation.

The following officers were elected to the **Texas Association of Nurserymen**: Bill McGee, Red Hat Nursery, Duncanville, chairman; Chuck Sudduth, Chuck Sudduth Associates, Lubbock, chairman-elect; and James Harden, Mortellaro's Nursery Inc., San Antonio, vice chairman.

New directors include Joe Burks, Co-operative Rose Growers, Tyler, Region III director; Rick Archie, Archie's Gardenland, Fort Worth, Region V director; Charles Britton, Wolfe Nursery, Lubbock, Region VI director; Paul Wright, Rio Grande Nursery, Brownsville, Region VII director; Gary Kinney, Kinney Bonded Warehouse, Donna, allied director; Bill Shaw, Esco Distributors, Houston, director-at-large.

The Groundskeeper line (from left): Dump "E" hydraulic dump body; AM-23 & AM-30 "tow-behind" units; trailer-mounted AG-18; flatbed-mounted FRP



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Seed Basics

HOW SEED BECOMES CERTIFIED

STOP ME if you've heard this one before. Bert walks into a store looking for seed for his new home lawn. Because he's a real "do-it-yourselfer," he knows that he can not only plant the lawn himself, he can select the perfect seed for his new castle. After all, how hard could this be? It's only grass seed, right?

So Bert walks into the garden center, looks over his choice of seeding mixtures and selects Boffo's Super Enhanced, Turf-In-An-Instant, Lawn Builder Plus (to the nth power). He reads the bag long enough to know that this seed will "germinate first" and "cover quickly."

Now Boffo is a name Bert kind of recognizes, and considering the colorful artwork on the bag, he thinks this must be their best quality seed. He casually looks over the white tag attached to the top of the bag, only long enough to realize that this information is completely unimportant to him — a mere formality. He pays his money and off he goes to put the finishing touches on his American Dream home.

Two weeks later, Bert is back in the store complaining that the seed he bought does not even remotely resemble the lawn he knew he could grow. His dream lawn is a menagerie of annual ryegrass, a "tall looking thing with yellow flowers," and an unidentified plant of possibly tropical origins. And it is at this point that Bert realizes that he doesn't know as much about seed as he thought. In fact, the high school kid at the register knows even less. And to compound matters further, Bert is quickly coming to the conclusion that all seed is junk.

CONFUSION ABOUT SEED. This is not a problem limited to homeowners. Landscape contractors, nursery managers and even golf course superintendents have all been taken in by cheap, uncertified seed. Fancy, colorful marketing is no match for genetic superiority. But how does one know if one bag of grass seed is genetically better than another?

The white tag, or label, on the grass seed bag is only one part of the labeling process. It contains information such as germination percentage, seed purity, inert material, weed seeds present, other crop seed and the types of seed included. By law, this label must be on each bag of seed.



A seed technician sorts through a sample seed-by-seed to determine crop and weed content of a sample. This process can take up to two hours and must be performed by hand. Photo credit: Seed Research of Oregon.

The guarantee of best quality seed also includes certification, such as the Oregon Blue Tag certification label. This blue tag, usually affixed adjacent to the white seed label, is the very best assurance that the seed in the bag is genetically pure and meets with the industry's benchmark of quality — the Oregon seed certification program. Other states have similar programs of certification, many of which are based on Oregon's program.

The white tag, or label, on the grass seed bag is only one part of the labeling process. It contains information such as germination percentage, seed purity, inert material, weed seeds present, other crop seed and the types of seed included. By law, this label must be on each bag of seed.

According to the 1994 Oregon Certified Seed Handbook, the program was established "to provide a service for the public for the maintenance and increase of quality seed and propagating material of varieties grown and distributed in such a manner as to insure varietal purity through the appropriate application of rules."

This program is administered by the dean of the College of Agriculture Science at Oregon State University in Corvallis, Ore. A certification board works to determine policy for the rejection and acceptance of varieties into the certification project. It also develops and modifies existing certification policies, rules and specifications.

The seed certification program, located within the Oregon State University Extension Service, oversees enforcement of the certification rules and guidelines, from the production field evaluation through the actual bagging of seed.

Currently, the program certifies the genetic purity of grasses, legumes, small grains, mint, trees and field crops like rape, potatoes, beets, sunflowers and turnips. This is a rigorous process, and not every company in the seed industry participates.

In 1993, there were over 223,000 acres of certified seed production in Oregon. Of that total, there were:

- 10,558 acres of bentgrass (colonial, creeping and velvet)
- 11,966 acres of bluegrass (big, Kentucky, rough, *P. supina* and other)
- 25,250 acres of fine fescue (blue, Chewings, hard, red and sheep)
- 60,421 acres of tall fescue
- 3,856 acres of annual ryegrass
- 70,492 acres of perennial ryegrass
- 182,543 total acres of certified grass seed.

QUALITY CONTROL. Perhaps the single most important item regarding Oregon certified blue tagged seed is that the certified seed can be traced back not only to the manufacturer, but all the way back to the parental material used in its breeding.

Every step in the certification process provides that someone is accountable for the quality of the product. The breeder is accountable for the research and evaluation of the variety. The grower is accountable for the quality of the production fields. The company that markets the seed is responsible for the bagging, tagging and shipping of the seed. Few industries take such start-to-finish quality control measures.

The certification process begins with the registration of plant materials for certifica-

(continued on page 22)

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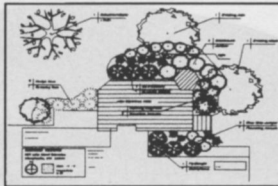
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USE READER SERVICE #71

Seed Basics

(continued from page 20)

tion. In order for a seed variety to be eligible for certification, it must first go through extensive evaluation to maintain and certify the pedigree. In order to be considered for certification, a variety must:

1. Be adequately tested to be "distinguishable" from other varieties, and be named.
2. Have a clear and documented breeding origin and history.
3. Have a description of its morphological characteristics.
4. Have evidence of performance against similar varieties.
5. Have a statement of probable range of adaptation.
6. Have a described procedure for maintaining seed stock.

With the ever-growing list of turfgrass varieties available to the market, seed certification is the contractor's best assurance of breeding quality. Without these safeguards, unscrupulous merchants could formulate "varieties" by blending together seed from any one of a number of sources.

Not every variety is eligible for certification. Many varieties, blends and mixes currently sold in the lawn and landscape market will never meet these certification guidelines. Buying uncertified seed is like buying a used car. You may get one that runs great and will give you many years of trouble-free performance. Or, you may get a lemon that the manufacturer is not likely to warranty.

ELIGIBILITY REQUIREMENTS. Once a company has a variety approved for certification, the process shifts to locating production fields that meet the program's specifications for maintaining that variety's genetic purity.

This can be one of the most difficult eligibility requirements in the certification process. Issues to be considered by the program's rules include: What crops were previously grown in that field? What crops are grown in neighboring fields? And what (if any) weeds or volunteer plants are currently present in the field?

Field management is also a high priority in determining what fields are suitable for certified seed production. This criteria is followed throughout the planting, growing and harvesting process, and a field can be deemed unacceptable at any time due to weed invasion, insufficient growth of the crop, inadequate plant density or disease and insect pressure. Even though a variety is approved and listed on the certification list at Oregon State, if the production fields are less than optimal, it may be deemed uncertifiable.

Once the seed is harvested, seed cleaning, warehousing and bagging (known as conditioning) are supervised strictly. All warehouses and cleaning facilities that handle certified

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SEED STANDARDS BY SPECIES

	PURE SEED	OTHER CROP*	INERT MATTER*	WEED SEED*	GERMINATION
Bentgrass	98%	0.50%	2.0%	0.25%	85.0%
Bluegrass	95%	0.25%	5.0%	0.30%	75.0%
Fine fescue	97%	0.25%	3.0%	0.30%	80.0%
Tall fescue	98%	0.50%	2.0%	0.30%	90.0%
Annual ryegrass ¹	99%	1.25%	1.0%	0.30%	90.0%
Perennial ryegrass ²	99%	1.25%	1.0%	0.50%	85.0%

* denotes maximum allowable percentage

¹ total "other crop" includes perennial ryegrass

² total "other crop" includes annual ryegrass

seed, whether as a variety or in a mix or blend, must first be certified themselves. In order to receive certification, the facility is inspected for cleanliness. Tracking the movement of seed lots and periodic inspections by the staff of the certification service of both the warehouse and the inventory records are performed to insure compliance.

Seed is also sampled by the program to evaluate purity and germination. Strict minimums and maximums have been established to insure varietal quality, and must be met before the blue tag can be affixed to the seed bag. These seed standards vary by species, however, all of the minimums and maximums must be met.

Sample sizes vary from species to species, and reflect the comparative size of the seeds. For instance, the sample size for a large seed such as tall fescue is 0.5 pounds. On the other hand, small seeds such as creeping bentgrass have smaller sample sizes (creeping bentgrass is 0.25 pounds). Once all of the samples have been tested and approved, the certification program prints and distributes the blue tags.

Mixes and blends come under equally stringent regulations. In order for a mix or blend to be certified, it must be composed solely of certified varieties, be mixed in a certified warehouse and pass all sample testing. This is especially important as mixes

and blends gain more and more popularity in the seed market.

The penalties for falsifying seed tags and/or inventory records are quite severe. Companies in violation of the certification rules are subject to thousands of dollars in fines (sometimes hundreds of thousands of dollars in extreme instances), and are often suspended from tagging seed with certification blue tags for several years. Because of the watchful eye of the certification program, these violations are fairly rare.

Does all of this mean that certified seed is better than uncertified seed? The Oregon Blue Tag certification program (and the blue tag on each bag of Oregon certified seed) is your very best guarantee of genetic purity. It is not a guarantee of varietal performance. This is an important point of distinction.

It would not be unreasonable to suppose that an uncertified variety might actually perform better in a given environment than a certified variety with poor adaptation to that same climatic region. The difference is that, without the blue tag on every bag of seed, the end user has no assurance that the uncertified variety name on the white tag is the actual seed in the bag.

If you have further questions regarding the seed certification process, the Oregon State Seed Certification Office can be reached at 503/737-4464 or write to: Seed Certification Office, 31 Crop Science Building, Oregon State University, Corvallis, OR 97331-3003. — Skip Lynch

The author is technical agronomist at Seed Research of Oregon, Corvallis, Ore.

After sorting, seeds are tested for germination percentages. They are then numbered and stored for later retesting.

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USE READER SERVICE #73



The Personal Touch

Good customer relationships and a devotion to detail have earned The Kennedy Nursery in Greenwich, Conn., an excellent reputation and healthy, long-term business.

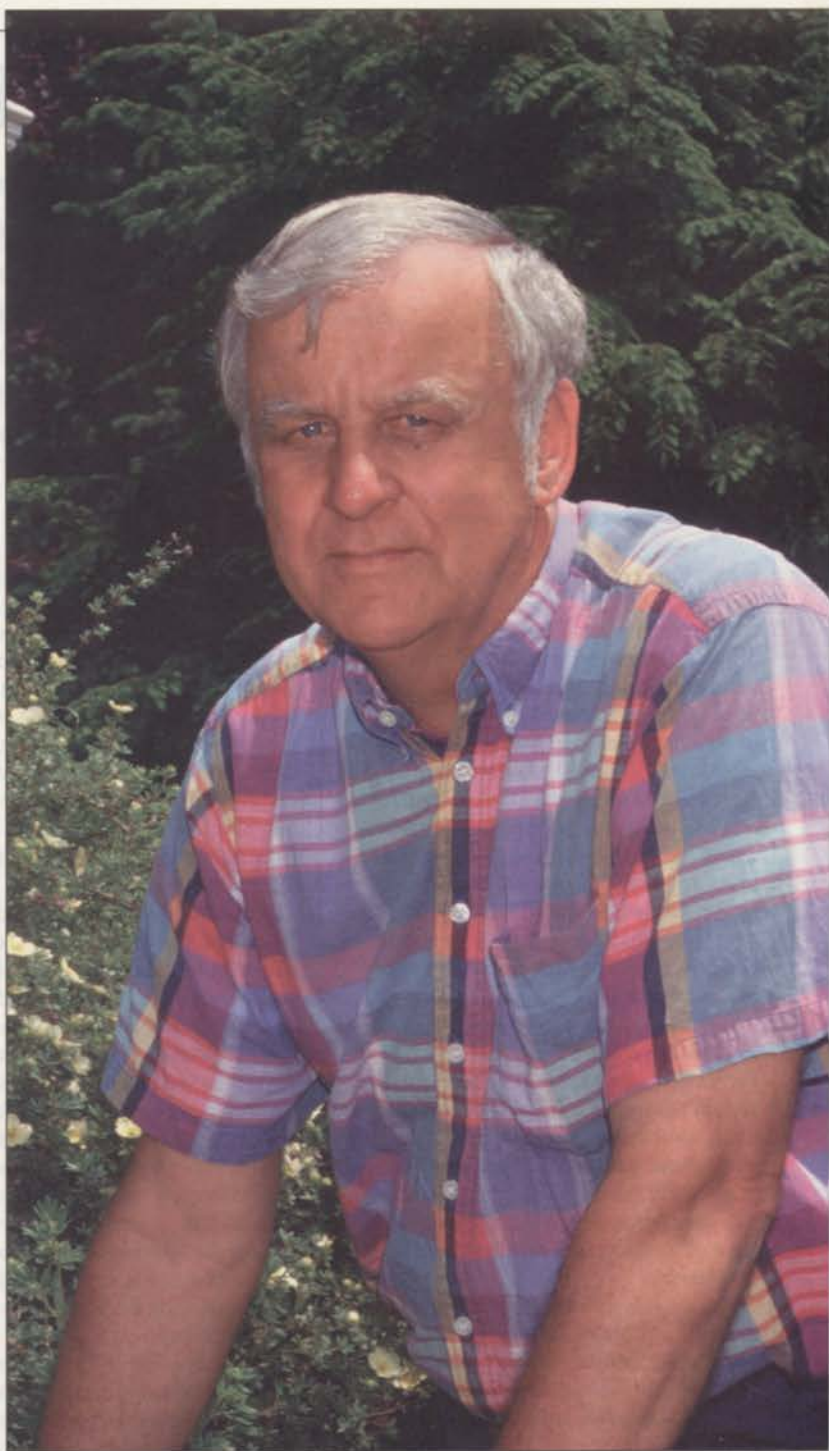
By Susan Gibson

THE GOAL of many fledgling landscape contracting companies is to become an institution in the market. A long-term, successful company can focus on what it does best, spend its time and effort developing good customer relationships and make a mark for itself through quality service.

One such company is The Kennedy Nursery, which was established in 1941 in Greenwich, Conn., by Wellington Kennedy. His son, Todd Kennedy, is now president of the firm. He recounted how a tradition becomes established: "In those days, much of our landscape contracting work was supplying plants to large estates in the area. Some of those estates employed two or three groundskeepers."

Over the years, the firm branched out to a wider base of residential landscape installation clients. The company now coordinates approximately 65 percent of its work through landscape architects hired by home and estate owners in the affluent Greenwich area. "We also have a part-time landscape designer, but most of our work is installation on properties that are quite large—many are two acres or more," Kennedy added.

He noted that the wealthy clients, many of whom are out of town a good bit of the time, are interested in plantings of larger trees to screen their property and provide privacy. This business—installing larger plantings on large private properties—may seem to be a small market niche, but actually offers several opportunities in the Greenwich area.



The Kennedy Nursery established itself years ago in the Greenwich, Conn., area. Today, Todd Kennedy oversees a business that succeeds because of close customer contact.

Kennedy pointed out that Greenwich is popular with people who commute to New York City for work and also with several landscape contractors who have travelled from New York and New Jersey to break into the market. "The work is here, the roads are good and the cost of living is less there." And, he noted, people in his market are "sharp about spending money."

How does a small but experienced contractor stay competitive with larger firms? Kennedy believes it's because of the "personal touch" his firm can provide.

LOCAL CONTACTS. The company, which operates a 10-acre nursery as its own source



THE KENNEDY NURSERY

HEADQUARTERS: Greenwich, Conn.
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THE PRESIDENT TODD KENNEDY

FAMILY: Married, works with son Thomas, who joined the firm five years ago.

EDUCATION: Fifth generation of Kennedy family in horticulture in Scotland and the United States. Graduated from Cornell University in 1957 with a degree in ornamental horticulture and landscape design; worked for a landscape contractor in Pasadena, Calif.; served in the U. S. Air Force; joined Kennedy Nursery in 1960.

EQUITY HELD: 100 percent.

he will travel with a landscape architect in the search for specific plant specimens.

Or, he will visit growers by himself and keep track of what's available. "I take color photographs and keep a log of specific plants. I may let a landscape architect know that there is a certain sugar maple available, for instance. This helps me develop more business with landscape architects," Kennedy added.

This travel, done mostly during the cold weather months, benefits others through Kennedy's participation in the Landscape Materials Information Service. "This group sources plants from Ohio to New England," he noted. Growers fill out forms showing size and type of plants at their nurseries, then send the forms to the organization, which sorts and codes the data.

He pointed out that the information is particularly helpful for landscape architects, landscape contractors and city planners who are involved in siting plants.

This knowledge of plant material sources and available plants is essential to Kennedy's business. He told of having one crabapple in a matched pair die after a few years. He returned to the same nursery in Pennsylvania where he bought the first pair, and found what he called a "perfect" match as a replacement.

Care in selection is as important as quality installation work on the property, Kennedy pointed out, and can lead to expanded business.

"We have a lot of repeat customers who call us back after a few years to replace a plant or make additions. We really try never to have a plant die, but when they do, we want it to be a 'friendly' replacement. Often, while we're on a property for replacement work, the owners ask us to do something else for them," he said.

The contact doesn't stop once a plant or landscape has been installed. Kennedy noted that his small business allows him to keep in close contact with his clients. "I try to follow up and stop by a client's property," he said. "When a crew starts a job, I may leave it and swing over to another to see how it's doing. On a lot of the properties, I even know the dog's name."

Kennedy asks the owners if there is anything he can do for them, walks the property, and even gets out a hose and waters plants if needed. "I may find that the plants are not being watered, which is unintentional," he explained. "I may water the plants and tell the owners to turn the water off at 4:00 p.m., or I'll call them later to turn it off."

This assures that landscape installations get proper maintenance and also keeps strong contact with owners. "Most of our clients read up a lot about landscaping. They read garden books and they also have other interests," Kennedy said. "They have hired a landscape architect, but they may not be at the property while the work is being done."

By visiting the property frequently, Kennedy can keep relationships strong and make sure the landscape meets expectations.

EMPLOYEE ISSUES. Kennedy or his son Thomas oversee the work, which changes every day. Work assignments are made to meet the demands of each job, rather than an organizational structure. Crews vary with the assignment, usually working without a foreman.

Experienced employees know what to do, he noted. "We have experienced people and they are easier to handle than having a foreman and crew structure."

Employee retention is a big issue at Kennedy Nursery, as it is at every contracting firm. "We have some employees who have been with us from 8 to 16 years, which is a long time," Kennedy stated. "Of course, we always have to hire new people and they are difficult to keep."

Most of Kennedy's landscape employees are Hispanic and reside in the Stamford area, which is located 15 miles away. The company transports the workers back and forth in a large van capable of carrying 12 people. The van also does double duty by transporting equipment and supplies to job sites.

Kennedy noted that most of his employees are Puerto Rican and "are happy to be working together." Since they speak Spanish as a first language, crew assignments often hinge around the ability of workers to communicate with each other

of plant material, has deep roots in the community. Todd's father, Wellington, passed away early this year at the age of 88, but remained active in the business until late last fall. His years of work for area clients paid off in continued business and a good reputation.

The quality of work Kennedy provides tends to generate more business within the community, either as new work or repeat work for established customers. "I spend practically nothing for advertising," he admitted. "A major element of our business is in our local contacts

and the follow-up we make. One recommendation at a party can lead to more work."

Kennedy's personal touch starts with a no-charge consultation and a warranty for the work he provides. Careful plant selection, either from the company's nursery or from growers as far away as Pennsylvania, comes next. One of his main responsibilities is to search for plants in nurseries located in New England, New Jersey and Pennsylvania.

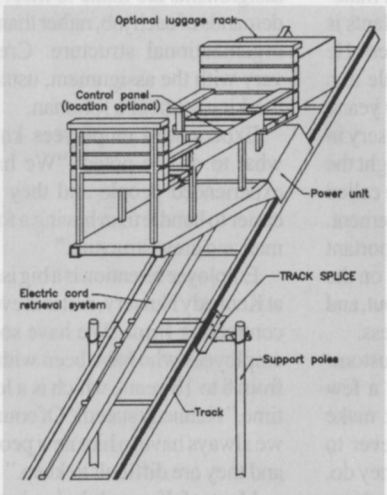
"I visit nurseries that tend to grow plants for the landscape trade—the larger plants," he explained. Often,



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and the client or architect at the job site. Communication does cross language lines because "everyone speaks a little 'Spanglish' around here," he explained.

GROWING SPECIALTY. The business that started out supplying plants to estates now finds itself specializing more and more in the installation of large plants. "Our clients are more interested than ever in screening their properties," Kennedy noted. "Five years ago, we bought a tractor (to transport trees) that was twice as big as the one we had 10 years before. We're looking for an even larger tractor now."

He pointed out that some of the screenings require evergreens as much as 30 feet high or big, 10-inch caliper shade trees. The transportation and planting of large specimens is an art in itself. "We've had to hire a crane to take these plants off the truck. Even then, the crane can't put it where you want it. We move the plants on the ground with a 'stoneboat,' which is a kind of sled used here in New England with the proportions of a door and a hole in the end for pulling it," he explained. "We can move trees with that method when we couldn't do it with a bulldozer or backhoe. Some of these trees are so large there can only be one tree per trailer truck."

The work, which generates steady business for the firm, is both time and profit-consuming. "It's not as big a profit item as you may think, because of the time and effort involved," he noted.

Kennedy Nursery's in-house nursery also consumes time and effort. Kennedy and his son have discussed the advantages and disadvantages of keeping it going.

"Thomas, who takes care of the planting, has a business background," Kennedy pointed out. "He thinks we are spending too much time on the maintenance of our own plants when we could be buying for direct delivery to the job."

The nursery is unusual because it specializes in large specimens. Occasionally, customers will visit to look at a plant before it is used in an installation, but basically the nursery serves as in-house inventory. In the last three years, deer have damaged several plants, necessitating the construction of costly fences around the property.

Kennedy also uses the property to produce compost, which is made from recycled landscape

materials. "We recycle about three-fourths of our materials, which includes sods and stones, too," he said. "We make our own potting soil with vacuumed leaves and fertilizer mixed with soil. It makes great soil for planting and cuts down on our use of peat moss."

NATIONAL CONNECTIONS. Wellington Kennedy was one of the three founding members of the National Landscape Association, which is a part of the American Association of Nurserymen. "My father was one of the group who proposed that the then National Landscape Nurserymen's Association combine with the AAN in the late 1940s. He was also an active member of the Connecticut Nurserymen's Association," said Kennedy.

He currently serves as president of the National Landscape Association. In a recent interview, Kennedy shared his perspective:

Q. What are the strengths of the NLA?

A. I think NLA's focus is more on the artistry of design/build, rather than on commercial landscape plantings. It's very plant oriented.

NLA is the landscape end of the AAN, and its role is to provide education and information to those in the landscape field. It helps people become better landscape designers.

Q. What is your role as NLA president?

A. My role is to oversee the administrative board, which is made up of representatives from six regions in the United States, plus myself as president. We also have a publicity committee, the committee that organizes the Management Clinic and the local Washington staff.

The Management Clinic, which we hold every February in Louisville, Ky., is a really interesting event. It's not a trade show, but an educational program. It gives us the chance to talk to other people who are professionals in the field.

Q. What is your opinion of the failed Plants for America promotion order?

A. I was in favor of the promotion order, because the green industry would have been able to advertise in big, national magazines. Our industry has to realize that we're not in competition with other landscapers, but with the person who sells appliances, kitchen cabinets, cruises, anything that I call 'discretionary' spending."

I think many of the growers were afraid that it would be another case of big government watching over them, looking over their shoulder.

Q. Do you think it is easier or harder to become

(continued on page 28)

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USE READER SERVICE #61

Cover Story

(continued from page 26)

established in this industry these days?

A. I think it is easier because of the existence of the rewholesalers. Now, you don't have to go 100 miles for plants, you can go 10 or 15 miles, and that makes a lot of difference. The rewholesalers cost more, you get less choice and possibly less quality, but they are convenient. If a contractor picks up material and takes it directly to the project, he can stay competitive.

A lot of people in allied businesses see landscape installation as an easy way to get into this business. Masons and excavators are two examples—they can put plants in when they're at the job, because the supply is there. Instead of having 100 companies, now 2,000 can do that.

Q. How can you compete with the startup companies?

A. We've made a niche for ourselves in larger plants and sometimes we even work for the smaller companies. For instance, we will deliver a big oak, dig the hole, put it in, and let them finish the job. In exchange for the work, we tell them we won't solicit their customer.

Q. How does the public perceive the value of landscaping?

A. The growth of real estate has been our biggest business for years. While people see landscaping as important, it is sometimes postponed. That makes it difficult for us. When business picks up in general, so does ours.

The economy is a big thing to our industry. The availability of leisure money depends on whether business is up or down. If it's down, they stop spending money on landscaping. People won't invest money in projects if it's tight. They may want to do landscaping but can postpone it. I think the industry's success follows the stock market more than it used to be.

Q. What areas of growth do you plan for Kennedy Nursery?

A. One area is in wetlands mitigation. As people build properties closer to streams and swamps, they have to agree to replace the plants to meet federal regulations.

Another area of growth is planting trees on older golf courses, along the fairways. There are some sophisticated private courses nearby that are adding more landscaping on the courses.

Q. What major changes do you plan?

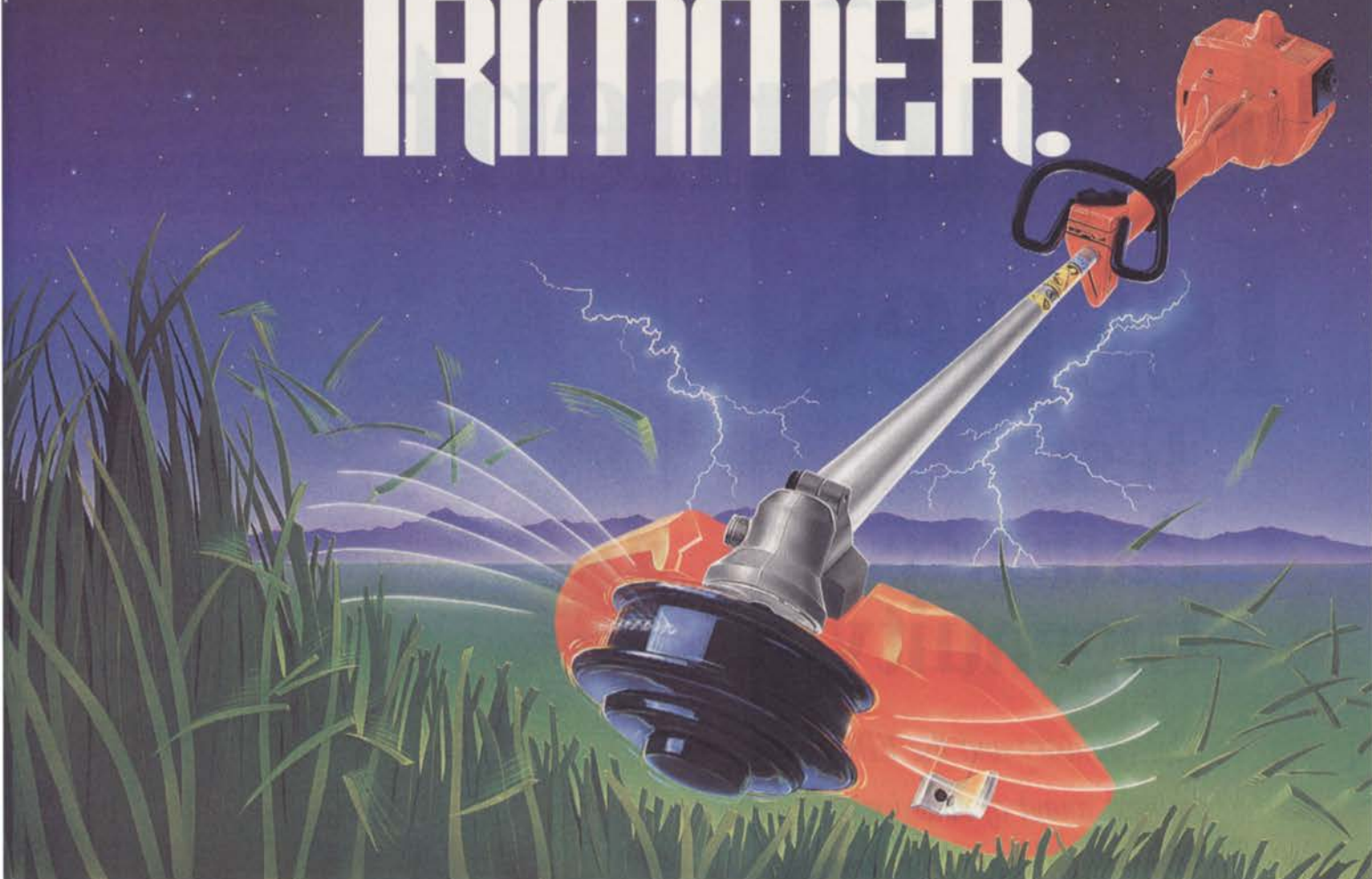
A. In five years, I expect to see an increase in maintenance work, more perennial plantings, bulb planting, even some small amounts of lawn cutting. It would be good to follow up on our own installation projects.

I also see a great need for selective pruning. Most people are not skilled in pruning and only cut new growth. The more selectively you prune, the better it looks. ■

The Kennedy Nursery is located at 201 Clapboard Ridge Road, Greenwich, CT 06831. Telephone is 203/869-3152.

The author is Managing Editor of Lawn & Landscape Maintenance magazine.

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Power Equipment Issues

Test Patience, Ingenuity

While industry and the EPA debate the next round of emissions standards for off-road, spark-ignition engines, manufacturers search for technology that lowers emissions without breaking the bank.

By Paul Schrimpf

Engine emissions and noise levels are two critical issues for equipment manufacturers and users. Photo credit: Echo Inc.

FOR THE LAST several years, the manufacturing and use of power equipment has come under unprecedented scrutiny.

Under the 1990 Clean Air Act, the United States Environmental Protection Agency, as well as some state governments, have set standards that reduce the amount of carbon monoxide and hydrocarbon pollution generated by power equipment. This includes trimmers, blowers, cutters and other machines



that contractors have relied on to keep costs low and quality high on the land they maintain.

On the user side, some areas of the country have been racked with community activism against noise levels in power equipment, especially gas-powered backpack blowers. Locally-based restrictions, and in some cases, complete bans, have turned contractors into lobbyists at city hall and in the council chambers.

And neither front is giving much headway. For equipment users, the noise issue continues to smolder. Some contractors have taken their cases to court to get the use of their equipment back.

TIMETABLE. The new era of nationwide regulation for the power equipment industry officially commenced on May 30, when EPA signed off on the first phase of emissions mandates. Manufacturers have already spent millions of research and development dollars in the redesigning of existing equipment in anticipation of the rules.

Then, the regulatory negotiation process for even more strict Phase II regulations will be completed near the end of this year, with proposed guidelines seeing the light of day by this time next year. Those regulations would not be enforced until after the year 2000.

"This is the most complex project ever undertaken by the power equipment industry," said Don Purcell, president of the Portable Power Equipment Manufacturing Association in Bethesda, Md.

He noted the industry is actively involved in the development of other ongoing projects,

including the two phases of California emissions regulations, a recently adopted emissions mandate in Texas and two levels of national fuel reformulation regulations.

"Not only do manufacturers need to make sure that their redesigned equipment meets the emissions standards, but they also must be certain that when fuels are reformulated, they are compatible with those engine redesigns," he explained.

With few signs of relief on the horizon, manufacturers continue to search for technologies that will lower pollutant output and still be cost effective to mass produce.

ONE DOWN. The mandates contained in Phase I of EPA's emissions regulations, are very much what equipment manufacturers expected—similar to the regulations they were modeled after, the California Air Resources Board Tier I standards.

Purcell said that after an initial review of the more than 250-page regulatory document, he found the regulations to be reasonable.

"I think it's clear that the EPA wants to work with our industry to develop reasonable regulations. They appear to have accepted many of the recommendations that we made," he said.

Don DeMaster, manager of technical services and CARB certification for Kohler Co., Kohler, Wis. agreed. "It appears that the EPA listened, and was receptive to the concerns the industry had. At least at the federal level, they are trying to work with the industry. The overall feedback I have gotten from others in the industry has been positive," he said.

The emissions standards set in Phase I are achievable through some minor but still substantial redesigning of two- and four-cycle engines. The air intake and cleaner, carburetor, valves, combustion chamber and cylinder block have undergone adjustment. In addition, to prevent tampering with the fuel mix controls, the carburetors on all engines will be sealed.

The big plus in the document was the timetable for manufacturing compliance. The EPA ac-

cepted the industry recommendation of waiting for the 1997 model year before having to comply. Depending on when its model year begins, a company could have until Sept. 1, 1997 to begin manufacturing equipment in compliance with the mandates.

Due to the size of the document and its release near deadline, manufacturers were unable to comment on many of the specifics contained in the regulations for this article.

Although many manufacturers claim to be right on track with the new regulatory demands, Purcell made it clear that this initial round of regulations should not be construed as a walk in the park for manufacturers. "This will be a complete cultural change for the industry, the first time this has ever happened—they have never had to deal with these kinds of issues," he noted.

The issues will include EPA certification for all product lines, mountains of regulatory paperwork, testing requirements and, later on, audits of testing procedures and accuracy.

At least one manufacturer sees potential opportunity in the tighter regulations. John Nelson, vice president of engineering with Snapper Power Equipment, McDonough, Ga., feels that if lowering the emissions raises the price point on inexpensive consumer equipment, more

consumers may hire professionals—causing greater demand for commercial-grade equipment.

"If the \$149 lawn mower consumers purchase today went away at some point, people would be less inclined to go out and buy a new mower, and more inclined to hire a professional," Nelson predicted.

Although only modest increases are expected as Phase I becomes enforced, Phase II will likely require the total redesign of many of the engines available today—and will cost more.

ONE TO GO. Few in the industry are venturing a guess on how much of an additional burden will be placed on manufacturers to lower pollution in Phase II. Purcell, along with representatives of manufacturers and other industry organizations, is working on the front lines of the continuing negotiation over the second level of EPA's emissions regulations.

The regulatory negotiation, or "reg-neg," process is scheduled to continue for the rest of the year, with proposed guidelines to emerge by June, 1996. Then the regulations will be put up for public comment and, by June of 1997, Phase II should be in the books.

The industry's biggest concern is that limits will be set so high as to

BE A GOOD NEIGHBOR

THE LESSON to learn is to be aware of everyone around you whenever you are using power equipment.

Echo Inc., Lake Zurich, Ill., promotes its "Be Smart" program to contractors in an effort to raise consciousness about the noise that equipment can make and the kind of disturbance it can create.

Here is a list of things contractors should keep in mind out on the job:

- Operate equipment at reasonable hours, not extra late or early when neighbors could be disturbed. Check the community ordinances for times, but the usual recommendation is 9:00 a.m. to 5:00 p.m. Monday through Saturday.
- Use only one piece of equipment at a time when possible.
- With blowers, operate at the lowest possible throttle speed to do the job. Full throttle is seldom necessary.
- Check the equipment before operation, especially the muffler, air intakes and air filters.
- Use rakes and brooms to loosen debris before blowing.
- Watch out for children, pets, open windows or freshly washed cars—blow debris away safely.
- Wear ear protection if using a blower more than two hour per day.

be either technologically impossible or just cost too much to mass produce. The reg-neg process gives the industry the opportunity to make its case to the EPA.

While officials talk, manufacturers continue to push research programs forward in anticipation of the inevitable mandates.

"Most of the hand-wringing is over now," said Larry Will, director of engineering with Echo Inc., Lake Zurich, Ill. "We've got to comply — it's a given fact. Now, we need to get on with our work."

"We are focusing our research and development on engine modifications to cut down on emissions to meet or exceed regulatory levels, without effecting the level of performance," said George Matthews III, spokesman for engine manufacturer Briggs & Stratton, Wauwatosa, Wis. "At the same time, the company feels that regulations need to be sensible and achievable, especially considering that small gas-powered engines contribute only three percent of the total man-made volatile organic compounds."

"We have been manufacturing to

meet the California emissions limits as required — the big unknown now is the Phase II standards," said Bob Burkholder, vice president of engineering with Homelite Inc., Charlotte, N.C. "By necessity, we are studying the ways we can achieve low-emission engines and maintain flexibility. What is at stake here is the future of the \$69 price point on line trimmers."

DESIGN CHALLENGES.

It isn't an easy task. The two- and four-cycle engines, for which much of the concern has centered, have not taken well to cost-sensible technology that reduces emissions to the level expected in Phase II.

Basically, there are two ways to affect emissions: Change the way combustion occurs in the machine, or treat the exhaust after the gasoline is combusted.



Kohler has emphasized overhead valve technology, which now comprises 70 percent of its engine line. DeMaster feels that the durability and quality of OHV technology will outweigh any cost disadvantage. "They typically run leaner and produce better fuel economy. We see it as the way to go — better

Manufacturers are exploring new engine designs and theories to meet future emission regulations. Photo credit: Husqvarna

technology for the customers."

According to Wayne Anderson, a chief engineer with Kohler, OHV engines have a more compact combustion chamber which burns the fuel more completely and consequently, emits fewer pollutants.

Other attempts at emissions reduction have centered around adapting technology from the automotive industry. Catalytic converter technology was a strong candidate for a while, but has lost favor with many manufacturers.

DeMaster felt that converter technology falls short due to space limitations, as well as temperature and durability concerns. Rugged outdoor applications would submit the converters to frequent shock, and high engine temperatures from the secondary air brought in to complete the combustion process concerns some engine designers. "You have to worry about combustible

(continued on page 36)

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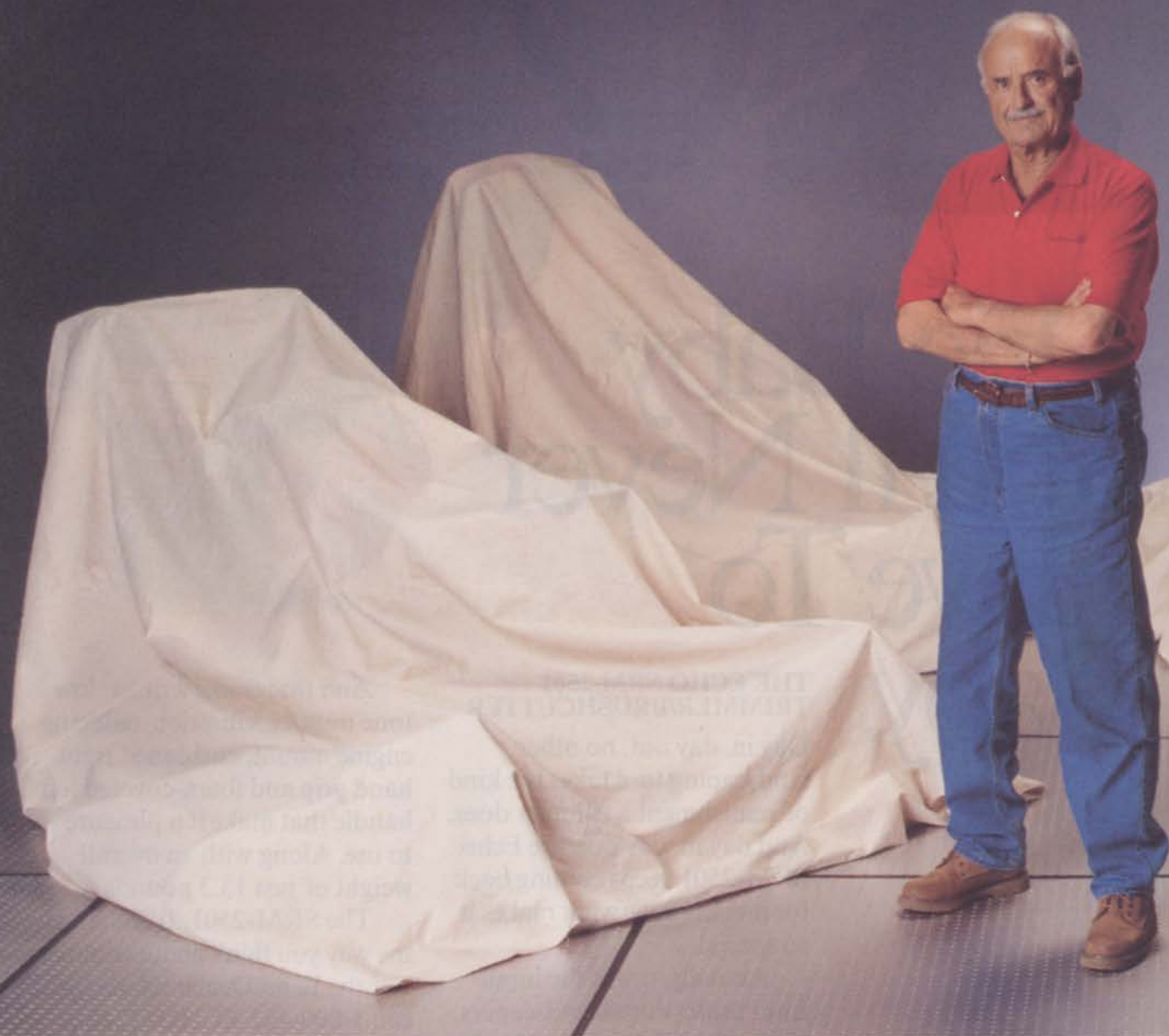
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USE READER SERVICE #29

Power Equipment
(continued from page 32)

materials, and operators touching it," he said. David O'Connell, vice president of marketing with Tecumseh Products, Grafton, Wis., said it comes down to the bottom line. "Converter technology simply costs too darn much to be financially practical."

More promising research is looking at ways to gain greater control of the fuel charge into the engine. In particular, fuel in a two-cycle engine has a tendency to build up, causing a richer mix of fuel to burn and resulting in higher levels of

pollutants in the exhaust. Fuel injection and carburetion with added metering controls are showing promise, but none of the manufacturers are reporting any major breakthroughs.

Environmental Engines Corp. of Escondido, Calif., produced a prototype engine that can meet anticipated Phase II standards in the laboratory, according to company president Kenneth Seitz.

The unit achieves low emissions using an electronic, direct-fuel injection system. The speed at which two-cycle engines operate necessitates that the fuel be under great pressure and injected at very high rates of speed.

"With two-cycle engines, you need to be able

to achieve speeds necessary to run equipment such as chain saws," Seitz said. "The injection system needs to make from 100 to 200 injections of fuel per second. To gain this rate, the fuel needs to be at 1,500 or more psi of pressure."

To control exhaust, however, it is necessary to burn the fuel consistently. This was achieved by what Seitz called "skip-firing." When a user throttles up, the injector fires more often and as power drops, the injector fires the same amount of fuel per injection, but less frequently.

The next step for this design will be determining how well it can be applied to a wide range of equipment, Seitz said. "Assuming we can get the financial support we need, we are looking at two years before we will be able to produce sample equipment for testing."

SHHHHH. The convenience and time savings that a leaf blower provides on the job for lawn and landscape contractors is akin to the advent of the television remote control — one wonders how people got along without it for so many years.

Initially popular in California to clean sidewalks and driveways of yard waste as an alternative to spraying water during the state's drought-ridden years, blowers became highly productive and efficient clean-up tools for contractors.

Despite this, local governments and grass roots groups in more than 200 communities in eight states have allied against leaf blowers — particularly the backpack, gas-powered models — due to the noise they produce at full throttle.

Robin Pendergrast, president of International Marketing Exchange Inc., McHenry, Ill., and a consultant to equipment manufacturer Echo, helps local landscape groups, dealers and contractors fight off or reach a compromise with equipment ban groups.

Pendergrast said that the industry needs to take the threat of equipment bans and restrictions more seriously than it has so far. "If the trend continues to grow across the country, the restrictions could go beyond blowers and into other types of equipment," he warned.

HOT SPOTS. Pockets of communities have developed where individuals and groups are pushing relentlessly to get blowers out of the hands of contractors. The battles have been especially heated in Westchester County in eastern New York, where many of the towns and villages have instituted or are looking into restricting or banning equipment.

The area is unique in that a well-organized, non-profit group called Project Quiet Yards has coordinated the anti-blower effort across many of the Westchester area communities. The group published a phone number to take noise complaints, took out advertisements in local papers, publicized council meetings and kept the heat on local officials.

In response, landscapers have worked with the same tenacity, attending meetings and lobbying with local town and village councils to limit restrictions and stop bans.

The industry chalked up one big victory in the
(continued on page 85)

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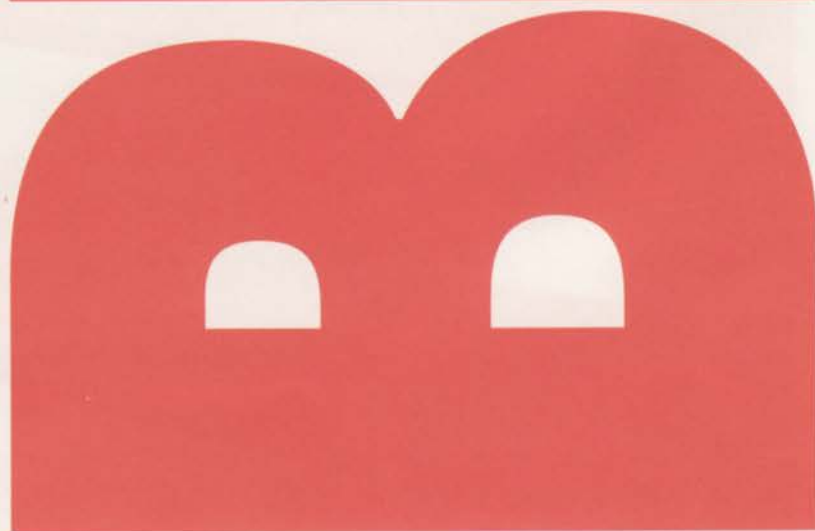
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Good Safety Programs Are No Accident

A serious investment in money, time and effort are necessary for a safety program to be successful. Several contractors share their successes and priorities.

By Kevin Tanzillo

SAFETY IS LIKE world peace. Everyone is in favor of it, but the real challenge is making it happen every day.

For lawn and landscape contractors, that means devising some kind of plan to make sure employees remain safety conscious all the time. A sampling of contractors shows that their plans range from nothing more than hiring safety-conscious people all the way to complex programs complete with prizes for avoiding accidents on the job.

ACCIDENT PROOFING. The well-organized program at Landscape Resources in Irving, Texas, developed out of a focus on safety that began about five years ago, after an alarming number of accidents, explained Denis Byers, vice president.

The company, with about 300 employees, focuses on commercial and residential maintenance, landscape installation, irrigation and renovation.

"We developed our own safety video, in English and Spanish. It was professionally done, but with our employees," said Byers. "That communicates to anyone new to our company the same message about safety, whether it is handling lawn equipment or any other equipment we use."

"That was probably the most effective safety training tool, but it wasn't reducing the number of workers' compensation claims. So we came up with a safety incentive program," he explained.

Individuals and their crews, or teams, earn "safety points" for each safe hour worked. Points can be saved for prizes or gifts. If a crew has an accident, team members lose that week's safety points.

The company's employees' points are tracked weekly and the more points earned, the better the prize — all the way up to a stereo or television set. Another incentive is time off, Byers added.

"We track the costs of claims, and if we stay below certain levels, we get additional days off at Christmastime," he said.

A safety committee reviews any incident "from a preventive standpoint," Byers noted, and safety is discussed at any organized company function. Employees wear safety buttons based on annual

themes suggested by employees. The winning suggestion is worth \$100.

In addition, tailgate meetings led by crew leaders are encouraged at least weekly and safe drivers are saluted at an annual barbecue. In addition to the benefit of safe employees, Landscape Resources has seen its workers' comp premium costs tumble.

"If we stayed at the rate of five years ago, we would probably be out of business now," Byers explained. "We would be paying excessive workers comp premiums. This has given us the opportunity to use the savings for our safety programs and to help the bottom line."

ENTHUSIASTIC EFFORTS. When it was time for Morin's Landscaping in Hollis, N.H., to establish a safety program, safety director Jim Moreau went about it methodically and enthusiastically.

"In 1993, we consulted with a risk management specialist in safety for the construction and landscape companies. He came up with a program for a safety policy," Moreau said.

"We also got input from other landscape companies around the country through the Associated Landscape Contractors of America. We put our policy together by mixing and matching different policies and programs."

Morin's, a 17-year-old company, does design installation, irrigation, lawn maintenance and hardscapes, as well as operating a full-service garden center. Seasonal employment peaks at about 65 people. The company was an ALCA safety contest winner this year.

"We abide by our rules and don't take a lot of guff," Moreau commented. "We pay a lot of money for safety equipment. It took me three days just to decide what kind of safety glasses to buy, because we wanted them to be somewhat fashionable so the guys would wear them."

Morin's has general safety meetings for all employees once or twice a year. The number of accident-free days is posted constantly at the company and foremen, most of whom are certified in first aid and CPR, meet weekly on safety.





Protective clothing and safety gear go hand-in-hand with instruction in the proper application techniques. Photo credit: Gempler's

Moreau added that equipment maintenance is crucial. "Our equipment has to be in tip-top working condition. We have two crack mechanics and we inspect our own fleet. Nothing goes out of this yard in unsafe condition."

Personal protection also ranks high at Morin's. "We make sure everybody has disposable earplugs and we have chaps and helmets for any chain saw work. We make sure our guys work smarter, not necessarily harder," Moreau said.

He explained that his company

has shied away from incentives. "Safety is a rule here and if it isn't followed, you are reprimanded. There is a warning the first time, a pink slip the second and the third time could be suspension or dismissal. We haven't had to get to that point."

He noted that Morin's Landscaping has benefited by as much as a 30% savings on insurance costs since it instituted its own safety program.

Moreau's advice to other contractors is simple: "You can't be safe enough. You have to stick with a policy. You may think it costs you

SAFETY RESOURCES

SAFETY is becoming good business and several companies specialize in safety-related products and information. They can serve as valuable resources in designing a safety plan. Some have OSHA-certified specialists on staff who can recommend specific protective gear or training materials. The following includes just a partial list of such firms:

- Lab Safety Supply is a direct marketer of safety equipment that has a 900-page catalog of items for personal and environmental safety, storage and information. The company, in Wisconsin, has a toll-free tech line (800/356-2501) taking calls from 6 a.m. to 9 p.m. central time, with 25 representatives answering product or compliance questions.

- W.E. Chappes specializes in protective clothing that it manufactures. President Jim Carter explained that the company's line of one-size-fits-all clothing is designed to be protective but cool and comfortable. For a catalog, call 904-761-2427.

- Gempler's Inc. is a catalog house that sells personal protective equipment that protects pesticide applicators, and it has emphasized safety equipment for "people who get dirt under their fingernails" since 1986, noted President Steve Schlecht. The Wisconsin company stocks more than 3,500 products sold through its catalog and toll-free number, 800/382-8473.

- Greenline Distributors markets safety manuals, how-to videos, notification signs, clothing and more via a 125-page catalog. Owner Lamar Smith said the Georgia company offers, among other products, a series of seven safety training videos and has a safety resource manual that covers the entire working environment, with safety plans and guidelines. Greenline can be reached at 800/356-0171.

- Green Stuff Absorbent Products offers emergency response kits for use in case of a hazardous spill of pesticides or other toxic materials. Mike Kane, product manager of the Ohio company, said the kits "will put you into compliance with worker protection standards laws regulating personal protective equipment. We also sell all different types of absorbents." Green Stuff has a free video about its products and their applications. Call 800/294-4105.

- Safety Wear is a distributor for approximately 1,500 different products for personal protection by catalog. "We've been serving the lawn and landscape market for about 2 1/2-years," noted Don Bender, controller. The Indiana company offers a full line of safety videos for sale or rent and also has OSHA-certified staffers to help in selection.

"We carry products from head to toe," he noted. The firm also offers training seminars on general personal protection and work hazards at several locations in the Michigan, Ohio and Indiana areas. It can be reached at 800/877-3555.

- LESCO Inc., Rocky River, Ohio, distributes safety clothing through its network of local dealers, who are trained to help contractors select the proper items, according to Jack Zeigler, product manager.

"I'd say that in the last six years, sales of safety products have grown about 25 percent per year," he estimated. Zeigler attributed the growth to greater awareness of product liability. LESCO offers a catalog of safety products and can be reached at 800/321-5325.

too much to be safe, but it will be well worth the investment."

SPREADING THE NEWS. "Common sense and good fortune" get credit for the safety record at Jackson Inc. Landscape Contractors in

Jackson, Wis., another 1995 ALCA contest winner.

"We have been very fortunate and have worked for most of 29 years with very little incident," said John Lamm, president of the landscape contracting and maintenance

company, which has about 25 employees at its seasonal peak. "However, in the last four to five years, we have really talked about safety and become more aware."

Lamm's son, John Jr., is safety officer for the company, as well as a landscape crew leader. He makes sure all trucks and equipment are well maintained.

The company puts everyone through regular two-hour training sessions on operation of trucks and front-end loaders. Employees also are required to view videotapes on safety practices and equipment operation. There are regular safety talks and Lamm said any infractions are confronted on the spot.

"We have had a lot of awards for safety and we don't take it for granted," he noted. "We send copies of awards and information about our people attending safety meetings to our insurance agent. When the companies review that, it makes a difference."

SAFETY COSTS MONEY. "Prevention is the number one thing. We try to keep the accident from happen-

ing," explained Ben Miller of Perma-Green Lawn Care Co. in Boise, Idaho.

Miller is compliance and technical manager for the 17-year-old residential and commercial lawn and tree care company with several

locations in the Northwest. Its seasonal peak is about 170 employees. "Our record is really good. The employees know we will spend the money up front. Mike Spicer, our president, never says no to anything safety-related," Miller added.

Two years ago, the company saw numerous back injuries and related workers' compensation claims, along with a lot of vehicle backup damage. Perma-Green countered that with extensive training and installation of vehicle backup alarms. In fact, the alarms resulted in a reduction in insurance premiums covering their cost.

'You can't be safe enough. You have to stick with a policy. You may think it costs you too much to be safe, but it will be well worth the investment.'

"This spring we had several new employees, so we dedicated the year to training," Miller said. "It doesn't

matter so much what you talk about. What is important is keeping it ongoing, having a schedule and sticking to it."

For Perma-Green, training consists of weekly sessions at each office location and a day's worth of training at all locations about every six weeks. The company uses ALCA training videos and its safety manual plus information from the Professional Lawn Care Association of America.

"We've seen the cost of accidents go down," Miller stated. "Damage claims have gone down, especially ones that are employee self-inflicted. The money saved has made a big difference."

Miller's advice is to get employees truly involved in the training and safety equipment decisions. "We have gotten to the point where our good employees are aware enough to teach safety to the new people on a regular basis."

He pointed out that some Perma-Green branches use incentives very successfully. The managers may give employees a short safety quiz, then give the winner a \$20 bill he or she wasn't expecting. "Do anything you can to keep employees' interest up," he recommended.

HIRING FOR SAFETY. For Ron Tatton, president of Erickson Landscaping in Salt Lake City, Utah, hiring well is the key to safety.

Tatton's company, which does commercial installation, maintenance and irrigation, has been in business a quarter century and peaks

(continued on page 44)

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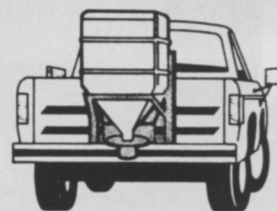
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Good Safety Habits

(continued from page 42)

at about 30 employees. It was an ALCA safety contest winner this year.

"We make sure that drivers are competent," Tatton declared. "We check their driving records and make sure those who get behind the wheel are trusted employees."

Attributing his company's success in part to luck, Tatton said he became more safety conscious about three years ago, when he heard horror stories from other contractors.

"I became more conscious of my own people,"

he noted. "This policy has worked for us. The employees know safety is important and take it upon themselves to make it work."

Tatton doesn't insist on tailgate-style safety meetings; the company does a yearly meeting for everyone and an orientation for new people. He pointed out that the company's enviable safety record resulted in lower insurance premiums.

SAFE SUPERVISORS. At Oak Brook Maintenance Co. in Naperville, Ill., another ALCA contest winner, the safety message is pushed by crew leaders, noted Robert Winter, president.

Oak Brook is a commercial maintenance com-

pany with a staff of about 40. "The crew leaders are the real emphasis. As soon as they see something that is not correct, they instantly correct it," Winter explained.

He bought the business in 1987, and two serious accidents that year resulted in high workers' compensation premiums for a few years afterward. The safety emphasis has brought those premiums way down.

ALCA has been a pace car on the road to safety and has given many contractors the nudge they needed to start their own safety programs. "ALCA has been active in safety as long as I have been with it, nearly 16 years," said Debra Atkins, executive director. "We have a safety committee that has been very active and we sponsor an insurance program with CNA Insurance Companies."

The organization has numerous safety publications, including a comprehensive manual that enables contractors to tailor their own safety programs. "We also have 100 two-minute safety talks, which are short safety awareness topics that a supervisor or foreman can use each morning," she pointed out.

ASSOCIATION SUPPORT. ALCA's annual safety contest had the most participation ever this year, with 109 companies entering.

That growing participation squares with a trend Atkins observed: "We see an increased awareness of safety, not only because of OSHA regulations, but as contractors realize how it affects their bottom line."

Members' experience has shown that safety efforts do pay off. "You don't want any employee hurt; the more training and safety awareness that goes on, the more prevention will pay off," she added. ALCA safety program information is available at 800/395-2522.

PLCAA provides a safety manual to new members, offers an instruction video on safe pesticide application techniques to members and nonmembers and includes extensive safety-related material in regular newsletters.

In addition, said Tom Delaney, director of government affairs, the association is working with the U.S. Environmental Protection Agency in a national stewardship program designed to lessen the risks of pesticides to the applicator, the public and the environment. PLCAA can be reached at 800/458-3466.

The Professional Grounds Management Society also has videos and printed pamphlets, brochures and books on the subject of safety that are available to members and nonmembers.

"We have three major manuals that are 'bibles' in the industry as far as safety and other information," said John Gillan, executive director, noting that PGMS would like to focus more on safety. PGMS's safety information is available at 410/584-9754.

In addition to industry associations, several manufacturers, insurance companies and government agencies offer information on safety programs and providing adequate training. ■

The author is a free-lance writer based in Norwalk, Ohio.



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OPEI EXPO Spreads Its Wings

As the market for lawn and landscape equipment grows, so does interest in the International Lawn & Garden Expo, to be held this month in Louisville, Ky. This year's show promises plenty of innovations for both new and experienced contractors.



EXPO visitors will get many opportunities to try out equipment innovations at the huge outdoor exhibition area.

IN ITS 12TH YEAR, the International Lawn & Garden EXPO continues to serve as a main gathering place for outdoor power equipment manufacturers, dealers, distributors and users. More than 25,000 attendees are expected at the show, which will be held from Sunday, July 30th to Tuesday, August 1 in Louisville, Ky. A large contingent of lawn and landscape contractors will be among those thousands.

The mix of visitors to last year's

EXPO totaled approximately 20 percent landscape and commercial mowing contractors, 44 percent dealers and retailers, 18 percent distributors, 11.5 percent manufacturers' representatives, 3.5 percent equipment rental dealers and 3 percent merchandisers/buyers.

Traditionally, participants visit EXPO to "see new equipment," and this year's show promises a wide selection. Indoor exhibit space is ex-

(continued on page 48)

EXPO ATTRACTS COMMERCIAL EXHIBITORS



This year's show has attracted nearly 50 commercial-only exhibitors. Add to that another 284 exhibitors showing both commercial and consumer products and there is a huge marketplace for a wide variety of landscape contracting products. Most commercial-only exhibitors follow:

ARI Network Services, Inc.,	EH 2157
ATI Corporation,	EW 1063,1065
AmeriQuip,	EW/R 1105
American Isuzu Motors Inc.,	EH 2100
American Lawn Mower Co.,	EH 2240,2241,2242
Bando American Inc.,	EW 367
Bunton Company,	SW 4350
Clark Engineering Services,	EW 1306
Classen Mfg. Inc.,	EW 674
Consolite Corporation,	EW 422
Crenlo Inc.,	EW 1308
DewEze Mfg., Inc.,	SW 3567,3569
Direct Source,	EW 647
DuraTech Industries Int'l.,	EW 1084
Easy Lawn Inc.,	EH 2145,2146
Erisco Industries Inc.,	EW 661
Hodges Mfg. Co.,	SW 3490,3491
Howard Price Turf Equipment, Inc.,	SW 3375
Ideal Computer Systems, Inc.,	EW 542,544,546
Jungle Jim's Accessory Products Inc.,	EH 2063,2064
Kart Marketing International,	EW 366
F.D. Kees Manufacturing Co.,	SW 3620
Knott Brake Co.,	EW 175
Kut-Kwick Corporation,	EW 1224,1225
LandTek,	EW/R 1013
Lawn & Landscape Maintenance Magazine,	EW 387
Maintenance Solutions Magazine,	EW 663
McCanse Engineering Inc.,	EW 1017,1019
Multi-Ad Services, Inc./Custom Marketing Resources Div.,	EW 455
Nelson Division Exhaust & Filtration Systems,	EW 569,571
Powercom-2000, Inc.,	SW 3535
Parker Hannifin Corp.,	EW 632
Polecat Industries Inc.,	EW/R 901,1000
Quick & Easy Tire Products, Inc.,	EW 474
Ransomes - Cushman - Ryan,	SW 4465
Red Wing Business Systems Inc.,	EW 649
Riverside Gardens Inc.,	EW 352
Ross Operation Div. of Parker Hannifin Corp.,	EW 632
S & R Industries Inc.,	EW/R 712
Screentech, a division of Roeda Signs, Inc.,	EW/R 1014
Snapper,	SW 3410
Strategic Weather Services,	EH 2052
TGMI, Inc.,	EW 568
Trailmate,	SW 3810
Turf & Landscape Press,	EH 2265
Woodland Container Corp.,	EW 468
Yanmar Diesel America Corporation,	EW 666,668

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EXPO Preview

(continued from page 46)

pected to reach last year's level of 256,000 square feet. Nearly 600 exhibitors are scheduled to participate.

The outdoor exhibition area will offer approximately 560,000 square feet of displays. It is especially popular because participants get the opportunity to operate new products and see them in action.

Both commercial and consumer products are the focus at EXPO, and a majority of exhibitors will be showing products for both markets. As of press time, nearly 50 companies will be exhibiting commercial products only, joined by another 284 highlighting both consumer and commercial products.

A new innovation at EXPO '95 will be the taping of a one-hour television special for the Home & Garden Television network. The program will be hosted by popular weatherman Willard Scott and will focus on the many new products featured at the show. Viewers can see the show on HGTV in late August or early September.

EXPO '95 EDUCATIONAL SEMINARS

THE OUTDOOR POWER Equipment Institute has scheduled two series of seminars during EXPO: PLUS seminars for professional landscapers and REAP programs for outdoor power equipment dealers.

The PLUS seminars cost only \$20 for the series of four and cover the following topics:

- Recovering Overhead & Equipment Costs in Your Bids (Sunday)
- Ask the Pros Panel Discussion (Monday)
- Customer Service Tips for Your Crew (Tuesday)
- Use Safety & Training to Protect Your Bottom Line (Tuesday).

REAP seminars cost \$30 for the series and include

the keynote address, as well as the following:

- MarketQuake 2010 (Sunday)
 - Marketing Smart Business (Sunday)
 - More Ideas to Increase Profits (Monday)
 - Finding, Motivating, Compensating & Keeping Parts & Service Personnel (Monday)
 - Serving the Commercial Customer (Tuesday)
 - Diversify or Die? (Tuesday)
- Other EXPO seminars will cover:
- The Effects of Emissions Legislation on the Outdoor Power Equipment Industry
 - Maximizing Your Inventory Investment
 - Current & Future International Trends.

PRODUCT MIX. In addition to innovative commercial and consumer products, this year's EXPO will again include the Rental Showcase, where a large number of exhibitors will display products found in rental outlets. Contractors looking for a temporary and inexpensive alternative to purchasing equipment may be interested in the landscaping, light construction and maintenance products available for rent.

EXPO's Premiere Video Theater returns, where exhibitors' train-

ing and promotional videos will be on display.

This year's event also reflects a growing international flavor, as nearly 25 foreign exhibitors participate. That number is in addition to the many United States manufacturers who maintain facilities in foreign countries.

Last year's top selling equipment likely to repeat are:

- Lawn mowers
- Lawn mower accessories and attachments

- Chain saws and accessories
- Trimmers and accessories
- Shop tools and equipment
- Chippers, shredders and grinders
- Replacement parts
- Engines, batteries and supplies.

MAIN MEETING PLACE. EXPO is free for those who preregister; on-site registration costs \$20. For more information on attending EXPO '95 or participating in specific programs associated with the show, call 800/558-8767. ■

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Engine Burnout Blues:

Are Replacements the Cure?

When an engine goes, you're faced with a tough choice. Should you short block, recondition or replace it? Several contractors weigh the options.

By Bob Gitlin

JEFF BARTELS, as maintenance division manager at Northwestern Landscape Co., Puyallup, Wash., makes decisions for a large company that can't afford downtime.

When shop equipment suffers from burnt-out engines, he doesn't mess around with rebuilding engines. "We buy new replacement engines 90 percent of the time. We short block the other 10 percent. We have found little satisfaction in trying to recondition the engine," he said. (A short block is the guts of an engine, to which the flywheel, carburetor and other components must subsequently be attached.)

In the trade, such downtime is called "blowing an engine," and, although most contractors would rather not admit it, dumb mistakes cause many of them. The classic is one is the employee who forgot—for two months—to change the oil.

These casual blunders range from forgetting oil changes all the way to putting the wrong kind of fuel in the mower or other power tool.

THE APPEAL OF BUYING NEW.

"If that engine is blown or is worn out, we find no point putting new rings in and all that," Bartels noted. "Instead of trying to rebuild or getting it machined, we buy new."

All his repairs and engine installations are done in house.

"My number one concern," he explained, "is getting the thing up and running. If we don't have good equipment, we don't make money. Instead of sending the engine out for two weeks to get rebuilt, I'd

rather spend the extra hundred bucks getting the new one in and getting the machine back out there."

New engines are put in blowers, edgers, weed eaters, and hedge trimmers, as well as mowers.

Travis Shopshire, service mechanic at Northwestern, is the man who does the re-installation work. He uses 3-hp Briggs & Stratton replacements on power trim edgers and hedge trimmers, and 12-hp Briggs units on midsize mowers. The engines are vertical stroke and gas fueled. All but two (electric start) are pull start.

He's been alternately rebuilding and replacing motors on the smaller equipment. But he's come to the point where he said there's no point rebuilding an edger engine.

The job is easy enough: the four bolts in the throttle cable come right off. "Usually when those go out, they break a crankshaft or rod," Shopshire said. "It's a lot easier to order the short block.

"To rebuild, you're going to have seven hours tearing it apart, rebuilding it, putting it back together, plus the price of parts. And when we need something around this place, we need it yesterday. It's not worth trying to recondition or refurbish, particularly as the replacements are so inexpensive," he added.

'FOULING PLUGS.' When mower engines wear out, usually they start "fouling spark plugs" because they're burning so much oil, Shopshire explained.

(continued on page 52)



Kohler's application engineering laboratory includes the 'hot room,' where engines are tested at simulated high temperature conditions.



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USE READER SERVICE #28

Replacement Engines

(continued from page 50)

Normally his lawnmower engines last from two to five years, he estimated. "Each mower is used, on average, at least 30 hours a work week, and is deployed at least six months of the year. A mower can be pushed well beyond 40 hours a week in peak season." Mowing in his part of the Northwest takes place all year, except for a slight scaling back during the slower winter growth period.

Shopshire estimated it takes about two hours to pull out an old midsize mower engine and put in a new one.

"We have 36- and 48-inch walk-behinds that we do this to," he explained. "We have to take all the belts off the bottom of the motor. Then we have to remove the pulleys or anything else that may be attached underneath the deck. We disconnect the throttle cable via the attaching bolts, and the engine comes off."

When that is done, the process reverses itself.

ENGINE OPTIONS DRIVE DECISIONS

THE BEST RULE of thumb when determining whether to buy new or to rebuild the old engine is this: If a rebuilt engine would cost you two-thirds of what a new engine would cost, buy the new engine.

Engines in the lawn service market break down into two basic power types: two-cycle and four-cycle. Two-cycle engines mix oil with the gas and have no crankcase.

There are a lot of things to consider when choosing a replacement engine, such as:

- Is it powered by gas, diesel, propane, electricity, or batteries?
- How is it cooled?
- How much horsepower does it deliver?
- How many cylinders does it have?
- How is its crankshaft configured?
- How does local legislation affect engine use, in terms of noise or other potential pollution?

Sometimes, Shopshire hangs onto the good parts in hopes of assembling an engine from scrap to be used like a shop spare tire, in the event of an emergency.

But often the old engine is simply thrown out.

"Usually there's not a whole lot left that's any good," he noted. "We have a man that comes around ev-

ery two weeks to buy all of our scrap iron and other metal. He recycles it."

It's a convenience to be able to unload what constitutes junk to someone willing to bear the costs of removing it from the property.

REBUILD OR RECONDITION. When it comes to replacement engines on

fleet machinery ranging from blowers to lawn mowers, other maintenance operators adhere to criteria different than Northwestern's shop management follow.

Sometimes, those decisions are based on time factors, the need to get maximum productivity from the equipment at hand or the perception that one method over another is the right way to get the job done.

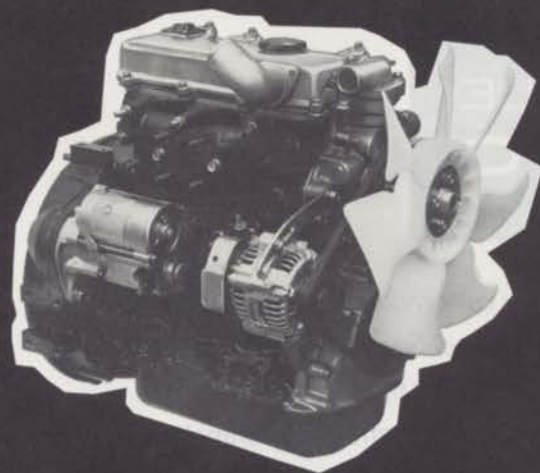
One example where the bottom line ranks higher than time constraints is at Case Western Reserve University, Cleveland. John Michalko, superintendent of landscaping and grounds, tries to avoid buying new replacement engines.

"We order a short block of what was already in there," he said.

Sometimes, if that won't work, Michalko will send engines out to be reconditioned.

"We have a mechanic in house," he explained, "but he maintains a lot of other things besides our equipment. So there are times when we'll send it back to the manufacturer through a local distributor and have them work on it."

(continued on page 56)



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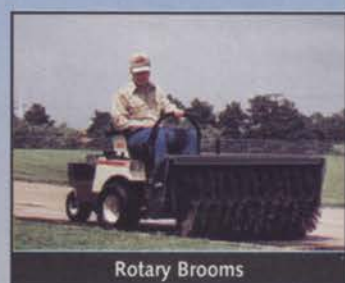
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USE READER SERVICE #33

Replacement Engines

(continued from page 52)

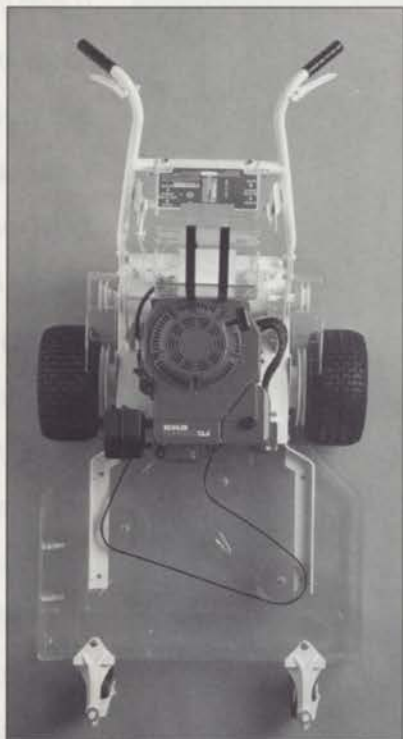
The dozen or so mowers in his fleet top out at 60-inch units in both walkers and riders.

OPERATOR ERROR. "Usually the problem with engine breakdown is something like the employee never checked the oil. It's usually an operator problem," Michalko commented.

His mechanic follows standard mower-engine maintenance, setting his schedule by the number of total hours during which the machine is run. "We try to change the oil frequently, either every week or after 40 hours," he noted.

He's never had to buy a new engine, he said. He attributed this to his shop's regular replacement of equipment on a seven-year rotation. With short blocking and occasional reconditioning, "the engines have held up for us," he noted. "It has to do with our maintenance program, I really believe. We're strict and have limited mess-ups."

Mark Neidich, fleet manager at Groundmasters Inc., Cincinnati,



Ohio, has also used short blocking and rotating mowers so that the firm hasn't needed replacements.

Replacing mower engines can be a quick solution to a production bottleneck. Photo credit: Kohler Co.

"We've never done a total replacement yet with a new engine on a commercial walk-behind," Neidich recalled. "I allow myself two options: short block or complete replacement."

SHORT BLOCK VS. NEW.

Malfunctions on low-hour engines generally happen because of operator neglect. The classic story — known to all groundskeepers — is of the operator who didn't tell anyone about an oil leak, causing the engine to burn up. In that case, Neidich would short block.

But on the other hand, on a high-hour unit already showing worn recoils and other components, replacement might be called for, he countered. "I'd shop

for the best price and always buy from a reputable local dealer I know — I would never buy out of state. I'd make sure there's a good warranty. And the main thing, I'd want to replace my engine with the same thing that was there before."

But don't OEM imitations do the job? Aren't there crossovers that have the same specifications? Neidich said he'd go that route only if the manufacturer made the wrong choice of engine on the original machine.

This was once with case, he added, when a certain manufacturer's 12-hp engine on a walk-behind kept burning up within a single season. "We immediately replaced them with another company's 12 1/2-hp engine and solved the problem," Neidich noted.

PREMIUM MARKET.

According to George Thompson III, spokesman for Briggs & Stratton Corp., Milwaukee, Wis., engines that would be purchased by mower operators are pretty rugged and sophisticated.

(continued on page 58)

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Replacement Engines

(continued from page 56)

He also said that the rule of replacing with the original generally holds true. But it depends.

"Sometimes we're running a special or a 'push' on a new product that has all of the same specifications as the original," he said.

"Many of our new premium engines for the commercial lawn care market were designed to retrofit pieces of equipment that they normally would not have been used on in the first place."

MAKE SURE IT FITS. Silly as it sounds, mistakes are sometimes made when lawn and landscape maintenance contractors try to put replacement engines where they don't fit.

"The number one thing when buying a replacement engine is making sure it fits," Thompson recommended. "Otherwise, you're messing around trying to make it fit, and running the risk of changing the configuration of the product, which may cause repercussions."

For commercial midsize lawnmowers—the category of replacement engines that comprises the biggest cost to the lawn care industry—replacements break down into side-valve and overhead-valve models, he added.

"With us, you're talking about the high end side-valve, four-stroke engines, or the premium overhead-valve twin cylinder. We have basic OHVs (overhead valves) and OHV twins." Those engines have the properties of long life, low maintenance and lower emissions, Thompson added.

POINT OF NO RETURN. "Professional lawn care operators will buy a new commercial-grade engine when major components such as the shaft or cam break down, or the engine block cracks," said John Helderop, national sales manager at Kawasaki Motors Corp., Grand Rapids, Mich.

"Assembling all the new components and trying to rebuild will cost you as much as buying a new engine," he pointed out.

Those people, Helderop said, are

in the market for 12- to 14-hp engines, either side valve or overhead valve.

PRICING FACTORS. Placing prices on replacement engines is a tricky enterprise, said Cam Litt, product manager for twin cylinder engines at the engine division of Kohler Co., Kohler, Wis.

"We supply engines in the 5- to 25-hp range," Litt explained. "We supply vertical shafts starting at 11-hp and going up to 25-hp. Most turf applications involve the vertical shaft, but there are horizontal shafts in the larger horsepowers."

His company does not make anything in the small commercial walk-behind or consumer area, he added.

"We're talking starting at 37-inch mowers for the big guys. There's a difference in how an engine is manufactured if it's for the homeowner market," Litt said.

Commercial engines, like most commercial equipment, are designed for more heavy duty use and long, hard wear.

"Every OEM requires something different from us," he said. "We

build up to their specifications. We might supply the muffler—or they might. It's the same with the oil sentry system, the air cleaner, the engine monitor controls, and other components.

"It's a little deceiving when you talk price in the aftermarket," he explained.

When a manufacturer, such as Kohler, offers a replacement engine for a midsize commercial walk-behind, the company is guaranteeing to offer an engine built exactly the same way, Litt noted.

"We're a little higher priced than most people," Litt said. "We offer three-step distribution, which causes our list price to be higher" than other makes.

An average price range for an electric recoil-start 14-hp replacement engine may be from \$600 to \$1,000, he said. That is a typical size and style of replacement engine used by many lawn maintenance contractors.

The author is Contributing Editor of *Lawn & Landscape Maintenance* magazine.

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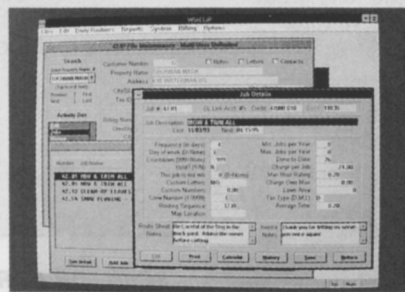
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Backflow Preventers: Gatekeepers Of Irrigation Water

Prevent costly and possibly dangerous contamination of water systems by using backflow preventers. Four basic configurations can prevent problems on almost any irrigation system.

By Luke Frank

WE USUALLY take a cool, refreshing glass of water for granted. Just open the tap and out it comes. But there have been incidents, some of them fatal, where that tapwater was not so refreshing.

For example, several nurses working in a hospital in Michigan complained of rusty water streaming from the drinking fountain. Two doors down from that fountain was the autopsy room, where spray hoses, laying in a sump used to collect cuttings and wash organs, provided a conduit for backsiphoning "nonpotable" water into the hospital water system.

Another more appealing example occurred in 1970, when the water supply valve at a winery in Ohio was inadvertently left open after flushing wine-distilling tanks.

During the subsequent fermenting process, hearty burgundy wine backflowed from the vats into the city main and out of kitchen faucets, simply because the distilling tanks were operating at a pressure higher than the city water supply.

IRRIGATION'S ROLE. It is estimated that more than 10,000 cross-connection incidents occur in the United States every day, according to Morgan Howard, director of sales and marketing for Wilkins Division, Zurn Industries, Paso Robles, Calif. Backflow is a potentially serious hazard for irrigators and the industry has had its incidents, too.

Yale University's football team canceled an entire season when irrigation water that had puddled



Backflow preventers protect potable water systems. Photo: Febco

around the sprinkler heads backsiphoned into the potable system through an unprotected cross-connection. A mainline repair had created a vacuum on the supply line, and when water service resumed, the team showered in and drank water tainted with hepatitis germs.

Even though an irrigation system delivers potable water to landscape, it is subject to contamination. Irrigation water puddled around sprinklers slightly below grade can contain residual landscape pesticides, fertilizers and animal feces.

"New technologies like smaller residential/commercial injector systems that apply fertilizers through an irrigation system can make the hazards of irrigation systems higher still," stressed Tony Arthur, national sales manager with Watts Regulator, Lawrence, Mass.

Understanding how a backflow condition is created is the key to applying the appropriate technology. There are specific mechanized backflow preventers for distinctive

types of backflow conditions.

"Your local water purveyor sets the minimum backflow standards," explained Steve Govero, national sales manager for Conbraco Industries, Matthews, N.C. "They will specify the type of backflow preventer to use and who must install, inspect and maintain it."

Those specifications vary from jurisdiction to jurisdiction and can literally change by crossing the street.

TAPPING INTO A SYSTEM. Any connection between the potable water supply and a source of contamination, like an irrigation system, is called a cross-connection. If the flow of water is reversed from an irrigation system back into the potable system at the point of the cross-connection, it creates a backflow condition.

Because chemicals used in the landscape can be aspirated into irrigation systems, many jurisdictions are compelled to declare them high-hazard cross-connections. But in

(continued on page 62)

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Backflow Prevention

(continued from page 60)

other areas, residential irrigation systems are considered low-hazard. Regardless of its classification, every irrigation system must have an approved backflow preventer at the cross-connection point.

Backflow is created by two basic conditions—backpressure or backsiphonage. *Backpressure* is the flow from a pressurized system through an unprotected cross-connection into the potable water supply. This occurs when more pressure is generated in the nonpotable water system than the potable system by a pump or by elevation differences.

When a change of system pressure causes the pressure at the supply point to become lower than the pressure at the point of use, the nonpotable water can be *backsiphoned* into the main supply line.

The type of backflow preventer needed is based on the degree of hazard of any substance which can flow into the potable water supply.

A *pollutant* is considered an impairment of the water's quality that



Different backflow preventer assemblies can protect against backsiphonage or backpressure, depending on the system's configuration. Photo credit: Wilkins Regulator, Zurn Industries (left) and Febco (right).



does not create a public health hazard but may produce discolored or badsmelling water. A *contaminant* is a health hazard that can cause illness or death when ingested.

BACKFLOW ASSEMBLIES. Pollutants can be controlled at the cross-connection by one of several mechanical backflow preventers, including vacuum breakers (hose-connection, atmospheric or pressurized), double check valve assemblies, dual check valve assem-

blies and reduced pressure principle assemblies.

The garden hose is the most common form of cross-connection. It can easily be connected to the potable water supply and used for a number of potentially dangerous applications. *Hose connection vacuum breakers* contain a spring-loaded check valve that seals against an atmospheric outlet when under pressure. If water is not flowing from the hose bib, the check opens and vents to the atmosphere.

These devices should be installed above the highest usage point and are only effective against backsiphonage and not backpressure. "Backflow preventers on hose bibs are almost always required for new construction and to close escrow on an existing home," Howard pointed out.

Atmospheric vacuum breakers are designed to prevent backsiphonage of contaminants but will not protect against backpressure. When the irrigation system is pressurized,

(continued on page 87)

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Tracking the Fate of Nitrogen in Turf

New research shows that nitrogen applied to a dense, well-maintained turf is used up quickly, with little leaching deeper into the soil.

By B. E. Branham

NITROGEN is the most commonly used agrichemical in managed turfgrass systems and it is safe to assume that most lawn maintenance companies owe their existence to nitrogen. Yet many contractors who use nitrogen on a regular basis may not have a thorough understanding of what happens to nitrogen after it is applied to turf.

Applied nitrogen can be converted into organic matter and serve as long-term storage of nitrogen in the soil. But organic matter formation cannot go on indefinitely, or eventually all of our soils would turn into peat. So at some point, an equilibrium is reached and organic matter is no longer being stored in the soil.

Under a relatively constant turf management scheme, soil organic matter equilibrium is probably reached in 10 to 20 years. Many turf soils are at equilibrium and yet we still need to apply nitrogen on a yearly basis, implying that nitrogen is being lost from the system. It can be lost from a turf/soil in three basic ways: leaching, ammonia volatilization and denitrification.

LEACHING. This is the strongest suspect because in many row crop systems, nitrate leaching is a serious problem. Within soils, added nitrogen is readily converted to nitrate (NO_3^-), which is the form of nitrogen preferred for plant and microorganism uptake.



Before starting a series of fertilizer applications, Michigan State University researchers install lysimeters to monitor nitrate leaching over a three-year period. Photo: Branham

However, nitrate is not adsorbed, or fixed, by soils but is actually repelled by the soil colloids, resulting in a species that is freely mobile in soils. If nitrate is not absorbed by plants or microorganisms, downward flowing water will move the nitrate deeper into the soil.

Once the nitrate leaves the root zone, there is little chance for uptake, since microbial populations decline severely beyond the root zone. Nitrate reaching this point will eventually move to groundwater. Compared to other crops, turf has a shallow root zone but within that root zone, very high root densities aid in rapid nitrogen uptake.

VOLATILIZATION. Another source of nitrogen loss is ammonia volatilization. When urea is added to turf, an enzyme called urease rapidly

hydrolyzes urea to ammonium ion (NH_4^+). If soil pH is above 7.0, there will be an excess of OH^- ions present and the following reaction can occur: $\text{NH}_4^+ + \text{OH}^- \rightarrow \text{NH}_3(\text{gas}) + \text{H}_2\text{O}$.

Ammonia gas (NH_3) is very volatile. So, any added ammonium ion can be converted to ammonia gas, which results in the loss of N from the system, providing certain conditions occur (the pH must be above 7.0 or there will not be enough hydroxide ions present to convert ammonium ion to ammonia gas).

Urea has a special property that makes ammonia volatilization much more likely. The hydrolysis of urea by the urease enzyme raises the pH around the urea particle, which can result in pHs greater than 7.0, even though the bulk soil or thatch pH is less than 7.0.

This creates a microclimate where ammonia volatilization is likely. Volatilization can lead to significant (10 to 50 percent) losses of N within two to three days following application. After this, nitrogen from the urea is taken up by plants or microorganisms and not available for volatilization.

A second point that bears mentioning is the possible loss of ammonia from decomposing clippings. Since clippings are usually returned to the turf, ammonia could gradually volatilize from the decomposing plant residues. This would lead to significant losses over the entire growing season.

DENITRIFICATION. This can potentially result in large losses of nitrogen from turf. It occurs under anaerobic (no oxygen) conditions and the process of denitrification is shown in the following reaction: $\text{NO}_3^- \rightarrow \text{NO}_2^- \rightarrow \text{NO} \rightarrow \text{N}_2\text{O} \rightarrow \text{N}_2$.

Nitrate can be reduced to nitrogen gas, the final product shown above. In fact, the last three species formed are all gases. Nitric oxide (NO) is very unstable and unlikely to escape from soil/thatch, while nitrous oxide (N_2O), also called laughing gas, is stable and can escape from the soil. Under conditions where this reaction is occurring rapidly, most of the nitrogen is reduced all the way to N_2 .

Nitrogen gas is the dominant

(continued on page 66)

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goals with this smart new technology and for raising the standards for fertilizer performance and environmental stewardship."

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Peter E. Smith
Superintendent
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USE READER SERVICE #32

Nitrate Leaching

(continued from page 64)

species in air, with about 78 percent of the air we breathe made up of it. This makes denitrification difficult to study because the amount produced by soil is inconsequential compared to the amount in the air.

Besides our academic interest to know what happens to applied nitrogen, there is another reason we should be concerned about denitrification losses.

Some N_2O can leak out and it has been determined to be a greenhouse gas that results in the destruction of ozone, and so it is important to know to what extent this reaction occurs in turf systems.

SEASONAL NITROGEN APPLICATION SCHEDULE DURING 1991

EARLY SPRING	LATE FALL
April 26+	
June 4	June 4
July 12	July 12
August 19	August 19
September 27	September 27
	November 8+

+Received nitrogen enriched in ^{15}N on those dates only

This schedule was followed in 1992 and 1993 without the ^{15}N applications.

Table 1

WHERE DOES IT GO? So where does applied nitrogen go when applied to turf? We've identified three loss mechanisms but have not yet discussed the fate of a nitrogen application.

At Michigan State University, we recently completed a three-year study on the fate of nitrogen in turf. Our project examined the fate of nitrogen in a Kentucky bluegrass turf and was designed to compare

DATE	CLIPPINGS	VERDURE	THATCH	SOIL	LEACHATE	TOTAL	% RECOVERY
5/14/91	0.94	14.2	12.2	3.2	0	30.5	78
6/21/91	7.83	8.0	12.2	4.3	0	32.4	83
10/14/91	11.9	3.4	7.4	6.2	0	28.84	74
11/26/91	12.1	3.0	12.5	6.7	0	34.39	88
5/26/92	12.9	1.5	13.7	8.0	0.004	36.06	92
11/30/92	13.7	1.0	8.4	6.6	0.004	29.63	76
5/14/93	13.9	0.7	5.2	5.3	0.005	25.14	64

Table 2. From clippings, verdure, thatch, soil and leachate from a 39.2 kilogram/hectare spring application. All data are reported as KG/HA.

the fate of a single N application applied in the early spring (what could be termed a conventional N application timing) or in the fall (often called a late-fall or dormant N application).

We were concerned about nitrate leaching, and so a set of four large, nonweighing lysimeters were constructed at the Hancock Turfgrass Research Center on the campus in East Lansing, Mich.

Each lysimeter was 1 square meter in surface area and 1.2 meters in depth. All of the water that drained through the lysimeters was collected and analyzed for NO_3^- and NH_4^+ . The lysimeters served only to measure the amount of these materials in the leachate.

In order to follow the fate and movement of nitrogen in the soil, a second approach was taken. Smaller, open-ended lysimeters (microplots) were used to follow the distribution and cycling of nitrogen in the turf and soil below. These PVC pipe lysimeters — 8 inches in diameter and 24 inches in depth — were pushed into the ground near the large lysimeters and were treated exactly the same.

We applied urea at a rate of 0.8 pound N/M (per 1,000 square feet) to the large lysimeters and to 40 microplots, which permitted us to follow what happened in the soil without disturbing the soil in the large lysimeters.

A second set of lysimeters and microplots were treated with urea at the same rate in November, 1991.

Four of these microplots were excavated at various times throughout the study to permit the examination of the form, depth and transformations that were occurring to the applied N.

Each program applied the same amount of N on an annual basis and had four applications in common. The only difference in the two programs was the timing of the fifth application and the form of the N during the 1991 early spring and late fall applications.

TELLTALE ISOTOPE. Those two applications were made with urea that was enriched with ^{15}N , a stable isotope of nitrogen present in naturally occurring nitrogen at only 0.36 percent. The nitrogen applied to the lysimeters and microplots contained 25 percent ^{15}N .

Therefore, any sample we took during the study, whether it was water, clippings, thatch or soil, was analyzed for the ^{15}N content. If it was above the natural background of 0.36 percent, then that N must have come from our enriched application. This approach allowed us to follow the two N applications made in 1991 over the next three year period.

The soil sampling regime was designed so that four samples were

collected the year of the ^{15}N application, two samples in the second year, and one sample the third year after application. Clippings were collected weekly and analyzed for ^{15}N concentration. Water from the large lysimeters was tested for NO_3^- and NH_4^+ concentrations and ^{15}N concentration.

Summing all sources of N accounted for all N left in the soil. Only volatile losses due to ammonia volatilization or denitrification were not accounted for directly. We can assume that whatever we did not recover was lost to the volatilization process.

GOOD RESULTS. While our biggest concern in this study was NO_3^- leaching to groundwater, this turned out to be an insignificant loss (see Tables 2 and 3). By any measure, nitrate leaching in this study was negligible. When examined over the entire course of the study, nitrogen in the leachate averaged a mere 0.43 milligram/liter for the spring treatments and 0.77 milligram/liter for the fall treatments. These values are very low and could be considered "background" levels.

So if fertilizer nitrogen is not being leached, what is its fate in turf? This portion of the data serves to highlight the excellent biological activity of turf.

The high level of surface organic matter associated with a turf contributes to a correspondingly high level of microbial activity. The microorganisms associated with a turf metabolize pesticides and use nutrients to support their growth.

Note in Tables 2 and 3 the low amount of applied N that actually reaches the soil surface, regardless of application timing. The clippings, verdure and thatch accounted for 69 to 92 percent of the recovered ^{15}N for both treatments throughout the course of the experiment.

Thus, the "turf" consumed most

(continued on page 86)

RECOVERY OF FERTILIZER NITROGEN - FALL

DATE	CLIPPINGS	VERDURE	THATCH	SOIL	LEACHATE	TOTAL	% RECOVERY
11/26/91	0	14.0	24.3	4.8	0	43.1	109
5/26/92	8.5	8.9	21.9	3.8	0	43.1	109
6/29/92	10.5	7.6	13.9	2.8	0.001	34.7	89
9/17/92	12.1	2.6	9.6	6.3	0.001	30	76
11/30/92	12.4	1.7	9.9	6.0	0.002	30.1	77
5/14/93	12.7	1.1	8.6	8.8	0.008	31.2	80
11/30/93	15.0	0.3	6.7	10.0	0.07	31.9	81

Table 3. From clippings, verdure, thatch, soil and leachate from a 39.2 kilogram/hectare late fall application. All data are reported as KG/HA.

The Challenge Of Empowering Employees

Employee empowerment programs can mean more profits and productivity, but the road to success takes a lot of time, effort and faith in your employees' abilities.

By Barbara G. Howell

Employee empowerment can accomplish many things. It can increase productivity, improve morale and increase customer satisfaction. But employee empowerment isn't for everybody.

"Worker self-management requires the right workforce and the right management," suggested Larry Helms, an organizational development specialist and senior vice president of Western Training Systems in Medford, Ore. "Empowerment can't just be awarded. It has to happen because management is willing to give up part of the decision making and employees want the responsibility and buy in....The lawn care industry is just now getting involved in the concept."

Professional Lawn Care Association of America Director Ann McClure recently wrote a column in the PLCAA newsletter saying the service demanded by today's customers suggests "issues like employee empowerment may be among the biggest challenges in the next five years." A PLCAA management conference early in 1996 will highlight such total quality management (TQM) principles.

The Associated Landscape Contractors of America investigated employee empowerment as part of its work on Total Quality Principles last year in its *Crystal Ball Report*. The report noted: "To be empowered means to have all the necessary ingredients to act on one's own. Among the many ingredients that are required are goals, experience, information, education, training, guidelines, feedback, accountability, rewards and recognition," it said.

A few companies are practicing empowerment. What is employee empowerment and can it work at your company?

TERRITORY STRATEGY. Barefoot Grass in Worthington, Ohio, was built around the employee empowerment strategy. Its leaders just didn't give the concept that name 10 years ago when the firm was established, according to Bill Hoopes, director of training and development.

"This company was built on the territory manager concept," he said. "In effect, we em-

Empowering the employees to make decisions, and mistakes, is a difficult process to establish at any landscape firm.



power one person to be responsible for the treatments, follow-up service and sales in each area.

"From day one, Barefoot started with the one person/one lawn concept. It is in direct contrast with the high volume approach which results in competition between the sales, treatment and service divisions," Hoopes continued. "With the territory manager, we believe that the company will have happier customers who learn to work with just one person, a lower cancellation rate and happier employees. Lawn care company employees put in long hours, but, without the ownership, they get discouraged and will quit. It's always a battle to keep people."

"The territory manager approach allows our people to have tremendous pride in their accomplishments.

There are huge benefits when someone drives up and down the street and feels it's a job well done," he said. "When you assign individual responsibility, an employee tends not to promise what he can't deliver."

At Barefoot, the only responsibility not extended to the territory manager is the issuing of credits. For that, he must have someone else sign off.

"There are some pitfalls" in such employee empowerment, Hoopes acknowledged. "You can give up some efficiency and probably also make more sales with a persuasive sales person handling just that end. But the sales made by that persuasive sales person will be weaker and cancel at a higher rate."

Hoopes also suggested that employees must be carefully selected. Some people just don't work well

TAKING STEPS TOWARDS EMPOWERMENT

Have you heard about and studied employee empowerment concepts and believe such self-management can be beneficial for your company and your customers?

If you are ready to start the empowerment process, here are some steps that organizational development consultant Larry Helms said are needed to give power to the people. He is senior vice president of Western Training Systems in Medford, Ore.

"Generally, if you have decided this management will work with your employees, organize them and let them determine what their goals and objectives are and how those goals can mesh with the employer or manager's vision. The vision is where you want to be in five years. That's what the leader needs to determine. It is the job of the managers and the empowered employees, to implement the vision," he explained.

ALCA's Crystal Ball Committee said, "It's not simply a matter of flipping a switch and your employees are immediately empowered. Empowering an employee is a combination of training, trust and experience along with the proper tools to do their job...They need adequate experience in your business and with your customers before they can make effective decisions. They need to be trained to think in terms of options and approaches to problem solving."

The best time to begin the empowerment process, Helms cautioned, is in the shoulder season, not in the peak season when everyone is busy and under pressure.

Suggestions for starting employee empowerment programs begin with the following steps:

1. Talk with members of the current management and make certain they know what they're giving up to help the employees grow and improve productivity.

2. If the management's goals are compatible with the abilities of the employees and compatible with the employee empowerment concept, begin the empowerment process.

3. Look at the literature. Read the works of W. Edwards Deming. Get information from local universities about management options.

4. Identify employees with whom you can share the information. These should be people with good communication skills, the ability to accept responsibility and the willingness look at ways to help themselves and others.

"If you can identify the right people," Helms promised, "they'll come up with more ideas than the managers will."

5. Explain to this core group ways that employee empowerment will benefit them and help the company and its customers, too.

6. Remember there is no recipe on what to do or how much re-

sponsibility to add. The group needs to work at its own pace.

7. Develop a mission statement which explains the vision of the company. Develop goals and objectives which grow out of that mission statement.

Each level should have its own application of the company mission statement and its own set of goals and objectives.

Develop job descriptions which match the mission, goals and objectives and place the responsibility for meeting those goals and objectives on each employee.

8. Look at the people in the company. Do they have the skills they need? Do you work with them or go around them?

9. Get education and training to help the key employees learn about self-management.

10. The steering group should then work with the rest of the employees. Get them involved and help them understand the paradigm shift (the new view and methods in the company).

11. Begin and continue training programs. Help employees help you and help themselves.

12. Remember, nothing is going to happen overnight. Empowerment and its improvements are a lengthy process. "It's like a plant, Helms concluded. "It takes a while to nurture it and watch it grow before you see whether it's going to take hold and grow."

Empowered employees, from managers to crew members, have greater self-esteem and enjoy their work more.

in an empowerment environment. The company must also continue to reinforce the knowledge and skills of the manager. At Barefoot, that process begins with the job description at the first interview, then continues through ongoing training programs.

ACKNOWLEDGING THE NEED. PLCAA

Director McClure said the organization's members are just now acknowledging the need to begin new management practices and "hire people who can handle empowerment." To help those struggling with practices still new in the industry, PLCAA is holding a first-ever management conference in Phoenix Jan. 13 and 14, 1995. Main speaker for that conference will be Larry Helms.

"We need to be following along the stream of inevitable action with society. Some people are starting to say 'Now I'm ready for more high-level business.' The PLCAA conference will help inform and train managers on such strategies," McClure noted.

Making employee empowerment a valuable option depends on having the right kind of people, Helms noted. "Empowerment isn't for everybody. Many people don't want the responsibility. You have to have the right workforce. Your employees can't be the 'work the eight then hit the gate' type.

"Management wanting it isn't enough," he continued. "True empowerment comes from getting employees together and having them to buy into the concept. Supervisors will have to let them be empowered to the point that it threatens their existence."

The transition is often long and difficult, especially in a company with a tradition of strong management and little employee participation in decision making. "It takes the right kind of management, too. Management has to give employees the right to make decisions, even bad decisions," he pointed out.

It also works both ways in that employees must accept the responsibility for making decisions and living with the consequences. That can be hard for employees used to having decisions made for them. "The workers can't turn to the supervisor to make the decisions and the supervisors can't yell at the employees if the (workers') decisions are wrong. The question is: Will management allow decisions that they would make differently?"



"US" and the firm made great strides in profit and customer satisfaction in "a relatively short time."

Another company encouraged employees to "Get Whacked," a play on its quality awareness slogan, "WACTTQ." The acronym appeared on company literature, newsletters, jackets and caps to remind employees "We Are Committed to Total Quality." Each crew member was reminded that quality "is not what you think, but rather what the customer thinks is important."

Helms noted that there are some disadvantages to empowerment and recommended that each company decide its goals before determining whether employee empowerment will work at that firm.

"First, employees become more autonomous and their power grows exponentially. They may grow out of the organization. They may even want to go out on their own," he pointed out.

Contractors should also realize that new employees, who may be unfamiliar with both the company culture and the concept of empowerment, will need thorough training, Helms noted.

"The potential for problems also increases as people are given additional authority," he warned. "The company will need to retrain people. You may even find people who don't want to go on to the next level. You may find people within your organization who don't fit in under the new demands."

The benefits very often outweigh the problems. "Empowerment taps a hidden resource, the people. It also allows employees to grow in self-esteem and to enjoy their jobs more," Helms said.

The Crystal Ball Committee reminds company owners that "a manager can't be everywhere at once and can't possibly know every facet of every job...When you hired your employees, did you hire their brains or their brawn? Sometimes management people take the position that their workers should just do what they're told and not question the work or make suggestions. . .Empowering your employees allows them to take their head(s) along with them on the job, regardless of what position they hold." ■

The author is an industry consultant with Key Solutions, a division of Iris Sales & Solutions Inc., Rocky River, Ohio.

CLEAR GOALS. Companies reporting to the ALCA committee told stories of effective empowerment. One company president told the committee he and his employees began with a "mess," caused largely by blaming problems on "THEM." When the firm replaced work groups with teams, "THEM" became

Compost Digest

WHEN COMPOST HEATS UP, GOOD THINGS HAPPEN

THE HEAT THAT a compost pile generates is extremely important to the production of top-quality compost. As temperatures in commercial compost piles reach as high as 160 degrees, they offer important benefits like the destruction of pathogens, weed seeds and chemi-

cal residues. The high temperatures encountered during the composting process helps reduce the negative impacts in the landscape.

WEED SEED DESTRUCTION. The number of weed seeds produced by a single plant is some-

times astounding (see table at left). No wonder these plants are so tough to eradicate once they produce a seedhead! Because many uses of compost require the incorporation into native soil, low quality compost can actually promote the spread of weeds.

Problem weeds like nutsedge are especially difficult to eradicate once they appear in the landscape, but proper composting helps break their natural life cycle. Many weeds are prolific producers of seed and sometimes the mature seeds will be partially disburbed before arriving at the compost site. Still, the composting process, if conducted correctly, kills the weed seeds present in the compost pile.

A landscape contractor who has followed all the correct structural and agronomic procedures to installing an award winning landscape may still have problems if weeds persist in large quantities. More important, the customer who has to pull weeds or spray them with pesticides cannot have a positive image of the landscape contractor performing the work, especially if they suspect that the materials used on the job (ie., compost)

NUMBER OF SEEDS PRODUCED BY A SINGLE WEED PLANT

WEED	LIFE CYCLE	REPRODUCED BY	SEEDS PER PLANT
Barnyardgrass	A	seed	7,160
Lambsquarters	A	seed	72,450
Prostrate Pigweed	A	seed	14,600
Purslane	A	seed	52,300
Sandbur	A	seed	1,110
Black Medic	A/P	seed	2,350
Knotweed	A	seed	6,380
Yellow Woodsorrel	A/P	seed	570
Yellow Nutsedge	P	seed/tubers	2,420
Red Sorrel	P	seed/rhizome	250
Broadleaf Plantain	P	seed	36,150
Curly Dock	P	seed	29,500
Thistle	P	seed/rhizome	680

Table 1

(Source: Danneberger, 1993)

(continued on page 72)

HANDY RAMP ENDGATE PRODUCTS

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Compost Digest

(continued from page 70)

were the source of the weed infestation.

It is important to inform retail and commercial clients that at any one time, there may be literally thousands of dormant weed seeds ready and waiting to germinate in their existing soil. Weed seeds can stay dormant for a number of years, making complete control of weeds nearly impossible unless a strict chemical regime is adopted.

Landscape contractors may in fact benefit most from purchasing compost from a professional commercial compost producer who regularly monitors temperatures to ensure weed seed kill. If weed problems still arise, at least they can be assured that the weed seeds were present in the native soil. On the other hand, if contractors use their own compost made from yard trimmings that may or may not have been intensely managed or monitored for temperatures, they may be open to accusations that the weed infestation came from their compost.

REDUCING PATHOGENS. The source of many composts in the United States has been landscape debris. As such, there was initially a concern among contractors about using com-

THERMAL DEATHPOINT OF SOME COMMON PATHOGENS AND PARASITES

ORGANISM	THERMAL DEATHPOINT
<i>Salmonella typhosa</i> :	No growth beyond 46°C; death within 30 min. at 55° to 60°C.
<i>Salmonella spp.</i> :	Death within one hour at 56°C; death within 15 to 20 min. at 60°C.
<i>Shigella spp.</i> :	Death within one hour at 55°C.
<i>Escherichia coli</i> :	Most die within one hour at 55°C; and within 15 to 20 min. at 60°C.
<i>Endamoeba histolytica</i> :	Thermal death point is 68°C.
<i>Taenia saginata</i> :	Death within 5 min. at 71°C.
<i>Trichinella spiralis larvae</i> :	Ineffectively reduces as a result of one hour exposure at 50°C; thermal death point is 62 to 72°C.
<i>Necator americanus</i> :	Death within 50 min. at 45°C.
<i>Brucella abortus or suis</i> :	Death within three minutes at 61°C.
<i>Micrococcus pyogenes</i> var. <i>aureus</i> :	Death within 10 min. at 50°C.
<i>Streptococcus pyogenes</i> :	Death within 10 min. at 54°C.
<i>Mycobacterium tuberculosis</i> : var. <i>hominis</i> :	Death within 15 to 20 min. at 66°C; or momentary heating at 67°C.
<i>Mycobacterium diptheriae</i> :	Death within 45 min. at 55°C.

Table 2

(Source: Goleuke, 1993)

post from potentially diseased landscape plants, with the fear of spreading the potentially dangerous disease. However, this concern disappears quickly when we consider the

time it takes to destroy these pathogens.

Table 2 lists pathogens destroyed by intense heat over time. Notice that the list

(continued on page 74)

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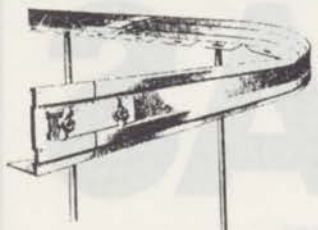
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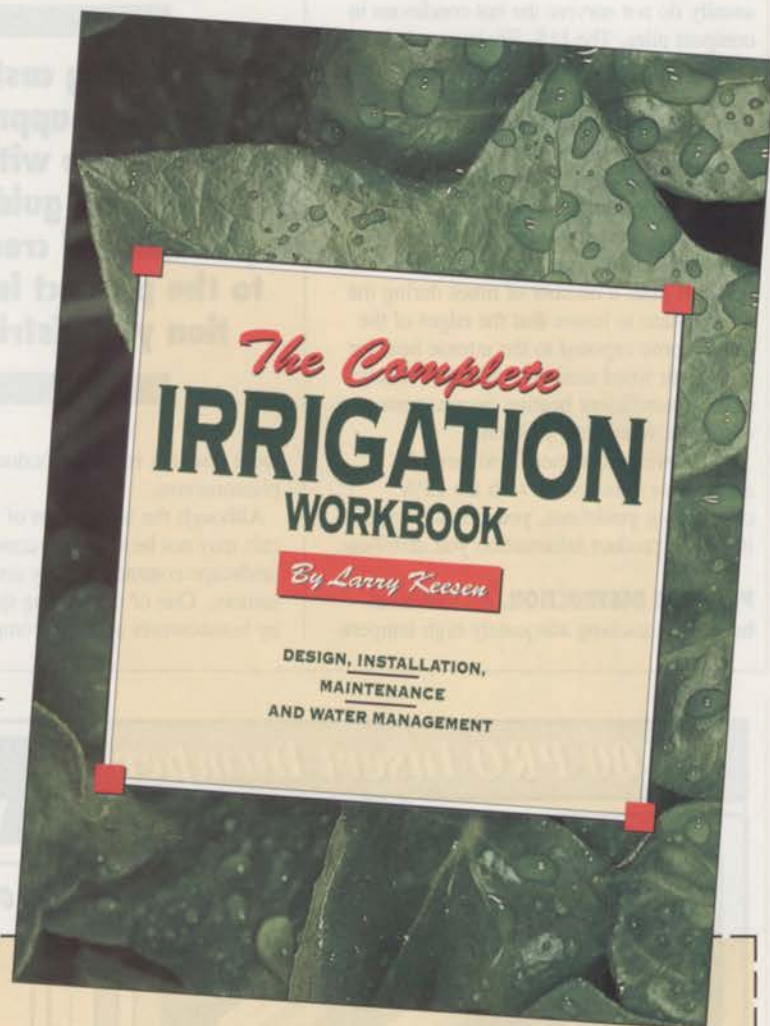
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Compost Digest

(continued from page 72)

includes some of the most feared human diseases that are naturally killed by the composting process.

Pathogens of humans, plants and animals usually do not survive the hot conditions in compost piles. The U.S. Environmental Protection Agency has set guidelines of 55 degrees Celsius for three consecutive days (or equivalent) as a minimum standard to ensure that all these pathogens are effectively destroyed. However, it is well known that some compost piles that are poorly managed may not reach this minimum temperature.

For best results, it is important to turn the compost piles a number of times during the active phase to insure that the edges of the pile become exposed to the intense heat for maximum weed seed and pathogen destruction. If insufficient heating occurs, customers may have weed seed problems.

By showing customers evidence of appropriate compliance with the EPA composting guidelines, you can add credibility to the product information you distribute.

PESTICIDE DESTRUCTION. An additional benefit of reaching adequately high tempera-

tures for extended periods of time is to help break down pesticides that may be present in the organic residual being composted, such as yard trimmings.

Many pesticides break down from intense heat and microbial activity over time and

By showing customers evidence of appropriate compliance with EPA composting guidelines, you can add credibility to the product information you distribute.

more research is being conducted into this phenomenon.

Although the breakdown of these chemicals may not be a leading concern among landscape contractors, they are to many consumers. One of the leading questions asked by homeowners at many compost confer-

ences is "What happens to those chemicals?" The fear is that the chemical will reside in the soil indefinitely.

Most of the chemicals used by the lawn and landscape industry actually have short lifespans in soils, some as short as months. The compost process simply helps increase the speed of decomposition and renders the chemical harmless. There is another section of the composting industry currently looking at the beneficial aspects of using composting as a way to remediate contaminated soils.

As contractors look to coordinating compost applications with normal landscaping activities, they will want to be sure to look for compost products that have reached adequate temperatures to reduce exposure to pathogens, weed seeds and chemicals. These are not items we should be "scared of" when using compost, because the majority of commercial compost producers already understand the importance of reaching adequate temperatures. The awareness of the process simply helps us to understand what to expect from the product. — Rod Tyler

The author is a Certified Professional Agonomist and free-lance writer residing in Medina, Ohio. He is employed by BFI in Oberlin, Ohio.

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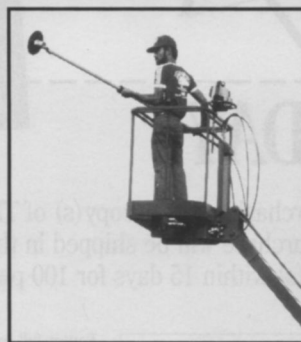
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USE READER SERVICE #13

People

HUSQVARNA Forest & Garden promoted **Mark Michaels** to senior forestry product manager. He previously served as the forestry product marketing manager. In addition, Husqvarna hired **Bob Buzzard** to fill the newly created position of portable tools accessory manager. Husqvarna also named several territory managers. **Jeff Bittner, Pat Canfield, Bob Gulbrandsen, Jeff Nourie** and **Dennis Thompson** were added as territory managers in the north central region; **Doug Gallogly, Gary House, Walt Rose,** and **Don Wilkes** were appointed for the southeast region; and newly promoted northeast region sales manager **Matt McNally** will supervise **Bill Capron, Steve Cole, Dave Earle** and **Tony Marchese. Brian Peake** will serve as a territory manager the Mid-Atlantic region.

Feldmann Engineering and Manufacturing Co. named **Clifford Feldmann** president of the corporation. He formerly served as vice president.

Rex Hansen joined James Hardie Irrigation to fill the newly created position of commercial marketing manager, responsible for new product development and marketing communications programs for the com-



Hansen



O'Neal

mercial product line. **Diane Smith** is the new product manager-residential valves and controllers, with responsibility for existing product lines and new development.

Bradshaw Landscape appointed **Dennis McDonald** director of operations. He has more than 23 years experience in landscape design, installation and management.

Echo Inc. announced the addition of two new district managers: **Jim Krichbaum** will manage the western United States except for the West coast and **Scott Haiges** will manage the East region.

TruckCraft Corp. appointed **Roy O'Neal** as the company's national sales manager. He will be responsible for the selection of the

national distribution network, and will handle all advertising and trade show activities.

Jeff Davis was named to the position of sales manager of the south Florida territory for L. R. Nelson Corp.

Albert McLaurin joined Berryman & Henigar as project engineer at the firm's East coast headquarters in Crystal River, Fla. In addition, **David Brittain** was brought on board as a structural engineering manager in the firm's Ocala, Fla., office.

Rain-Drip Inc. appointed **Michael Burch** as national sales manager.

Precision Laboratories appointed **Allan Yust** to sales and marketing manager of its turf and ornamental IVM products division.

Kevin Caskey was appointed to the position of vice president and general manager of Compliance Safety, Inc.

Rain Bird Sales Inc., recently hired **Elaine Krizesky** to fill the position of marketing coordinator for the commercial product division based in Tucson, Ariz.

AgrEvo Environmental Health named **Mark Haugland** chairman of the customer satisfaction team and **David Spak** specialty products development manager.

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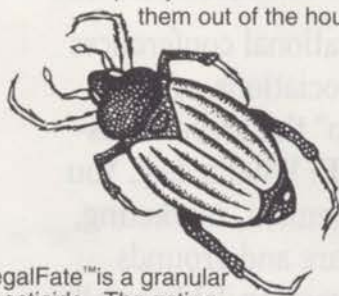
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Circle 125 on reader service card



Fusilade® II turf and ornamental herbicide from **Zeneca Professional Products** is a selective postemergence product for the control of annual and perennial grass weeds in noncrop areas. Recommended use areas include commercial turf, nurseries, roadsides, around buildings and on rights-of-way. It can be applied on newly planted and established areas and ground covers to eliminate costly hand weeding.

Circle 126 on reader service card



Foldaway ramp from **EZN Ramps of California** installs on any existing pickup tailgate to allow loading and unloading of rider mowers, trenchers, rototillers, tractors or other machines

weighing up to 2,000 pounds. The heavy duty, zinc-plated steel ramp is reinforced by a cable support system that distributes the weight evenly, yet allows a slim profile for easy folding into a 4-inch width inside the tailgate. Other features include an antislip surface, add-on legs for use as an on-site work table and durable finish.

Circle 127 on reader service card

Polyethylene tree protectors from **Tree Pro** feature easy installation and long-term protection for young trees from weather, animals and maintenance machines. Protectors come in various lengths from 12 to 72 inches and slide around the tree trunk. They are secured by ties that allow easy access to the tree trunk for maintenance and venting. Complete protection system includes organic weed control, anticompaction material for the soil and a controlled-release fertilizer.

Circle 128 on reader service card

Seed Research of Oregon introduced SR 8300 tall fescue, a semidwarf variety selected for survival in the Mid-Atlantic region of the country. Tests have shown good performance throughout the transition zone and in California. Special characteristics include lower growth habit, heat and drought tolerance, dark green color and disease resistance.

Circle 129 on reader service card

Get more power from standard 3- to 6-hp engines in outdoor power equipment with **Noram's** gear box, which can be bolted directly to the engines. The gear box provides a 6 to 1 gear ratio and allows engines to maintain a normal output capacity of



10 hp with torque of 15 foot/pounds at a lower rpm. Design features include aluminum case, heat-treated gears and ball-bearing PTO shaft.

Circle 130 on reader service card

Gear-driven, water-lubricated midrange rotor from **James Hardie Irrigation** has an operating range of 25 to 48 feet with both full- and part-circle operation in one unit. Model XL rotor has visible arc indicators on the riser for quick identification and adjustments of the arc setting. Six nozzles can be used on this rotor, which also features a power pause rotation, 4 3/4-inch pop-up height and a radius adjustment screw for up to a 25 percent reduction on each nozzle.

Circle 131 on reader service



Rain Bird's newest irrigation controller features a battery-powered control module that installs in the valve box out of harm's way, plus a separate hand-held unit for programming. A 9-volt alkaline battery powers the system for one year, making the controller ideal for installations without electrical power.

Circle 132 on reader service card

Wide deck hydrostatic riding mower from **Encore** features zero turning radius, floating deck design and a 20-hp water-cooled en-



gine. Rider comes with 52- or 61-inch deck and includes adjustable controls, parking brake, foot-operated deck lift with lock and an electric blade clutch brake.

Circle 133 on reader service card

Alamo® fungicide from **Ciba Turf & Ornamental Products** has higher rates of application with pressurized injection equipment. The material, for control of oak wilt and Dutch elm disease, can be used at rates of 6 ml for preventive treatment and 10 ml for curative treatments. It is available in quart containers or a micro-injection system for injection into the flare roots of trees.

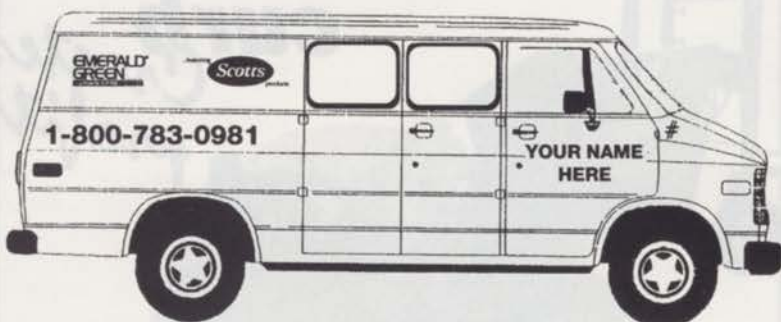
Circle 134 on reader service card

Horizontal overhead valve engines from **Robin America** are rated at 11 hp for use in mobile power equipment. The four-cycle engine provides 3,600 rpm and a maximum torque of 8 foot/pounds at rated speed. Design features include heavy duty construction, electronic ignition, aluminum crankcase and cast iron cylinder liner.

Circle 135 on reader service card

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using a shredder system said to drastically reduce clippings into usable mulch. The TL-1000 models come in a variety of engine makes and horsepower ranges to meet specific needs. All models include a 15-inch balanced impeller with four 1/4-inch thick curved steel blades for fast and efficient shredding.

Circle 136 on reader service card

Trailer-mounted power mulcher from **Reinco** handles up to 10 tons of hay mulch per hour and can convert a bale of hay or straw into



mulch in 10 seconds. Model M-65 is powered by a 54-hp diesel engine to send mulch through an extra long, 360-degree rotating boom to distances of up to 85 feet. Special beater chamber eliminates many high-maintenance components.

Circle 137 on reader service card

Desert Bloom soil additive from **Hydra-Soil International** is said to reduce the amount of irrigation water needed, maintain growth in dry years, allow vegetation to grow in sand, control dust and stop erosion from water runoff. The product can be used on bermuda and native grasses, flowers, orchards and sod. It is not a polymer, surfactant, penetrant, fertilizer or pesticide.

Circle 138 on reader service card

Self-propelled, walk-behind sweeper from **Sweepster** has left and right-brush angle design that simplifies operation. Model

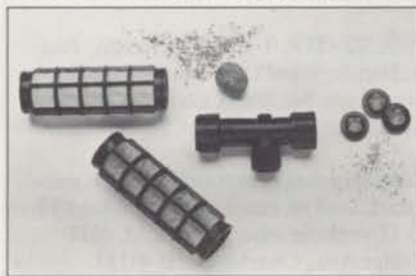


C36TW is powered by a 5-hp engine, provides a 32-inch sweeping path, and can be transported in a pickup truck. Two drive systems are available to handle heavy debris or grass clippings.

Circle 139 on reader service card

Barricade® pre-emergent herbicide from **Sandoz Agro** has a higher maximum annual rate on the label for control of crabgrass, goosegrass and other problem weeds. Turf managers can apply 2.3 pounds per acre in single or split applications for greater flexibility and timing. It is said to provide season-long control at low use rates, provide low water solubility and produce no stains. **Circle 140 on reader service card**

Raindrip's Model R608C 3/4-inch T-filter helps to reduce dripper clogging by removing most sediments and particulates at the water source outlet. The stainless steel 150-mesh screen traps particles and can be disassembled quickly for cleaning. The filter can also be attached directly to a faucet, flow control device or pressure regulator. **Circle 141 on reader service card**



Bunton's midsize hydrostatic drive riding mower handles close-in trim work and features a three-bladed deck in a 52-inch width. Model BHR-22 KOH rider has two heat exchangers — one for the engine and the other for the hydraulics. Mowers offer a choice of 22-hp Kohler or 18-hp liquid-cooled Kawasaki engines. **Circle 142 on reader service card**

Prostar® Plus™ fungicide twin-pack by **AgrEvo USA** includes Prostar® 50 WP fungicide and Bayleton® 50 turf and ornamental fungicide to control brown patch, dollar spot and 17 other turf diseases. The two products work together to provide a synergistic action said to increase the length of control beyond either one alone. Twin pack uses the lowest labeled rates of both products, yet has been shown to extend control as much as 28 days. Water soluble bags limit applicator exposure and are easy to use. **Circle 143 on reader service card**

Self-propelled blower from **Billy Goat** features a five-speed transmission and a 16-hp Briggs & Stratton overhead valve, twin-cylinder engine for power. Model QB1601SP has a 14-blade nylon fan that increases air velocity while limiting noise. **Circle 144 on reader service card**



The blower, which is designed to accomplish the work of two 11-hp models, clears up to 30 feet of pavement with wind speeds of up to 150 mph. **Circle 144 on reader service card**

Easy Lawn's portable irrigation system waters new or existing lawns and planting areas during early or dry growing conditions. System consists of an electronic controller, sprinkler heads, automatic valves and lines. The eight-zone design waters 3/4-acre lots and sets up quickly. **Circle 145 on reader service card**

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Calendar

JULY 25-27 Penn Allied Nursery Trade Show, Fort Washington Expo Center, Fort Washington, Pa. Contact: Pennsylvania Landscape and Nursery Association, 717/238-1673.

JULY 26 University of Georgia Turfgrass Field Day, Georgia Experiment Station, Griffin. Contact: Gil Landry, Extension Crop & Soil Sciences, 404/228-7300.

JULY 26-28 Turfgrass Producers International Summer Convention and Field Day, Omaha, Neb. Contact: TPI, 708/705-9898.

JULY 26-28 Florida Nurserymen and Growers Association and the Associated Landscape Contractors of America Conference, Hyatt Orlando, Orlando, Fla. Contact: Lynne Rue, FNGA, 407/345-8137.

JULY 26-29 American Association of Nurserymen Conference, Minneapolis Convention Center. Contact: AAN, 1250 I St. NW, Suite 500, Washington, DC 20005; 202/789-2900.

JULY 30 - AUG. 1 International Lawn, Garden & Power Equipment EXPO, Kentucky Exposition Center, Louisville. Contact: EXPO 95,

6100 Dutchmans Lane, Sixth Floor, Louisville, KY 40205; 800/558-8767.

AUG. 2 Illinois Landscape Contractors Association Summer Field Day, Ball Seed Co., West Chicago. Contact: Julie Nicoll, ILCA, 708/932-8443.

AUG 3-5 Turf Diagnostic Course, Cornell University, Ithaca, N.Y. Contact: Joann Gruttadaurio, 607/255-1792

AUG. 4-6 Southern Nurserymen's Association Trade Show, Georgia World Congress Center, Atlanta. Contact: SNA, 404/973-9026.

AUG. 8 Associated Green Industries of Northeast Ohio Summer Field Day, MacKenzie Nursery Supply, Perry. Contact: AGI, 614/263-1242.

AUG. 9 Eastern Pesticide Institute, Lehigh University, Bethlehem, Pa. Contact: Pennsylvania Landscape and Nursery Association, 717/238-1673.

AUG. 16 Ohio Turfgrass Foundation Field Day, The Ohio State University, Columbus. Contact: Julie Guenther, 614/261-6750.

AUG. 16-18 Field Diagnosis of Insects and Diseases on Trees and Shrubs, Cornell University, Ithaca, N.Y. Contact: NYS Arborists Association, 518/783-1322.

AUG 17 Michigan Turfgrass Field Day, Michigan State University, East Lansing. Contact: Kay, 517/321-1660.

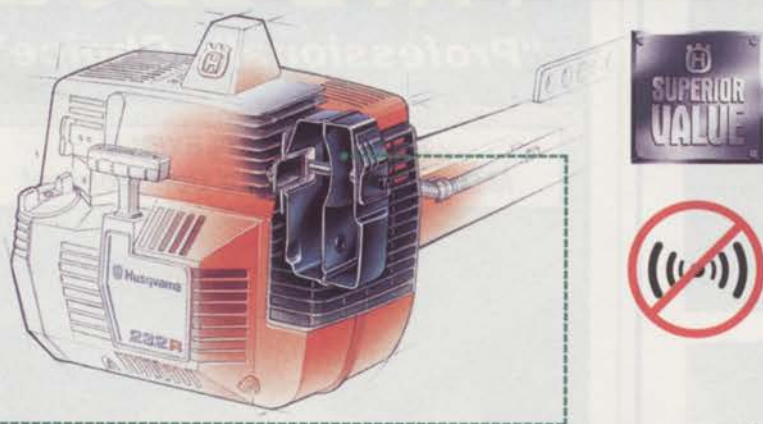
AUG. 18-20 TAN-MISLARK Nursery and Garden Supply Show, Dallas Convention Center. Contact: Texas Association of Nurserymen, 512/280-5182.

AUG. 18-21 Nursery Management Institute, Michigan State University, Lansing, Mich. Contact: American Association of Nurserymen, 202/789-2900.

AUG. 30 - SEP. 1 CAN Convention, Pacific Hort Expo and Ornamental Research Conference, San Diego. Contact: California Association of Nurserymen, 916/567-0200.

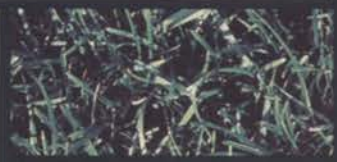
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USE READER SERVICE #24

Power Equipment

(continued from page 36)

village of Scarsdale, where a blower ban was overturned in the village court. The ruling was important because it called into question whether a total ban could ever be implemented and survive a court challenge.

The ban had some fundamental flaws that led to its demise. First, it banned blower use only on residential properties, and not on golf courses, which was ruled discriminatory. The fact that blowers were the only equipment to be banned was also seen as discrimination by the judge. Finally, the judge ruled that other noise ordinances already on the books restricting power equipment were more than sufficient to protect the health and safety of the public, and that a ban is unduly oppressive to the lawn and landscape contractor.

The victory in court gave landscape contractors the ammunition they need to fight off total bans in other communities, but groups are pushing hard to get ordinances that

are as restrictive as possible.

Presently, the city of Greenwich, Conn., limits the use of blowers from 8:00 a.m. to 6:00 p.m. during the week and 9:00 a.m. to 3:00 p.m. on weekends, but Joe Golio, president of Golio Landscaping Co. in nearby Stamford, said that Project Quiet Yards wants more. There was a meeting late in June to discuss adding a "quiet day" each week where no power equipment would be allowed at all.

"We have fought back successfully so far, but the group keeps trying to chip away at it," Golio said.

California has also been an area of significant blower opposition. Larry Otto, president of Lawntech Equipment, a dealer in Riverside, recently locked horns with the city of Claremont over a blower ban.

The ordinance had some peculiar inconsistencies—for instance, residents could use the equipment from 7:00 a.m. to 10:00 p.m., but professional contractors were forbidden to use them. Otto's main argument was that banning one type of equipment over another is discrimination, and a ban should not be im-

posed. Currently, the ordinance is being reviewed by city officials.

"It's just not right to pick on one piece of equipment. Not having blowers available really creates productivity problems for contractors," Otto commented.

SQUEAKY WHEEL. The unfortunate reality in this situation is that, in many cases, it is the inconsiderate contractor using too much equipment at one time, or at unreasonable hours, who is largely to blame for the public outcry.

Project Quiet Yards in New York evolved from a confrontation between a single resident and a lawn maintenance contractor. "He was working next to the guy's property with a blower late at night, and did not try to work it out with the resident," Golio said.

In other areas, contractors and dealers say the bigger problem has been with "renegade" operators who aren't considerate of residents and neighbors about when and how much equipment they use.

"The people in opposition to the leaf blower situation, I believe, are

well-meaning and have the best interest of the community in mind," said Bob Cutler, president of Greenmaster, Highland Park, Ill.

Two years ago, a ban on backpack blowers was instituted from May 15 to Oct. 15, but did not regulate push-type blower vacuums. Now, some local residents are attempting to close what they view as a "loophole" by getting a partial ban on these blowers as well.

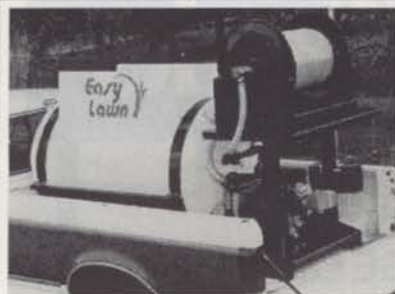
"The problem is, the push-type blower is powered by a lawn mower motor, so if the noise is a problem they will have to ban all lawn mowers," he noted.

The Scarsdale ruling is being cited as a primary reason why communities should not opt to try a ban anymore. "It's been conceded that a ban will be ruled unconstitutional, and if it goes to court, the community will lose," said Cutler. "Communities are more willing to settle for half a loaf and not provoke a lawsuit."

The author is Special Projects Editor of Lawn & Landscape Maintenance magazine.

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USE READER SERVICE #67

USE READER SERVICE #68

Nitrate Leaching

(continued from page 66)

all of the applied N, despite the fact that the actual fertilizer recovered in the clippings was only about one-third of the amount applied.

These data indicate that turfgrass roots must compete with a very active microbial population for applied N.

The nitrogen used by microorganisms is turned into complex organic compounds within the microorganisms; however, these mi-

croorganisms are relatively short-lived and when they die, the nitrogen is released as complex forms of N. Thus, even when a quick-release form of N is applied to the turf, a large fraction of that N is captured by a microbial population that turns it into slow-release N.

QUESTIONS REMAIN. While the data presented above paints a very favorable picture of the fate of N in turf, some questions still remain. First, how much of the non-recovered N was lost to volati-

lization? Second, our data indicate that added N is being converted to organic forms of N or soil organic matter.

But soil organic matter content in the soil will not increase forever and at some point, an equilibrium will be reached. When that occurs, what will happen to the N that is added every year?

If you are removing clippings, then you would have to add enough N to replace that which is removed with the clippings.

But we know from our experi-

ence that even if we return clippings, turf benefits from more N.

If leaching is not occurring, then returning clippings should produce a closed system where no more N would be needed. So, where does the added N go when soil organic matter is at equilibrium? These questions will need further research before they are answered. ■

The author is associate professor, Department of Crop and Soil Sciences, Michigan State University, East Lansing, Mich.

MEASURING NITROGEN IN CLIPPINGS

IN 1981, Starr and DeRoo published an article on nitrogen fate in turf using a stable isotope of nitrogen, ^{15}N , to follow what happens to an individual application of nitrogen. This allowed them to discriminate between nitrogen that came from the soil, from the return of clippings and from their fertilizer applications. In the study, they added 3.7 pounds of N per 1,000 square feet (M) per year to the turf.





When measuring the nitrogen recovered in the clippings over the entire growing season, they found that the clippings contained 3.2 pounds N/M. They determined that 1.1 pounds N/M came from the fertilizer application, 1.0 pounds N/M came from the soil, and 1.1 pounds of N/M could be directly attributed to returning clippings. Thus, while 3.7 pounds of N had been applied during the growing season, only 30





percent of the applied nitrogen was recovered in the clippings. Where did the rest of the applied nitrogen go?

Where clippings were returned, the authors found the equivalent of 0.76 pounds fertilizer N/M in the soil, and 1 pound fertilizer N/M in the thatch, and only a trace was leached below the root zone. They had a total recovery of 76 percent, so they estimated that gaseous losses, either ammonia volatilization or denitrification, accounted for the remaining 24 percent of their seasonal N application.

Competition for nitrogen in the soil is keen and the turfgrass plants could only recover around 30 percent of the applied N in the clippings. Microorganisms in the soil and particularly in the thatch are very active and compete with the turf for applied N.

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Backflow Prevention

(continued from page 62)

a disc-float assembly seals off the atmospheric vent area. When the flow of water stops, the float falls, opening the vent and allowing air to enter the piping system, thus thwarting any possibility of back-siphoning.

AVBs should be installed at least six inches higher than the last outlet. Irrigation piping that is higher in elevation creates enough pressure to cause backpressure. This backpressure can hold the air-inlet valve closed, allowing nonpotable water back through the device and into the potable water system. An AVB must not be used for more than 12 hours in a 24-hour period.

Pressure vacuum breakers also prevent backsiphonage but aren't effective against backpressure. However, they can be used to protect against both pollutants and contaminants.

PVBs have a spring-loaded check valve that closes when water flow stops. Its air-inlet valve opens when the internal pressure is one

psi above atmospheric pressure, preventing nonpotable water from being siphoned back into the potable system. These backflow preventers can be tested in line for proper operation.

Being spring-loaded, PVBs

It is estimated that more than 10,000 cross-connection incidents occur in the United States every day. Backflow is a potentially serious hazard for irrigators.

don't rely on gravity like AVBs and must be installed on the pressure side of a shutoff valve. Pressure vacuum breakers must be installed at least 12 inches higher than the last outlet.

Double check valve assemblies are effective against backflow caused by backpressure and backsiphonage, but are used to protect the potable water system from pollutants only.

Double-checks consist of two positive-seating check valves installed as a unit between two tightly closing shutoff valves. They also can be tested in line.

Elevation differences won't affect the performance of double

checks, therefore their placement in the landscape is oriented more toward accessibility. They are bulkier and, if installed below grade, can be difficult to drain for freeze protection. Increasingly, double checks are being installed outdoors in heated and insulated enclosures that protect against freeze damage.

Dual check valve assemblies are effective against backflow caused

by backpressure and backsiphonage. They protect the potable water system from pollutants. Dual checks consist of two independent in-line check-valve modules and should be installed in an accessible location for inspection and service.

Reduced pressure principle assemblies protect against backpressure and backsiphonage of pollutants and contaminants. The assembly is comprised of two internally loaded, independently operating check valves with a mechanically independent, hydraulically operating differential relief valve between them. An RP also contains tightly closing, resilient-seated shutoff valves upstream and downstream of the check valves, along with test-cocks for in-line testing.

During normal operation, the pressure in the zone between the two check valves is maintained lower than the supply pressure. If the zone pressure approaches the supply pressure, the relief valve will automatically maintain a differential of not less than two psi between the supply pressure and

(continued on page 90)

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A preliminary review can determine areas in your company that could be enhanced such as estimating, scheduling, budgeting, crew organization and effectiveness, profitability and job quality. A follow-up plan is then outlined for the weeks or months to follow according to your needs.

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•••

Backflow Prevention

(continued from page 78)

the zone between the two check valves by discharging to the atmosphere.

This backflow prevention assembly is used to protect against high-hazard contaminants and should always be the choice of backflow prevention when applying fertilizers and chemicals via the irrigation system.

Install RPs a minimum of 12 inches above ground, not in a pit or vault. These assemblies, too, are being installed in freeze-proof enclosures for year-round protection.

PRESERVING PROTECTION. What is the most common cause of backflow preventer problems? Installation, according to Howard. "During an installation, dirt and other debris can get in the seat of a backflow preventer," he explained.

Michael Birks, national sales manager for Febco Division of CMB Industries, Fresno, Calif., agreed: "Always flush the assembly at installation or after repairs to an irrigation line."

Vandalism is another concern with backflow preventers and should be considered when selecting the location of the assembly in the landscape. Protective cages and other more aesthetic products are available to conceal units.

All backflow preventers should be installed where they can be inspected and serviced regularly. Any kind of water discharge from a backflow prevention assembly should be investigated, as it could be an indication of backflow occurring or the need for maintenance.

Generally, yearly inspection by a qualified backflow prevention tester is recommended, particularly if you're dealing with irrigation water with organic material or that is high in calcium or magnesium.

Protection and prevention continue to become a daily fact of life, from motorcycle helmet laws to check valves in sprinkler heads for liability. Backflow preventers ensure personal safety of millions of people, while protecting you from liability. As technology develops, so do the responsibilities that go with its application. ■

The author is a partner with VERDEcom Environmental Resource Media. He is based in Banning, Calif.

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Dixie Chopper	91
DowElanco	43,45,92
Easy Lawn	85
Echo	33
Emerald Green	81
Environmental Protection Developers	62
Fabriscape	83
FMC	57
Frederick Mfg. Co.	62
Gandy	82
Glenmac	28
Grasshopper	53
Green Stuff Absorbent Prod.	22
Greener Pastures	42
Greenline	87
Highway Equipment Co.	19
Hunter	21
Husqvarna	29,84
ICD	23
Inclinor Co.	26
Integrated Digital Products	22
JCB Inc.	76
Jonsered	4
Kubota	7
Line-Ward Corp.	84
Longhorn Inc.	22
J. J. Mauget	59
Metromail	81
Oldham	15
Pave Tech	83,85
Polecat	74
Rain Bird	16
Ransomes, Ransomes America Corp.	17
Reading Body Works	56
Real Green	16
Regal	78
RISE	63
Sensible Software	58
Shindaiwa	9
Snapper	34,35
Spectrum	70
Steiner	44
Sure-Loc	72
Thomas Equipment	71
Toyota	11
TruckCraft	74
Tuflex	86
United Horticultural Supply	65
Walker Mfg.	32
Woods Equipment Co.	47
Zajac	27
Zeneca	49,61

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