



Scag: cutting heights easy to change from driver's seat.



Excel: 2500 compact is built with high-capacity mowing deck.



Grasshopper: outfront decks reduce secondary trimming.

## ZERO-TURN MOWERS

**These mowers increase productivity with their quick maneuvering ability and compact design.**

Over the last 25 years, commercial, zero-turn riding mowers have been gaining market share, as evidenced by the number of manufacturers producing them today and the large number of machines operating on properties.

The Outdoor Power Equipment Institute (OPEI) reports that almost half of the commercial riding mowers sold during 1993 were transmission steer (lever steering) zero-turn type machines.

### More productive

Operators routinely claim doubling the amount of mowing output after changing from midsize walk-behinds or conventional steering wheel riders to zero-turn riding mowers.

Of course, the production gain depends on the type of areas being mowed, but generally, landscaped turf with combinations of small and open turf areas is "typically" where zero-turn riding mowers have an advantage.

Production gains are the direct result of increased maneuverability:

- ▶ ability to quickly maneuver, with very little lost motion, means the mower spends more time "in the grass."
- ▶ ability to maneuver in tight areas, which reduces travel time.
- ▶ ability to maneuver easily, which facilitates trimming and covering irregular-shaped areas.

### Reduce or maintain labor

Increasing productivity gives zero-turn operators two options: reduce their labor force or maintain it and grow their businesses. Either way, labor savings easily offset the higher purchase price of a zero-turn rider and the investment to train workers to operate a "lever steering" machine (a common objection of "steering wheel" proponents).

Some zero-turn owners claim it is actually easier to teach proper operation of a lever-steering rider than a midsize walk-behind.

SOURCE: WALKER TALK, USED BY PERMISSION OF WALKER MFG. CO.



## ZERO-TURN MOWERS

**BUNTON**  
(502) 966-0550  
Circle No. 250

The new "Twister" zero-turn mower features a new, innovative finger-tip, electric, deck height adjustment. The feature lets the operator make quick and easy deck height adjustments, based on various situations, such as curbs, sprinkler heads, or tree roots. Ergonomic, contoured seat and control panel provide exceptional all-around visibility of cutting deck and all four tires.

**BUSH HOG**  
(334) 460-2595  
Circle No. 251

New Bush Hog zero-turn mowers deliver top appearance and efficiency, says the Mobile, AL.-based company. Engine options include air-cooled, 18-hp Briggs & Stratton, or 22-hp, Kohler Command engines; or 20-hp Kawasaki engines.

**COUNTRY CLIPPER**  
(515) 872-2544  
Circle No. 252

The new mid-mount, zero-turn radius mower—Model 2200M—maneuvers well and has cutting widths of 48- and 60-inches. It offers the same high production capabilities of larger mowers, says the Corydon, Iowa company. Overall length is 74-inches, tire width is 48-inches.

**ENCORE**  
(402) 228-4255  
Circle No. 253

Encore's new Z48 is built with features that improve cutting performance and durability. Zero radius turning adds efficiency to mowing, and eliminates the need for small trim mowers. The rider is compact enough to maneuver in confined areas. Wide wheel base and oversized rear wheels give exceptional stability on hills.

**EXCEL**  
(800) 395-4757  
Circle No. 254

The 2500 Compact mower is built with high-capacity, deep-tunnel mowing decks. Hydraulic deck lift is standard, and a 22-hp Kohler Command engine provides the power. Excel says the 2500 Compact has "the world's fastest edger attachment." The mower turns within its own length, on counter rotating, independent drive wheels.

A BAC-VAC catcher installs quickly and is easy to remove and empty. The Excel Hustler 3000 features an air-cooled Kohler Command engine.

**EXMARK**  
(402) 223-4010  
Circle No. 255

The Lazer Z is a zero-turn mid-mount with hydraulically-dampened steering, for smooth control. A low center of gravity and wide drive-tire stance provide exceptional traction and unmatched stability. An Instant-Adjust system lets the operator easily change cutting heights from 1-1/2 inches to five-inches from the comfort of the fully-adjustable seat.

**FERRIS**  
(800) 933-6175  
Circle No. 256

The newest mower to the Ferris line is the Pro Cut Z zero-turn riding mower. The Pro Cut Z features an



exclusive, dual-point floating front end. Two mounting joints in the front axle allow vertical travel at each wheel. The company says the mower will provide an unbeatable cut on uneven terrain.

**GRASSHOPPER**  
(316) 345-8621  
Circle No. 257

The Model 725K from Grasshopper is the company's largest air-cooled unit. The mower is powered by a 25-hp Kohler Command V-Twin OHV engine for extra power to optional equipment. The 725K is compatible with all Grasshopper decks, including the Combo Mulching Deck, which is available for all Grasshopper dual-path, hy-

drostatic direct-drive, zero-radius power units.

**KEES**  
(402) 223-2391  
Circle No. 258

The Kees Hydro provides smooth, positive and responsive fingertip control for instant forward, reverse and turning without slippage on inclines or in wet conditions. The results are increased productivity and greatly reduced operator fatigue.

**RANSOMES**  
(800) 228-4444  
Circle No. 259

Ransomes' Bob-Cat ZT 200 offers true zero-turn capability. Tires are 23 x 10.50-12 for increased floatation. The wide design means peak performance on hills. A 22-hp Kohler command engine with dual hydrostatic drive brings power to

the task at hand, and six anti-scalp rollers produce a quality cut.

**SCAG**  
(414) 387-0100  
Circle No. 260

The SSZ is available in 48-, 52- and 61-inch cutting widths, and cutting heights can be conveniently changed from the operator's seat. Engine options include 18-, 20- or 22-hp Kohler Command models. Additional features include a convenient electric blade engagement clutch, tapered roller bearing spindles and an oversized five gallon fuel tank.

**SNAPPER**  
(770) 954-2500  
Circle No. 261

The Snapper Z-Rider line of mid-mount mowers offer joystick steering and maneuverability. Snapper Z-Rider have been designed to serve the varying needs of commercial users. Fingertip maneuverability is possible due to the single-lever joystick that enables point-and-go steering. A pivoting front axle and 20-inch rear tires help to provide maximum traction and stability.

**STEINER**  
(330) 828-0200  
Circle No. 262

The Model 202 "floats" over uneven terrain with a unique

mower deck that flexes and moves, for an even and clean cut. The cushioned hydrostatic levers give operator smooth control with minimal training. Twin hydrostatic controls provide a steady ride and smooth power, while a single park lever and cutting height handle allow for fast, easy adjustments.

**TORO**  
(612) 888-8801  
Circle No. 263

The Z Master is a out-front type, zero-radius tractor. The Z320 is equipped with a 20-hp Kohler Com-



mand vertical shaft engine. The Z325 has a 25-hp Kohler Command vertical shaft engine. With a forward ground speed of up to eight miles per hour and a reverse speed of four miles per hour.

**WALKER**  
(970) 221-5614  
Circle No. 264

Walker zero-turn mowers are easy to clean and maintain, thanks to the new tilt-up deck option. A hinged deck carrier frame, large retractable handle on front of the deck and roller wheels on the back provide quick, easy tilt-up of the deck assembly. One person can tilt the deck up and then lower to the normal operating position in less than 15 seconds.

**ZIPPER**  
(316) 775-7766  
Circle No. 265

The Zipper TS commercial mower decks swing into the near vertical position for easy, time saving maintenance and cleanup. The electric deck lift makes curbs and obstacles a snap to crossover. **LM**



# New perennials ADD VARIETY

by STEPHANIE COHEN

Landscape contractors, designers and architects are always looking for 'the perfect perennial,' which they expect to excel in the following categories:

- ▶ long season of bloom;
- ▶ very little insect or disease problems;
- ▶ adaptable to a wide variety of soil types and climates;
- ▶ low maintenance, little dead-heading, staking, fertilizing and dividing;
- ▶ great looking foliage from spring to fall;
- ▶ more than one season of interest.

This miraculous plant in reality doesn't exist unless your materials are made of plastic! However, for both commercial and residential sites there are some perennials that come close to these high expectations. Please remember that the following sug-

gestions are my preferences, and each person in the field is very likely to give you a different list. Perennial people are a very feisty and opinionated group.

Most of the perennials listed below can fulfill the requirements mentioned before. Commercial landscape designers must also consider drought tolerance, since many plantings have no sprinkler systems and are not generally watered. For either commercial or residential work, plant in rather large drifts for maximum effect with those plants that have a long season of bloom.

## Shade plant favorites

One of the areas that I feel is now exploding is shade plants. There are now many new cultivars of Heucheras ('Velvet Knight', 'Chocolate Ruffles', Raspberry Regal'), Heucherellas ('Rosalie', 'Bridget



Veronica 'Icicle'



Ajuga and tiarella

Bloom'), Lamiums ('White Nancy', 'Shell Pink', Elizabeth de Haas'), and Pulmonarias ('Pierre's Pure Pink'). These provide good foliage color and interesting flowers.

There are always new Hostas, but 'Patriot' seems to be high on the list of what has been selling.

As far as sun plants, there are always great new daylilies on the market, particularly rebloomers:

- ▶ 'Stella de Oro' and her siblings
- ▶ 'Joan Senior'
- ▶ 'Stephanie's Dream'
- ▶ 'Fairy Tale Pink'
- ▶ 'Barbara Mitchell'
- ▶ 'Happy Returns'

Dr. Darrel Apps and Centerton Nursery are selecting and selling daylilies with a high bud count of 30 or 40 buds which they call "Trophy Taker" daylilies. This is a change from the old-fashioned kind that barely bloomed two or three weeks.

There are now many more cultivars of our sun-loving native herbaceous flowering plants and grasses. Many of those listed are natives because they are easy care plants once they are established. Certain cultivars

## SUGGESTIONS FOR 'PERFECT' PERENNIALS

<i>Coreopsis verticillata</i>	'Moonbeam' or 'Zagreb'	Threadleaf Coreopsis
<i>Scabiosa columbaria</i>	'Butterfly Blue' or 'Pink Mist'	Pincushion Flower
<i>Rudbeckia fulgida</i>	'Goldsturm'	Black Eyed Susan
<i>Kalimeris pinnatifida</i>	'Hortensis'	Japanese Aster
<i>Achillea</i>	'Apple Blossom'	Yarrow
<i>Calamintha pepeta</i>	'White Cloud'	Calamint
<i>Leucanthemum maximum</i>	'Becky'	Shasta Daisy
<i>Eupatorium maculatum</i>	'Gateway'	Joe Pye Weed
<i>Gaura lindheimeri</i>	'Whirling Butterflies'	Wand Flower
<i>Heliopsis x helianthoides</i>	'Summer Sun'	
<i>Monarda x</i>	'Marshall's Delight' or 'Jacob Cline'	False Sunflower
<i>Phlox paniculata</i> 'David'	'Shortwood'	Garden Phlox
<i>Lamium maculatum</i>	'Shell Pink'	Dead Nettle
<i>Dicentra eximia</i>	'Luxuriant'	Fringed Bleeding Heart
<i>Corydalis lutea</i>		Yellow Bleeding Heart
<i>Geranium</i>	'Max Frei'	Cranesbill
<i>Iberis sempervirens</i>	'Autumn Beauty' (reblooms in fall)	Candytuft
<i>Nepeta cultivars</i>		Catmint
<i>Malva sylvestris</i>	'Zebrina'	Rose Mallow
<i>Veronica</i>	'Goodness Grows', 'Icicle', 'Sunny Border Blue'	Speedwell
<i>Hemerocallis</i>	'Trophy Taker' daylilies	





Rudbeckia and miscanthus dominate this residential site.



Variegated grasses with daylily.

are better because—in the case of *Phlox* or *Monarda*, they get little or no mildew.

The biggest opportunity for the green industry is to combine perennials and annuals in commercial settings.

If your clients can be educated to see the beauty, diversity, ease of maintenance, and eventually lower long run cost, our landscapes would be more colorful and ecologically diverse.

Think of ways to build landscapes that clients will accept and that will result in bigger sales for the contractor and designer. **LM**

*The author is an instructor in herbaceous plants at Temple University, and education director for Waterloo Gardens, Devon/Exton, Pa.*

## Perennial sources

- |  |  |
|--|--|
| Greenleaf Enterprises<br>17 W. Main St.<br>Leola, PA 17540<br>(717) 656-2606         | Kurt Bluemel, Inc.<br>2740 Greene Lane<br>Baldwin, MD 21003<br>(410) 557-7229                          |
| Dunvegan Nursery<br>1001 S. New St.<br>West Chester, PA<br>19382<br>(610) 344-7566   | J. Van Hoorn & Co.<br>P.O. Box 814, 27617<br>Rt. 176<br>Island Lake, IL 60042<br>(708) 526-1811        |
| Northcreek Nursery<br>RR#2, Box 33<br>Landenberg, PA 19350<br>(610) 255-0100         | American Ornamental<br>Perennials<br>29977 S.E. Wentz Lane<br>Eagle Creek, OR 97022<br>(503) 637-33095 |
| Babikow Greenhouse<br>7838 Babikow Rd.<br>Baltimore, MD<br>2122337<br>(800) 835-7617 | Terra Nova Nursery<br>4309 S.W. Cullen Blvd.<br>Portland, OR 97221<br>(503) 2245-9543                  |
| Bluemont Nursery<br>2103 Blue Mount Rd.<br>Monkton, MD 21111<br>(410) 329-6226       | Centerton Nursery<br>R.D. 5, Box 44498 B<br>Bridgeton, NJ 08320<br>(609) 455-0926                      |

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## New look for Liberty Cannas

Although cannas have been in cultivation for more than 400 years, medieval gardeners would be stunned by the changes in modern-day varieties.

The tall, large-leaved plants originate from South America and the West Indies, and are spectacular in bloom.

In the mid-70s, hybridizers were quick to fill the need for compact-flowering cannas

with short sturdy stems. Jack Roberson, owner of American Daylily & Perennials, Grain Valley, Mo., was one of the first successful canna hybridizers. His compact Liberty canna is trademarked, and known for its dwarf growth habit and tendency for rapid increase. It is also tolerant of heat, rot and leaf roller worm.

Two varieties you should consider are:



Liberty Cantaloupe: clear melon bloom.

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Liberty Scarlet: grow on three-foot stalks.

Liberty Cantaloupe Canna, with a mouth-watering clear melon bloom, for use with ornamental grasses or soft-colored perennials. The blossoms are set on stalks that reach to more than three feet high, with clean, bright green foliage.

The Liberty Scarlet Canna features extra large, seven-inch flowers of bright, lipstick-red, set against unusual burgundy foliage on three foot stalks.

Liberty Scarlet increases rapidly, but is slow to set seed, and maintains a clean look long into the season. □

SOURCE: AMERICAN DAYLILY & PERENNIALS, (816) 224-2852; FAX: (816) 443-2849.



# Bio weed control's promise

*The work of Dr. Nick Christians and others at Iowa State University is unlocking the potential of "natural" weed controls.*

by RON HALL/ Managing Editor

**W**hen Dr. Nick Christians started working with corn gluten meal 11 years ago he wasn't looking for a "natural" weed control. In fact, he wasn't looking for a herbicide at all. He was doing experiments focusing on *Pythium*.

What he discovered, though, has since developed into one of the first commercially available "natural" pre-emergence herbicides for the turfgrass market. It provides a valuable, if still expensive, tool for turf managers.

It's also the first in what is certain to be a family of natural herbicides for turf and other crops too. Iowa State University has gained patents on the use of corn gluten meal, and other natural products, in the manufacture of these pre-emergence products. All of this resulted after Christians discovered that something in corn gluten meal, which he was using as a laboratory growing medium, inhibited root development in germinating plants. "It seemed to be a growth regulator effect," he explained.

He noticed that after normal germination, the bentgrass plants toppled over and died. This occurred as growing conditions dried. He identified the

source of the activity as corn gluten meal (CGM), a by-product of the wet milling process of corn.

But what was it about the CGM that he was using, which was 60 percent corn protein, 10 percent nitrogen by weight, that caused germinating plants to die?

The question kicked off months of painstaking laboratory work by Dianna Liu, a talented student who had just finished her masters in food chemistry. Liu first developed a water soluble CGM extract. It contained a high level of the inhibitory compounds. From this extract, Loo was able to identify five distinct compounds that had biological activity in the CGM extract. They are called dipeptides. (Since then, Liu has also isolated a promising pentapeptide from CGM.)

Products arising from these discoveries are now entering the turfgrass market. Because the CGM is 10 percent nitrogen by weight, it fertilizes turfgrass as it provides weed control.

Gardens Alive, a company specializing in natural products, was the first to gain a license from Iowa State to market a CGM-based pre-emergent/fertilizer combination for turf. It called the product A-Maizing Lawn. One application—20 lb.

per 1,000 sq. ft.—in the spring provides 2 lbs. N, plus the natural herbicide. A second application in mid August provides added control plus another 2 lbs. of N. The Indiana company sold the product mail order the past two seasons. Sales were stronger than expected, said Christians, despite the product's hefty price tag.

Iowa State is in the process of licensing others to market the natural pre-emergence product. The price should fall, he explained. Even so, it can't compete pricewise with chemical pre-emergence.

"It's going to expensive," said Christians. "If you want to use a standard weed and feed, you can do it cheaper.

"It's not going to be like a standard such as pendimethalin or whatever you happen to be using that gives 90 percent control the first time."

In fact, the corn gluten meal's activity seems to be cumulative. Christians' field tests showed 60 percent control of crab grass with the first season's application, about 80 percent for second-year applications and 90 percent the third.

Further studies have shown that the CGM product has activity against many broadleaf weeds too, including black medic, black nightshade, chickweed and dandelions. **LM**

**COMPARISONS OF THE PERCENTAGE OF CRABGRASS CONTROL IN KENTUCKY BLUEGRASS PLOTS TREATED WITH GRANULAR CORN GLUTEN MEAL (CGM) IN 1991 THROUGH 1995.**

lbs. CGM 1000 sq. ft.	lbs N 1000 sq. ft.	Percent Crabgrass Reduction				
		1991	1992	1993	1994	1995
0	0	0	0	0	0	0
20	2	58	85	91	70	36
40	4	86	98	98	97	88
60	6	97	98	93	98	93
80	8	87	93	93	87	75
100	10	79	94	95	86	75
120	12	97	100	100	98	84

**COMPARISONS OF THE PERCENTAGE OF BROADLEAF WEED REDUCTION IN KENTUCKY BLUEGRASS PLOTS TREATED WITH GRANULAR CORN GLUTEN MEAL (CGM) IN 1994 AND 1995**

lbs. CGM 1000 sq. ft.	lbs N 1000 sq. ft.	Percent Weed Reduction			
		CLOVER		DANDELION	
		1994	1995	1994	1995
0	0	0	0	0	0
20	2	81	56	71	49
40	4	90	64	100	77
60	6	98	93	100	89
80	8	100	76	98	96
100	10	94	84	100	98
120	12	90	93	100	100

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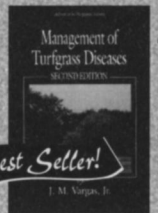
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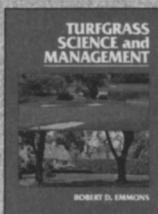
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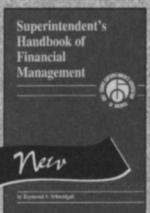
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# SPRING FERTILITY: test first, then apply

*Don't be in a hurry to fertilize in the spring. Get a soil test and wait until the turf is growing.*

By DR. BILL KNOOP/ Technical Editor



**Knoop: don't be too early with warm-season applications.**

**Nitrogen is 'number one' in its ability to produce high growth.**

**J**ust as many managers have been busy over the winter months getting equipment ready for the next season, it's time to make plans for the landscape fertility program.

The goal of any fertility program is to supply the landscape with all the nutrients it needs and can use on a timely basis. Our job is to determine just what nutrients the landscape needs. It makes no sense to apply unneeded or unused nutrients. Many needed nutrients are already available and we may not need to apply them. Major nutrient sources are the

soil, air, water and the decomposition of organic matter. Many landscape plants can grow very well just on these, but when plants like the turfgrasses are planted and grown in highly dense populations, the natural supply of nutrients may not be adequate.

There isn't any totally accurate way to determine just what nutrients or fertilizer a landscape needs, but a soil test will provide a fairly good idea. Now is absolutely the best time to test the soil. It's been a long time since any fertilizer was applied and none of the plants are using any significant amounts. You should get an accurate indication of the soils' nutrient status. With all the concern about the environmental dangers of over fertilization, there is no reason not to soil test.

#### **Know the soil pH**

It's possible that the soil test

results will indicate that it's not necessary to apply some of the nutrients that have been a part of the fertility program in the past. Another valuable part of soil testing is that of determining soil pH. Remember, the soil probably contains nearly all the nutrients the landscape needs but these nutrients could be tied up chemically with other elements. Research has shown that when the soil has a pH of around 6.5, most plant nutrients are in an available form. Here again it makes sense to take advantage of these naturally occurring nutrients by simply following any pH adjustment recommendations detailed on the soil test report.

Even though the soil test report indicates which nutrients the landscape needs and what fertilizer to use and maybe fertilizer rates, and application timing, there are still several fertility management decisions to make.

Just about every landscape will need some nitrogen. Nitrogen is "number one" in its ability to produce high growth rates. Research has proven that fast growth rates aren't necessarily desirable. This means nitrogen should only be applied in modest amounts. Plants prefer nitrogen that is in its nitrate form. Nitrate nitrogen can get into the plant and be used by the plant quicker than any other form of nitrogen. All the other forms of nitrogen must





go through changes to the nitrate form in the soil before they can get into the plant. Many of these changes depend on soil organisms such as bacteria. Soil organisms are not too active in cold, wet soils. Under these environmental conditions only nitrate nitrogen may stand a chance of being used.

The value of using a slow-release nitrogen source for most landscapes has been well documented. Just realize that the slow-release nitrogens do not all become available the same way. The application of one of them during environmental extremes may be a problem.

#### When growth begins

The first application of fertilizer in the spring, north or

south, at least for turf, should be when growth begins. Many feel this should take place after two or three mowings, not on the first, sunny spring day. Note the optimum temperature range for both root and top growth of the cool-season and warm-season turfgrasses. Only when the whole plant is actively growing will it take up the highest percent of fertilizer nutrients. It doesn't make a lot of sense to apply a fertilizer during unfavorable environmental conditions. Remember we can fertilize cool-season turfgrasses in the fall because the soil temperatures are still favorable for root activity.

A common mistake is to fertilize warm-season turfgrasses too early in the

spring. Many times green-up occurs but the plant still may not be warm enough to take advantage of any fertilizer. People not totally familiar with the normal growth cycle for warm-season turfgrass complain about their turf not being responsive to early spring fertilizer applications. Note the optimum growing temperatures. Many times the plant is simply not warm enough to begin active growth even though it may have greened up.

Lawn service companies usually do not have the chance to apply fertilizer to their lawns at the absolutely best time. Chances are that because of work load some lawns will be fertilized before the best time arrives. Think about using a lit-

tle nitrate nitrogen in those first days of the round. It should provide some response while the slow-release material is waiting to kick in.

As for the trees and the other woody plants, they usually get enough nutrients from the turf fertilizer. If there is a need for even more fertilizer for the woody plants, applications are made during late winter and early spring, long before the turfgrasses need any.

Don't be in a hurry to fertilize in the spring. Get a soil test and wait until the turf is actively growing. **LM**



*A World With Trees...with productive land, clean air and water, and habitat for wildlife*

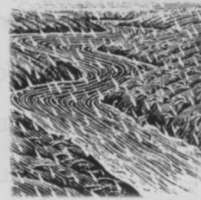
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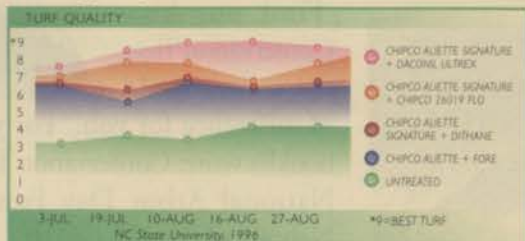


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