

# TURCAM<sup>®</sup>

INSECTICIDE



**Fast-Acting,  
Long-Lasting  
Grub Control**



TURCAM<sup>®</sup>'s advanced carbamate chemistry goes to work fast—and offers effectiveness that lasts—against white grubs as well as mole crickets, chinch bugs, sod webworms and other destructive pests. This hard-working insecticide is odorless...cost-effective...easy to apply. What's more, TURCAM won't tie up in thatch or damage turf and ornamentals.

Now available in two convenient forms—TURCAM WP a wettable powder and TURCAM 2½G granular—this versatile insecticide can take care of your toughest pest control problems. For more information on TURCAM, contact the NOR-AM

Communications Department or your local distributor.

CAUTION: TURCAM<sup>®</sup> is a restricted use pesticide.

 **NOR-AM**  
NOR-AM CHEMICAL COMPANY

3509 Silverside Road, P.O. Box 7495, Wilmington, DE 19803

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



Recreational turf managers need to implement programs that promote the development of a strong, deep root system. Among the most important management factors are proper nutrition and moisture levels, temperature, mowing height and others.

bluegrass sod has illustrated the inverse relationship between nitrogen and tall fescue-Kentucky bluegrass shear strength. This same work was unable to establish a definite relationship between nitrogen and root number in the surface  $\frac{3}{4}$  inches.

The principle of excessive nitrogen reducing bermudagrass shear strength has been illustrated by Mitchell and Dickens. They examined the impact of nitrogen fertilization on the sod strength of Tifway and Tifgreen bermudagrass and showed a tendency for 0.5 lb N/1000 sq. ft. applications at 4 week intervals to produce greater shear strength than 2 lb. N/1000 sq. ft. applications at either 2 or 4 week intervals. Therefore, moderate levels of nitrogen application appear to be important in the development of maximum shear resistance in both cool-season and warm-season grasses.

Choosing aggressive varieties that perform well in your region is a particularly important. A variety may have superior shear resistance in one region of the country and have susceptibility to a disease in another region. Such a condition minimizes the importance of shear strength because the disease destroys turf quality.

#### Proper moisture

In the transition zone, Kentucky bluegrass varieties such as America, Victa, Sydsport, Georgetown, Cheri, Vantage, Baron, Ennundi, Classic, Merit, Midnight and Gnome have provided a good combination of quality and shear resistance.

Maintaining adequate but not excessive moisture on athletic field turf is critical. Wet turf will certainly shear easier than dry turf. There is the practical management concern of needing to maintain enough moisture in the profile to keep root hairs alive while not putting so much moisture in the soil that increased compaction and shear damage is likely.

### *Aerification is a management practice that is absolutely essential to the quality production of turf on an athletic field.*

Soils are more prone to compaction damage when they are near field capacity. Therefore, allowing fields time to dry prior to compacting events will certainly reduce compaction-related problems and minimize shear strength. Likewise, fast use of rain tarps prior to events can prevent significant loss of turf shear strength.

Maintaining athletic fields with excessive moisture also leads to succulent leaf tissue which reduces footing.

Cool-season grass root production is going to be maximum during spring. There is a secondary burst of root growth associated with the cool weather of fall, but it is paltry compared with spring root production.

Summer's high temperatures are going to minimize the potential to increase shear strength through summer root generation. Syringing of athletic turf will be helpful in reducing the mid-summer root dieback caused by excessive high temperature.

#### The drought resister

The bermudagrasses are, of course, very capable of sustaining good root growth through hot summer temperatures. As temperatures cool in the late summer and early fall, bermudagrass root growth will slow, naturally decreasing shear resistance. This lost shear strength can be minimized with the use of plastic and geotextile tarps that trap heat and keep the bermudagrass green and growing roots.

Maintaining proper mowing frequency is critical to maintaining the maximum root system and shear strength. Actual mowing frequency needs to be geared to the growth rate and frequent enough to not be removing more than  $\frac{1}{3}$  of the existing green tissue with any one mowing (excessive defoliation of turfgrass has been shown to cause substantial root dieback).

There is a direct relationship between shoot tissue and the amount of root system that can be sustained by it. Obviously then, higher mowing heights will lead to greater root production. Whether or not a higher mowing height will lead to increased shear strength is not clear.

Agronomic principles dictate that higher mowing heights will produce greater root systems. However, higher mowing heights did not produce greater sod shear strength on tall fescue-Kentucky bluegrass mixtures and Tifway and Tifgreen bermudagrass.

#### Mowing frequency

Work by Jusks and Hansen on Kentucky bluegrass has demonstrated that more frequently mowed turf has less potential for root, rhizome and shoot production. Kentucky bluegrass maintained at a two-inch mowing height and mowed 5 times a week had 21 percent less root system and 34 percent less rhizome growth than the same turf mowed once per week. In this same study, turf mowed at one inch and mowed 5 times per week had 46 percent less roots and 45 percent less rhizomes. Therefore, maintaining a reasonable mowing frequency and mowing height will likely maximize shear strength by maximizing root and rhizome development in Kentucky bluegrass.

*continued on page 64*

# Three ways Mazda trucks outperform the competition.



1989 Mazda B2200

If you're about to commit your company's resources to building a truck fleet, you've probably looked at Ford Ranger, Chevrolet S-10, Toyota and Nissan. But your shopping list isn't complete until you've taken a good look at Mazda. Because Mazda trucks offer some very important advantages over the competition.



**Mazda trucks: Offer a 36-month/50,000-mile "bumper-to-bumper" warranty—The best in the truck business.\*\***

**Mazda trucks: Number one in overall customer satisfaction for three straight years.\***

1986	1987	1988
MAZDA #1	MAZDA #1	MAZDA #1
TOYOTA #2	TOYOTA #2	TOYOTA #2
NISSAN #5	NISSAN #3	NISSAN #4
CHEVROLET S-10 #6	CHEVROLET S-10 #7	FORD RANGER #8
FORD RANGER #9	FORD RANGER #9	CHEVROLET S-10 #10

MAZDA	TOYOTA	NISSAN	FORD	CHEVROLET†
36 MONTH 50,000 MILE WARRANTY	36 MONTH 36,000 MILE WARRANTY	36 MONTH 36,000 MILE WARRANTY	12 MONTH 12,000 MILE WARRANTY	12 MONTH 12,000 MILE WARRANTY

**Mazda trucks: Offer the most truck for your money.††**

Standard Features	Mazda B2200 Base	Toyota Standard	Nissan Standard	Ford Ranger "S"	Chevrolet S-10 "EL"
5-speed	Standard	N/A	Standard	Standard	Standard
Automatic transmission	Optional	N/A	Optional	N/A	N/A
Double-wall cargo bed	Standard	Standard	Standard	Standard	Standard
Tinted glass	Standard	Optional	N/A	Standard	Optional
Steel-belted radials	Standard	Standard	Standard	Standard	Standard
Full carpeting	Standard	N/A	N/A	N/A	N/A



**Mazda B2200 Cab Plus.** Combining spaciousness with practicality, the Cab Plus is the first extended-cab compact truck that allows two adults to sit facing forward in optional rear jump seats.

To find out even more ways Mazda outperforms the competition, contact: Fleet Department, Mazda Motor of America, Inc. 7755 Irvine Center Drive, Irvine, CA 92718. Or call (714) 727-1990.

\* J.D. Power & Associates 1986 and 1987 Compact Truck CSI and 1988 Light-Duty Truck CSI customer satisfaction with product quality and dealer service.  
 \*\* Warranty coverage without deductible. See your Mazda Dealer for limited warranty information.  
 † GM's 36-month/50,000-mile "Bumper-to-Bumper Plus" Warranty requires \$100 deductible per visit after 12 months/12,000 miles.  
 †† Comparisons with other makes based upon available competitive data.



Maintaining sharp mowers is also important in developing shear strength. It has been demonstrated that dull mowers significantly reduce turf quality, increase leaf spot disease activity and increase gasoline consumption by 22 percent.

Obviously maximum light absorption is desirable. This generally will maximize food production if temperatures are not excessive. Shaded turf tends to have thinner cell walls and be more prone to traffic injury. Excessive use of non-ventilated rain tarps can lead to inefficient use of stored food reserves in respiration. Therefore, quick removal of rain tarps is important to maintaining good shear strength.

### Hormones affect roots

Preliminary research at Virginia Tech by J.M. Geatley and R.R. Schmidt, discussed in the Virginia Tech Field Day Reports in 1987 and 1988, has demonstrated substantial root and shoot stimulation of turfgrass using seaweed extractable cytokinins and "cytokinin-like" fungicides.

It is known that hormones do control root and shoot growth and once the mechanics of how to utilize hormones with maximum efficiency is

worked out, it is possible that increased shear strength will result.

Their research has demonstrated increased shear strength on Kentucky bluegrass sod utilizing "cytokinin-like" fungicides such as propiconazole and triadimefop.

Compaction will reduce shear

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*Phosphorus and nitrogen appear to be the most influential nutritional elements on root production. Of the two, nitrogen is most often mismanaged.*

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strength by its negative effect on root growth and turf quality. A management program that includes aggressive aeration coupled with good traffic control, irrigation management and turfgrass selection can help minimize this negative impact. Capital improvements that provide

efficient irrigation design, modification of soils to resist compaction and installation of drainage will all help to reduce this negative impact of compaction.

### Aerification desired

Coring aerification increases air exchange, water infiltration, water retention, nutrient penetration and thatch decomposition while decreasing surface water runoff and irrigation frequency. It is a management practice that is absolutely essential to the quality production of turf on an athletic field.

Herbicides have the potential to harm turfgrass if improperly used. Most broadleaf herbicides, when applied in accordance with label recommendations, do little damage to turfgrass root systems. However, some preemergence and postemergence annual grass control herbicides do have the potential to reduce root system development even when used at recommended rates. Therefore, it is wise for athletic field managers and sod producers to critically scrutinize the data with regard to the potential of their preemergence herbicide to cause root pruning.

Work on cool-season grasses suggest that bensulide, pendimethalin and proflaminate have the potential to root prune Kentucky bluegrass and reduce shear strength. Likewise, bensulide and metribuzin do have potential to reduce bermudagrass root development.

### Pest control

Timely and effective control of diseases, insects and nematicides is obviously important as these pests have tremendous potential to reduce turf quality, root growth and turf shear strength.

In summary, utilize low to moderate levels of nitrogen and adequate levels of supplemental nutrition. Select the varieties that have the greatest potential for providing the best combination of mowing height and frequency that removes no more than 1/3 of the existing green tissue. Remember that low mowing heights and intense mowing frequency reduce root and rhizome development in Kentucky bluegrass.

Minimize the negative effects of compaction through implementation of an aggressive aerification program.

Carefully select preemergence herbicides to minimize the potential for root pruning. Maximize pest control effectiveness by applying the most efficacious materials at the proper time and in accordance with label directions. **LM**

## Some People Would Like to Snuff Out Oregon's Grass Seed Industry.

Turfgrass professionals have come to know Oregon grown grass seed as the finest in the world. Now, some legislators here would like to put a stop to field burning... the way we sanitize our fields of turf diseases and pests. This could mean the end of our grass seed industry as we know it, or at least, higher prices in the marketplace.

We need the help of turfgrass professionals. We need to tell our side of the story to legislators and the voting public. That's where you could help. Please help by sending some green back to Oregon.

Please make checks payable to

## OREGON SEED COUNCIL

866 Lancaster Drive SE  
Salem, Oregon 97301  
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# ACCLAIM KEEPS CRABGRASS AWAY FROM THE CLUB!

## Safe, effective crabgrass control.

Here is what golf course superintendents need for crabgrass and goosegrass control. Here is Acclaim® 1EC Herbicide—an aggressive rescue treatment that is truly effective, yet easy on turf. Unlike the old arsenates, Acclaim is effective with just one treatment. And Acclaim won't harm seedlings when applied to new or reseeded turf.

## Be ready for rescues anytime.

The best time for rescue treatments is early,

beginning within 2 weeks of July 4th—but Acclaim controls emerged crabgrass up to 5 tillers and goosegrass up to 3 tillers anywhere, anytime.

So be ready to treat those high-use areas with Acclaim while crabgrass and other problem grasses are still small.

You'll stay on top of crabgrass—and get nothing but compliments on your lush, beautiful turf.



Read and follow label directions carefully. Acclaim is a registered trademark of Hoechst Celanese Corporation. The name and logo HOECHST are registered trademarks of Hoechst AG. The name and logo ROUSSEL are registered trademarks of Roussel Uclaf S.A.

**Hoechst**  
**Roussel**

## ACCLAIM.<sup>®</sup> Because your turf is always on display.

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# EMPLOYEE RETENTION IN TRYING TIMES

As employee pools dwindle, flexible work schedules might be a way to attract and keep good people.

by Ed Wandtke

**T**he green industry in 1989 is experiencing an employee shortfall never before seen by any industry in the United States. Fewer available employees and an upcoming increase in the minimum wage will force you to pay even more for employees that are harder to find and keep.

How can you attract and retain employees in such times? One way is to maintain a reasonable work schedule.

## Defining the job

How many hours do your employees expect to work when they sign on for the season? Do you tell them what impact the weather can have on their work days in the early part of the season?

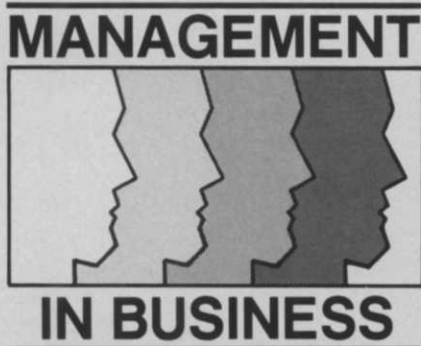
Don't assume that because you explain the working conditions and hours during the interview, turnover will be reduced. Memories are short and long hours and hot weather tend to increase an employee's forgetfulness. Prudent managers need to implement a work schedule that will reduce employee stress due to adverse work and weather conditions.

Some companies currently schedule production to consume more than 10 hours per day, five days a week and one-half day on Saturday. Other companies set production based not on hours but on the number of accounts that need to be produced each day of the week to be certain that all customers are serviced during a round, or weather-related period of time.

Mowing and maintenance firms often book too much work for a given day of the week. Therefore, to encourage their employees to perform this higher workload, they pay their employees on a percentage of production basis.

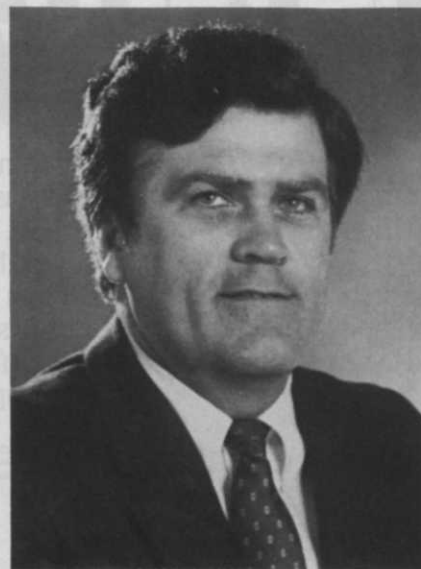
## What's a reasonable workload?

All of these scheduling systems completely ignore the implications of weather conditions on employees' morale and the impact extended hours has on production over a pro-



longed period of time. What can be done to alleviate this heavy-handed production push condition?

Determining a reasonable workload for employees performing various duties in your company should take into consideration the weather, physical exertion, machinery to be used, type of service to be delivered, drive time to and between properties and the length of time needed to service an individual account. These and



Ed Wandtke is a senior consultant with All-Green Management Associates in Columbus, Ohio. He focuses on operations and financial questions.

other variables need to be determined for each route that you operate in your company (compare the actual time to your estimate to determine if your estimates are loose or tight).

## Four or five day week

Many green industry companies discovered that when they scheduled work for five days of the week, they frequently were working all day Saturday and Sunday to complete scheduled tasks. Equipment breakdowns, absenteeism and weather constantly caused them to work these extra days. The result was more absenteeism the following week or less than quality work. Working out a solution to this dilemma was an immediate necessity.

A solution that appealed to the employees and management was a compromise in the length and number of work days. Hours were increased to 10 or 11 for Monday through Thursday. Friday was a day to finish by 5 p.m. Any work not completed during the first five days of the week was performed on Saturday.

## Results of a shorter week

Cutting the scheduled work week to five days resulted in almost all of the crews completing their work by Friday in order to have Saturday and Sunday off. All of these time improvement features were accomplished with the employees personal needs in mind and with no reduction in pay. Morale continued to increase and employees have remained with the company for more than three years even though they are not yet full-time workers.

A potentially undesirable result of this plan is that, if you're asked to bid a Saturday service, you'll have to either double the price or turn the account down.

Knowing when and how to lighten the workload requires planning. Morale, employee retention and company profitability will increase if the owner pays more attention to the hours employees work.

LM



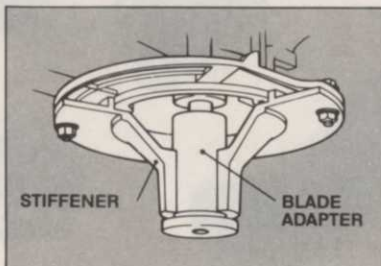
# We stake our reputation on it.

**We're so sure our revolutionary new walk-behind 2-cycle crankshaft system will stand up to what you run into, that we're backing it with an exclusive two-year warranty.**

No one else in the industry offers a two-year crankshaft warranty on small trimming mowers. Because no one else has what Jacobsen has. A revolutionary (patent applied for) crankshaft protection device incorporating an adapter and stiffener that help prevent twisting, bending or breakage. Thus, effectively extending engine and equipment life, while maximizing productive cutting time.

In fact, extensive testing showed this unique Jacobsen design to be

vastly superior to anything in the market. At full throttle, a solid steel, one-inch shaft was placed in the path of the rotary blade. Competitive crankshafts bent on contact, yet the Jacobsen crankshaft survived. Not once, but again and again, without damage.



Combine the exclusive new Jacobsen crankshaft system with our durable 2-cycle engine, rugged lightweight aluminum magnesium alloy deck, heavy-

duty greasable wheels, large five-quart fuel tank and shock-absorbing front bumper and you've got the most reliable commercial walk-behind available. We guarantee it.

So see your nearest Jacobsen Commercial Products dealer for more information and a free demonstration of the industry's most durable walk-behind rotary mower.

Jacobsen Division of Textron Inc., Racine, WI 53403.

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**JACOBSEN  
TEXTRON**

Jacobsen Division of Textron Inc.

# PRODUCTS

## Operator controls lend added safety

Exmark Manufacturing Company has added Operator Presence Controls (OPC) to its full line of commercial power mowers. The company says the controls provide precise fingertip control for safe and easy operation.

When OPC levers are released, the mower engine stops automatically if either the blade or wheel drive are engaged. Easy grip OPC levers are on the mower handles, increasing effectiveness and reducing operator fatigue.

Circle No. 191 on Reader Inquiry Card

## Five-hp engine guns into market

Tecumseh Products Co. of Grafton, Wisc. has introduced the five-hp OVRM50 engine. Sources at Tecumseh say the engine provides a 25 percent increase in horsepower.

Both the OVRM40 and OVRM50 are equipped with an automotive-type paper air filter, two-quart, no-rust fuel tank with large fill opening, easy access oil fill and dip stick and

long-lasting muffler.

Circle No. 192 on Reader Inquiry Card

## Equipment injects turf with polymers

Rainsaver, Inc. manufactures equipment useful for placement of starch-based polymers at the turf root level. According to Rainsaver, these water-absorbent polymers reduce water use by about 50 percent.



The Rainsaver equipment slices the turf every three to six inches, and then injects liquid polymers to a depth of 2 to 2½ inches into the root zone. The polymers hold up to 250 times their weight in water.

Rainsaver says the equipment is well suited for subsurface application of pesticides for grub and mole cricket control.

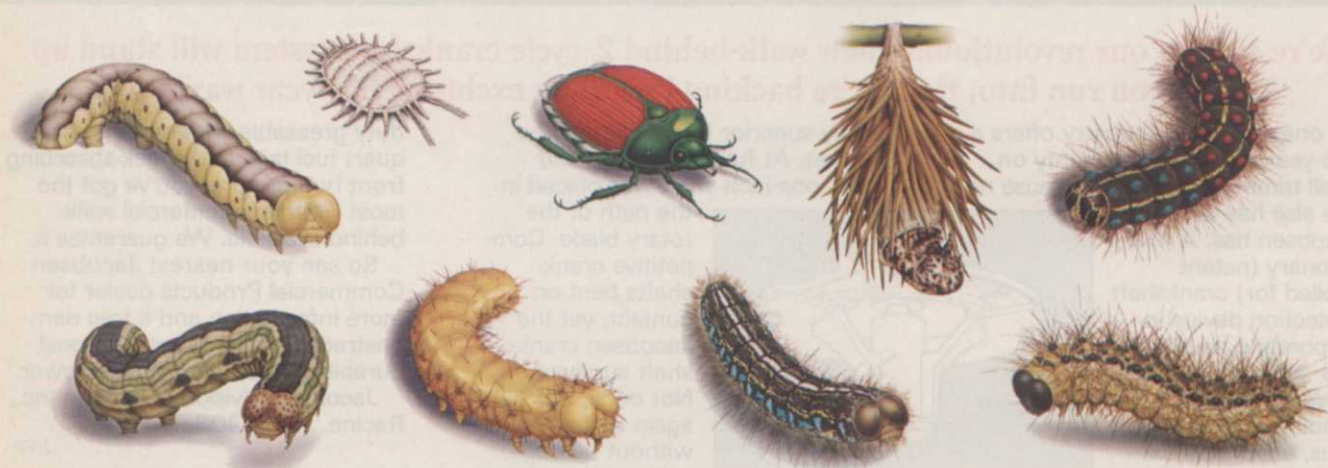
The Rainsaver 360 is designed for lawn care and industrial park areas. The Rainsaver 960 is designed for larger areas and can cover 12 to 20 acres a day with its 7½ inch swath.

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## Flow sensors measure for all services

Data Industrial of Pocasset, Mass. now offers a new line of 4000 Series flow sensors. The sensors' in-line, flow-through design uses a tangential six-bladed impeller for liquid flow measurement. The sensors are offered in nominal ½", ¾" and 1" pipe sizes, and are molded of PVC, CPVC and PVDF materials for all services, including deionized water and corrosive fluids. Pressure ratings of 350 PSI @ 70° and temperature ratings of 220° at 98 PSI are available depending on material selection. The unit's non-magnetic detection circuit provides accuracy within 1% full scale.

# EASY COME.



Top row: Leaf-feeding caterpillar, Mealy bug, Japanese beetle, Bagworm, Gypsy moth. Bottom row: Cankerworm, Leaf skeletonizer, Tent caterpillar, Webworm.





The 4000 Series units are compatible with a full range of Data Industrial transmitters and displays.

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### Biostimulant has had good results

ROOTS is a new root growth enhancer developed to promote root growth in turfgrass, trees and ornamental plants. ROOTS is composed of cold and warm water keip extracts, humic acids, plant enzyme catalysts and a metabolizing agent. It may be mixed in dilution with most fertilizers, pesticides and herbicides ex-

cept calcium nitrate and calcium phosphate.

For best results, dilute one gallon in at least 50 gallons of water.

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### Three-in-one helmet for safe trimming

A tri-function helmet system developed by Stihl for logging and tree trimming professions features a pat-



ented front visor sealing. The visor keeps saw dust and debris from falling between the mesh screen and hard hat.

The lightweight system has a noise reduction rating of 22 decibels. Col-

ored bright orange to promote the visibility and safety. Available with a patented rear rain shield.

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### Disc trencher in the groove

Dosko offers two models of disc trenchers, both with a maximum below grade cutting capacity of one foot.

The RC-14 is powered by an 18 hp/2800 RPM Kohler gasoline engine



with electric start.

The smaller RC-12 is a 12 hp/2800 RPM gasoline model with recoil start.

Trench widths for both models are

# EASY GO.

NEW!

The invasion is coming. An army of hungry insects, ready to destroy everything you've worked so hard to achieve.

But with new TEMPO® insecticide, they're stopped dead in their tracks. On arrival. With excellent residual



control. And all while using about 60% less chemical than most of the competition.

It's really a simple idea. Ornamentals need protection when insects mount their attack. With new TEMPO, the battle is over before it's even started. No contest.

Mobay Corporation  
A Bayer USA INC COMPANY



Specialty Products Group  
Box 4913, Kansas City, MO 64120

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two, three and four inches.  
Circle No. 197 on Reader Inquiry Card

### Custom control system monitors application

The CCS100 Custom Control System from Dickey-John automatically



maintains a preselected application rate for herbicides, insecticides, fungicides and liquid fertilizers, even as ground speed varies.

The system features a quick-acting, stainless steel control valve and sealed components for reliability and weather resistance. Digital readout displays pressure and gallons per acre or gallons per 1000 sq. ft. The unit also contains an audible alarm system to warn of inaccurate application.

Circle No. 198 on Reader Inquiry Card

### Control chemical drift with new spray tip

The XR TeeJet from Spraying Systems Co. may help turf applicators reduce the risk of chemical drift and eliminate weeds entrenched in rough terrain.

The patented extended-range spray tip is designed to maintain a consistent pattern over a wider range of spraying pressures. With the extended-range tip, applicators can adjust droplet size and flow rate without stripping down booms. To control drift, adjust the XR TeeJet to as low as 15 PSI (60 PSI maximum for broadcast spraying). Spray angles range from 80 to 110 degrees.

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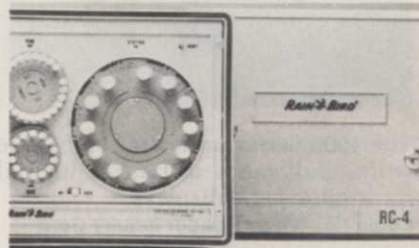
### Conserve smarter with RC controllers

Rainbird has updated its line of RC Series electro-mechanical controllers. The RC-4C, RC-7C and RC-1260C now feature a terminal strip for convenient installation of field wiring to valves and a quick-disconnect plug for easy connection of

the controller panel.

The RC Series is available in four, seven or 12-station models. A master power switch permits system shut-down during rain and retains the program during system maintenance.

Available with station timing of three or six minutes to one hour per station. Program up to one to 23 automatic starts per day.



Circle No. 200 on Reader Inquiry Card

### Backhoe equipped for greater depth

New Age Equipment, Inc. of Lafayette, Ind. has released its Model 99 high performance backhoe for skid steer and 3-point hitch applications.

An extendable dipperstick in-

# MITE.

