

"Hey Bill,  
 Look at this photo RGB sent  
 me... It shows what happened  
 when Lawn-Plex<sup>®</sup> was applied  
 with MSMA!"

"Wow, look at that green!  
 I've heard great things about  
 Lawn-Plex. I'll use it in my  
 next MSMA tank mix.  
 No more brown lawns  
 for me!"



MSMA without Lawn-Plex<sup>®</sup>

Unretouched Photo Taken 6/30/87  
 On Bermudagrass

MSMA tank mixed with Lawn-Plex<sup>®</sup>

**T**ired of getting burned? Lawn-Plex<sup>®</sup> fully chelated micronutrients provide a cost effective way to reduce stress and burn on lawns, fairways...all fine turfgrass. Similar results can be obtained by adding Agri-Plex<sup>®</sup> to ACCLAIM<sup>®</sup> tank mixes. Acclaim<sup>®</sup> is a registered trademark of Hoechst AG



Booth #306-308

*San Antonio*  
**PLCAA/87**

Unequaled Micronutrient Technology

**RGB**  
 LABORATORIES INC.

Contact your local RGB Distributor or call:

1531 Charlotte St., Kansas City, MO 64108 **(816) 474-3342**

Circle No. 130 on Reader Inquiry Card

# PROBLEM MANAGEMENT

by Balakrishna Rao, Ph.D.

## Applying insecticides

**Problem:** In our lawn care service, we use surface insect control insecticides during May and June. We are happy with the results except for billbug problems. We see a large number of adults, particularly during late August. Can we expect good control of billbugs if we apply insecticides in August and September instead of around May and June? (Pennsylvania)

**Solution:** As you have observed, billbugs can cause serious damage to turfgrass unless they are properly managed. For best results, as with any pest management program, it is important to have proper identification of the pest, proper pesticides, methodology and timing. If these are not followed, it may result in variable performance and might explain the reasons why you are having problems in managing the billbugs.

In addition, it is also important to know the life cycle of the billbug in order to provide pesticide programs during the vulnerable stage of development. The following discussion might be helpful in understanding and managing the problem. Billbugs overwinter as adults and become active in early spring. They feed on turf and lay eggs in feeding holes on tillers from mid-May through July. The eggs hatch in a week or so, and the young, legless larvae tunnel through the tiller and crowns and eventually become soil-inhabiting pests, feeding on grass roots from June through August.

During the feeding activity, their presence may go undetected because the damage will be masked by drought symptoms, often in many areas. These drought symptoms are often mistaken for moisture stress. Therefore, if the brown spots fail to green up with the onset of cool and moist weather in the fall, a close examination may reveal insect activity.

In some situations, one may find billbugs alone or with infestations of chinch bugs or sod webworms. It is not uncommon to find all three of these pests in a brown and declining lawn.

In answer to your question, August is not a preferred time for insecticide application for adult billbug control, because the majority of the adults might not have emerged or some of them might be moving to overwintering sites in nearby plant materials during this period. Because of the lack of information about fall treatment for billbugs, I suggest that you try fall treatments on a small test plot first to learn more about the effectiveness. Reports from Ohio State suggest that a mid-April application of insecticide gives best billbug control. The objective is to control the egg-laying population to reduce any future generations.

The second-best time would be directed against the larvae when they are active from June through August. Remember that larvae management is difficult because they are in a protected site in the stems, or may have moved into the soil, becoming soil-inhabiting pests. This would explain why you were having variable results with your program. Preferably, make a note of the se-

verely-damaged lawn in the fall. Severely-damaged lawns should be overseeded with compatible turfgrass cultivars. Treat these lawns in early spring for adult control.

## Controlling weeds around fences

**Problem:** What would be the best way to manage a wide variety of weeds and grasses around a fence? We are looking for chemicals to obtain pre- and post-emergence control of weeds. (New York)

**Solution:** "Oust" weed killer, manufactured by Du Pont, is recommended for pre- and post-emergence control of many annual and perennial grasses and broadleaf weeds on non-cropland areas. It may not provide adequate control of hard-to-kill perennials.

When using this product, make sure that the spray drift doesn't contact any desirable plants along the fence. Consider using some drift control agent to minimize drift. Oust is absorbed by both roots and foliage of weeds, resulting in growth reduction, reddish-purplish coloration, chlorosis, necrosis, vein discoloration and death of terminals. Although symptoms may start showing up two to three weeks after application, it may take four to six weeks after application for final effect.

Be careful not to use Oust where there is potential for desirable plant roots to come in contact with the treatment. Oust can be applied at any time of the year except when the ground is frozen. For better results, use this as a pre-emergent or post-emergent during early stages of weed growth.

Another choice is to tank-mix Elanco's Surflan with Monsanto's Roundup to deal with difficult weeds and grasses. Reports suggest that mixing 3 ozs. of Surflan A.S. plus 3 ozs. of Roundup in 1 gal. water to cover 1,000 sq. ft. would provide six to eight months' control of annual weeds and grasses. Make sure to avoid any spray drift coming in contact with desirable plants when using this combination tank mix. Read and follow label specifications for better results.



Balakrishna Rao is Director of Lawn Care Technical Resources for The Davey Tree Co., Kent, Ohio.

Questions should be mailed to Problem Management, Landscape Management, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.



Two years and two-hundred thousand engines later the other guys here and overseas have re-invented Tecumseh's Over Head Valve, OVM120 lawn tractor and riding mower engine. Well, we didn't exactly keep it a secret. We told anyone who listened about its superior performance. We couldn't refrain from bragging a little about our Ultra-Balance vibration control, the long life cast iron cylinder sleeve and pressure pump bearing lubrication. We did mention the premium electronic ignition a time or two. And the OVM's full twelve horsepower and high torque characteristics plus the superior valve system. We printed thousands of cutaway engine pictures and exposed our inner engine features. National magazines gave the public every intimate detail of the OVM's superior design. So it's not surprising that the competition is now announcing, one after the other, new OHV engines that they hope to make in 1988 or '89. Tecumseh's OHV engines are way out ahead of the pack with proven design and solid manufacturing techniques. Tecumseh . . . producing superior OHV engines in North America since 1967.



**TECUMSEH PRODUCTS COMPANY**  
ENGINE AND TRANSMISSION GROUP

1604 Michigan Avenue  
New Holstein, Wisconsin 53061

TECUMSEH ENGINES . . . *Better. Right from the start*



# RESEARCH UPDATE

## Nematodes: new in biological insect control

by Harry Niemczyk, Ph.D.

The Aug. 28, 1987 issue of *The Wall Street Journal* contained a front-page article entitled "Bug-Eating Nematodes Hold Promise as Natural Pesticides." Five papers dealing with these entomogenous (insect-killing) nematodes were presented before the Division of Environmental Chemistry of the American Chemical Society. That's the kind of attention these nematodes have been receiving lately!

### Spectrum of activity

Two genera, *Steinernema* and *Heterorhabditis*, show the most promise. They occur naturally all over the world, are known to be destructive to hundreds of species of harmful insects and yet are not harmful to plants, humans, animals, birds or earthworms.

Nematodes prey on insects that live underground during some stage in their life cycles. They actually seek

out their prey, entering through natural openings and releasing pathogenic bacteria into the blood.

Typically, the insect dies within 48 hours.

The nematodes breed inside their

---

*Nematodes are applied by adding them to water and applying them as spray over the infested area.*

---

host, depositing eggs that produce another generation to seek out and destroy other hosts such as grubs, billbug larvae, sod webworms, cut-

worms and mole crickets, to name a few.

### Persistence

The infective stage of the nematodes, formed in the body of the dead host insect, leave the host and are able to persist in moist soil for months without infesting a host. They are highly resistant to chemicals and natural toxins in the soil. Their movement and search activity is optimal in moist, sandy soils.

Persistence can be reduced in dry soils, during extreme temperatures and in the presence of toxic pesticides, pathogens and predators.

### Application

Nematodes are applied by simply adding them to water in a conventional spray system and applying them as a spray over the infested area. As the nematodes are highly resistant to most chemicals, a well-rinsed sprayer should be adequate. Post-treatment irrigation to prevent desiccation and facilitate movement into the soil is needed.

### Production, shipment

Biosis, Inc. of Palo Alto, Calif. a biotechnology company dedicated to the development of biological controls as an alternative to chemical pesticides, produces and ships nematodes all over the world.

According to Dr. Ramon Georgis, senior entomologist at Biosis, the nematodes are mass-reared on plastic foam soaked in a pork kidney/beef fat homogenate. Commercial production has not yet been achieved, but Biosis is working with scientists of the Alberta (Canada) Research Council to produce the nematodes in 40,000-liter tanks.

Large-scale shipment and storage are problems to be solved before full commercialization. Biosis has developed a process for desiccating the nematodes that appears promising.

### Effectiveness

Field trials against a wide range of soil-inhabiting insect pests of turfgrasses have shown this method of biological control has the potential to be a viable alternative to chemicals. Table 1 reviews some of the field trial results.

**Table 1. Summary of the field trials (1984-1986) with *Steinernema feltiae* (sf), *Heterorhabditis heliothidis* (Hh) and a standard insecticide, against selected turfgrass insects.<sup>a</sup>**

Nematode: Concentration (billion/acre)	Number of tests	% Control range	Average
<i>Japanese beetles, Popillia japonica</i>			
Hh: 1.0-5.0	18	30-91	64
Sf: 1.0-5.0	12	30-72	53
OFTANOL®	7	39-97	69
<i>Northern Masked Chafer, Cyclocephala borealis</i>			
Hh: 1.0-5.0	5	42-95	74
Sf: 1.0-5.0	4	41-61	55
OFTANOL®	3	47-99	73
<i>White Grubs, Phyllophaga spp.</i>			
Hh: 0.4-5.0	3	48-81	73
Sf: 0.8-5.0	3	39-62	53
OFTANOL®	2	35-46	40
<i>Mole crickets, Scapteriscus spp.</i>			
Hh: 1.0-5.0	3	3-12	8
Sf: 1.0-5.0	5	42-73	59
OFTANOL®	3	52-79	65
<i>Cutworms (Noctuidae)</i>			
Hh: 0.5-5.0	2	52-100	92
Sf: 0.5-5.0	2	38-96	74
DURSBAN®	1	88-100	96

<sup>a</sup> Taken from Georgis, R. 1987. Nematodes for biological control of urban insects. Preprint of Paper Presented at 194th Nat. Meet. Amer. Chem. Soc. Div. Environ. Chem. 27(2):816-821.

# The Ultimate, All-In-One Landscape Implement!

**NEW FOR '88**

The unique, new Dakota Hand is designed to be a do-anything, go-anywhere landscape tool. The main parts being a towable, bucket or 3-point mount tree transplanter, a boom sprayer, a log splitter, a dump box, and a spreader. Options include water pump, hydraulic pump, jack hammer, hydraulic power pack, and many more.

The Dakota Hand is made specifically for resorts, golf courses, apartment complexes, hobby farms, parks, nurseries, municipal and state facilities, and for rentals, landscapers or soil conservation.



\$3200

**TOWABLE TRANSPLANTER**



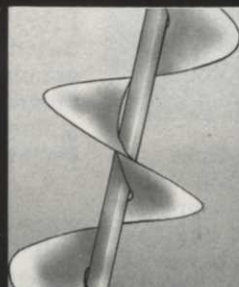
\$2800

**SPRAYER**



\$1900

**BUCKET or 3-POINT MOUNT TRANSPLANTER**



**POST HOLE DIGGER**  
call for prices



\$550

**LOG SPLITTER**



\$700

**DUMP BOX**



**SPREADER**  
call for prices

## DAKOTA HAND

Patent #46256621

**CALL OR WRITE: 1-800-327-7154**

MID DAKOTA CORPORATION  
GARRISON INDUSTRIAL PARK  
BOX 728  
GARRISON, NORTH DAKOTA 58540

Please send more information on Dakota Hand

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

Dealer Inquiries Welcome Product Demonstration Available on Video





## Pro Showcase:

The first Pro Show is being held this month in Dallas, Tex. As a service to Pro Show attendees, sponsors and the readership in general, LANDSCAPE MANAGEMENT devotes this month's "Products" section to those companies exhibiting at the Pro Show. This list consists of 1987 model products and 1988 models which will be revealed officially at the Pro Show. If you're attending, make sure to visit these companies' booths.

### Heavy duty blower meets lawn management needs

The BL-1100 I.C. wheeled blower from Billy Goat Industries provides 11 hp of blowing power. It features an operator hand-controlled "Gust Adjuster" which allows the operator to direct



the flow of air from side to side.

Adjustment of the remote control lever can direct debris from ground zero to 50 degrees for greater placement control. Varying the engine speed also aids control.

The BL-1100 I.C. is available with a Briggs & Stratton or Honda engine. The blower also has a tote box for carrying tools or larger debris. Padded handles and six shock mounts reduce vibration at high engine speeds for operator comfort.

Circle No. 195 on Reader Inquiry Card

### Hoe attachments approved by tractor manufacturer

The Kubota Tractor Corp. has approved Bradco 8MD2 eight-foot and 9HD nine-foot hoe attachments manufactured by American Trencher Inc. for Kubota L Series tractors.

The backhoes have rigid frame mount with four-point quick-attach features for the backhoe. The frame can remain on the tractor when the hoe is removed and doesn't interfere with the tractor three-point hitch or underdeck mower attachments.



Circle No. 196 on Reader Inquiry Card

### New attachments broaden mower's cutting versatility

A wider cutting swath and smoother ride are the results of two new attachments for the Gravely Pro out-front mower: a 60-inch mowing deck and a second riding sulky.

The cutting deck is rounded for improved trimming and is equipped with anti-scalping rollers for the walk-behind, out-front Pro. It improves the mowing width by 10 inches



over previously-available decks.

The new riding sulky has a plate behind the power unit to prevent jackknifing. It has a padded, high back seat and is easily attachable or detachable. The new sulky is offered in addition to the Castor Wheel sulky, already available.

The 1988 Pro units will also have a choice of five power units ranging from 12 hp to 16 hp.

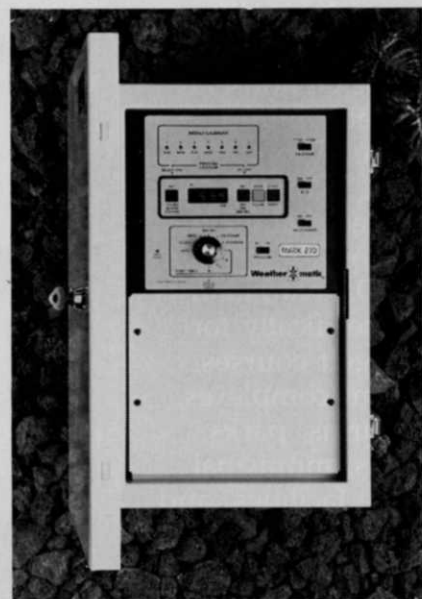
Circle No. 197 on Reader Inquiry Card

### Precise irrigation easy with programmable controllers

The Mark 200 series of micro-processor controllers from Weather-

matic offers 12, 18, 24 or 30 stations in a heavy-duty housing. The high-intensity LED display gives outdoor daytime visibility.

User training is minimal because the selector switch and four large programming buttons are clearly labeled. A six- or seven-day calendar allows for programming even-, odd- or third-



day watering and independent programs with four daily start times each.

A separate test program can run all P1 or P2 stations for two minutes without disrupting previously programmed duration times. The test program skips stations without programmed watering times.

Circle No. 198 on Reader Inquiry Card

### Tilt-deck trailer hustles when loading or unloading

Excel Industries' new Tilt-Deck Trailer brings to the Hustler line a hydraulic trailer that tilts down and locks into place for easy reloading.

The inside floor space measures more than 82 inches wide by 144 long, allowing for transportation of numerous types of turf and construction equipment.

Its 12-inch-high sides allow the trailer to be used for utility purposes such as hauling clippings or nursery stock when not transporting equip-





**While nobody was looking,  
Fairmont developed a  
Limb Lopper power pack  
that lets you trim branches quietly  
without being tied to your truck.**

**A** hundred feet or a hundred yards. Distances no longer matter with the quiet, self-contained mobile hydraulic power pack from Fairmont.

This compact, highly portable unit weighs just 53 pounds. It supplements the hydraulic outlets on your truck to let you do ground and ladder trimming beyond your truck's normal 25-foot hose limit. Best of all, it works with the tools that you're already using in your basket.

The practical benefits of Limb Lopper's mobile power pack are obvious. No longer do you have to equip each

truck with manual and gasoline-powered tools for jobs that a basket can't reach. One set of quiet, efficient hydraulic tools takes care of every tree-trimming job.

Many of the big commercial tree-trimming companies have already switched to Limb Lopper chain saws, circular saws, and shade-tree pruners. It's easy for you to do the same. Just phone or visit your nearest member of Fairmont's trained, dependable Limb Lopper dealer network. Or write: Fairmont Hydraulics, a division of Fairmont Railway Motors, Bldg. B, Suite 408, 800 Roosevelt



Road, Glen Ellyn, IL 60137.  
Phone (312) 790-1690.



Limb Lopper



**FAIRMONT  
HYDRAULICS**

Division of Fairmont Railway Motors



Circle No. 115 on Reader Inquiry Card



ment. The trailer's two-inch ball hitch has a 5,000-lb. capacity.



Circle No. 199 on Reader Inquiry Card

### Diesel engine injects power into front-cut mower

A Yanmar three-cylinder diesel engine provides Yazoo Manufacturing's new Eagle V with 27.5 hp for heavy-



duty cutting jobs. Hydrostatic transmission, PTO drive system, power steering and individual wheel brakes provide smooth operation.

The Eagle V is available with 60- or 72-inch cutting sections or an open or ROPS cab.

Circle No. 200 on Reader Inquiry Card

### Brush frame, shielding improved on lawn sweeper

Sweepster redesigned the L4800 sweeper with an angle-iron type frame incorporating a hood that covers the brush drive chain. The redesign eliminates the plastic shielding and chain idler needed on older models.

Other improved features include a gearbox drive from the front tractor



PTO, an electric lift, a four-foot wide, two-foot diameter brush and custom built mounting frames so the L4800 will fit most lawn and garden tractors.

The sweeper sweeps at a 30 degree angle to the right. Manual and hydraulic sweep angle adjustment controls are optional. The L4800 can be used for snow and thatch removal, leaf and pavement sweeping and dirt clean-up, among other things.

Circle No. 201 on Reader Inquiry Card

### Overhead valve design brought to small engines

Briggs & Stratton's new Vanguard line brings overhead valve design to en-



gines ranging from 4.5 hp to 14 hp.

The five engines are the 14 and 12.5 hp V-twins, 12.5 and 4.5 hp single-cylinder verticle shaft models (available next spring) and the 8 hp single-cylinder horizontal shaft (available next fall).

The OHV design gives full engine output with lower fuel consumption. Each Vanguard engine has cast-iron cylinder sleeves, Magnetron electronic ignition, heavy duty replaceable bearings, permanent mold piston and conrod, and heavy ribbed cylinder block.

Circle No. 202 on Reader Inquiry Card

### Lawn vacuum cart cover has all-steel construction

E-Z Rake's top-of-the-line lawn vacuum, the Model 46, now comes



equipped with an all-steel cart cover. It features a full length dust tunnel and is easier to clean.

The Model 46 comes with cart, side extensions, cover, vacuum unit and engine, with a 5.5 hp vacuum power plant. A single pin provides attachment to a tractor.

The Model 46 has a capacity of 32 to 35 bushels, the cart a 1000-lb. capacity. Connecting hoses are six-inch PVC, and

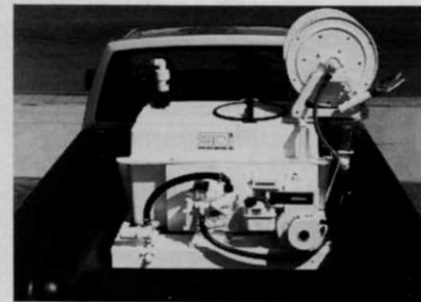
the 18-gauge steel side extensions add 21 inches of depth to the cart.

Circle No. 203 on Reader Inquiry Card

### Three new spray units will debut at Pro Show

Spraying Devices Inc. will introduce three new multi-purpose sprayers at the Pro Show in Dallas this month. The style-molded fiberglass tanks—50 (shown), 100 and 160 gallon sizes—have leakproof lids and self-lubricating mechanical agitators.

Pump choices include 3 and 10 gpm twin-piston or 9.5 and 14 gpm twin-diaphragm type. The new models bring to 60 the number available from the company, ranging in size from 50 to 1000 gallons.



Circle No. 204 on Reader Inquiry Card

### Interchangeable tools expand trimmer uses

The Panther model 2840 is the first trimmer/brush cutter in the 2800 series Expand-It system from HMC/The Green Machine.



Expand-it tools are interchangeable, attached easily to a single 24.1 cc,



# TRY TO SEE WINTER THIS WAY



While your competitors are locking up their lawn equipment for the winter months, you can be producing income with yours. Use your equipment to apply Great Salt Lake Minerals & Chemicals deicing products, **QWIKSALT® + PCI®** corrosion control polymer and **FREEZGARD™ + PCI®**, during

the winter. These products are more effective and less corrosive than other deicing products. You can keep roads and parking lots clear of ice and snow, and put money in your pocket while your competition is hibernating. Interested? Simply call (801) 731-3100 for the facts.



Circle No. 116 on Reader Inquiry Card

P.O. Box 1190 • Ogden, Utah 84402 • (801) 731-3100

**QWIKSALT®** is a registered trademark of Great Salt Lake Minerals & Chemicals Corporation. **FREEZGARD™** is a trademark of Great Salt Lake Minerals & Chemicals Corporation. **PCI®** is a registered trademark of Georgia Pacific Corporation

Great Salt Lake Minerals & Chemicals Corporation. A subsidiary of Gulf Resources & Chemical Corporation.



1.3 hp power source using a single knob on the tool shaft.

Tools beside a trimmer include a weeder-cultivator, blower and snow thrower and an edger tool that will be available next spring.

The model 2840 is lightweight with a 47.8-inch shaft for increased reach and comes with a debris and blade guard for safety.

Circle No. 205 on Reader Inquiry Card

### Steering control system gives zero-turning radius

Middlesworth Engineering and Manufacturing has developed an optional steering-wheel-controlled zero turning radius system which is used in place of standard lever controls on



any of the company's C series outfront mowers.

A foot pedal controls ground speed and direction, with the steering wheel increasing or decreasing individual wheel speed to provide steering.

Circle No. 206 on Reader Inquiry Card

### High-efficiency engine line meets commercial needs

Wisconsin Robin engines from Tele-dyne Total Power are designed to meet lawn and garden needs. The company offers a high-performance two-cycle engine that is compact and



lightweight. Overhead valve models offer durability with economical operation in low to medium horsepower ranges, including new single-cylinder overhead valve models.

Each model has solid state electronic ignition and a solid state oil warning system to prevent damage from insufficient lubrication.

Every Wisconsin Robin engine for power lawn and garden equipment is covered by a two-year limited warranty and a five-year warranty on the ignition system.

Circle No. 207 on Reader Inquiry Card

### Reciprocating aerator cores with vertical action

The Ryan Lawnaire 28, a self-propelled walk-behind aerator has reciprocating, crankshaft-mounted tine arms, allowing vertical coring action similar to larger models, giving a cleaner hole.

The Lawnaire 28 cores a swath 28 inches wide, covering 24,000 sq. ft. per hour. Three-quarter-inch tines penetrate 2 1/2 inches with a core pattern of 3 1/2 by 5 inches. The machine is 34 inches wide.

Tricycle front wheel and ground drive dog clutch can disengage to make rear drive wheels free-wheeling. The unit also has zero turning radius when aerating.

An over-center, lever-operated master clutch engages the drive wheels and reciprocating tines simultaneously. Releasing the lever stops both the tine arms and drive wheels.



The 7 hp engine is fed by a 1.1-gal. gas tank.

Circle No. 208 on Reader Inquiry Card

### Out-front rotary mowers cut up to 26 acres daily

The 17 hp diesel C417D (pictured) and 21 hp gas C420G out-front rotary mowers from Jacobsen Division of Textron feature three-cylinder liquid-cooled Kubota engines. The four-wheel commercial mowers have a 72-inch deep tunnel deck that can handle 26 acres of grass per day with cutting heights from one to four inches.

The tractors feature power rear-wheel steering, wide tires and hydraulic front-wheel traction drive



with a top speed of 9 mph. Hydraulic lift on the front-mounted implements and high ground clearance give curb-climbing ability.

Mechanical PTO drive is controlled through a heavy-duty electric clutch mounted on the engine flywheel. Jacobsen makes a full line of attachments for the tractors enabling year-round use.

Circle No. 209 on Reader Inquiry Card

### Brush, limb chopper at competitive price

Just introduced from Promark Products, the model 400 Brush and Limb Chopper is able to handle the toughest brush and limb jobs at a very competitive price.

Promark's 400 chipper uses a 90-degree in-feed angle, allowing both knives to cut the full diameter of the limb. The 400 chipper provides a fixed hydraulic feed rate of 152 feet per minute.

The safety bar on each side and



over the top can instantly start, stop or change direction of the feed rollers. The feed table is at the rear of the chipper to keep operators away from moving parts. The 400 can handle limbs as large as 12 inches in diameter.

Circle No. 210 on Reader Inquiry Card

### Deep root injector feeds trees and ornamentals

The Tree and Ornamental Feeder from Lesco Inc., is designed for deep