

AN E-Z-GO MAKES TER BUY.

Power Source: A rugged, reliable 18 horsepower Onan engine with the power to carry a full payload up to 24 mph. Substantially larger engine compartment for easier maintenance.

Braking: Improved hydraulic internal expanding.

Payload: 1500 pounds. A massive 50% greater carrying capacity than Cushman. More cubic space for greater material volume.

Suspension System: Heavy duty torsion bars, leaf springs, front and rear shock absorbers, designed to support the bigger payload.

Dump Construction: Heavy duty diamond plate steel with rugged rear bumper for heavier loads and longer life. Easily convertible to flat bed.

Headlights: Dual lights for greater night vision.

Seating: Dual seats for two passengers with individual back rests and hip restraints, constructed for larger men, greater comfort.

Price: Virtually the same.

Summary: E-Z-GO carries a greater payload, is easier to maintain, is larger, more durably built, and safer with a wider wheel base. E-Z-GO uses top quality components from companies such as Bendix, Borg Warner, Dana, Onan, and Rockwell International.

For the complete story on the E-Z-GO GT-7, a demonstration on your course, contact your E-Z-GO distributor. For his address check your Yellow Pages or call or write Mr. William Lanier, E-Z-GO, P.O. Box 388, Augusta, Georgia 30903, at (404) 798-4311.



E-Z-GO TEXTRON

Polaris E-Z-Go Division of Textron Inc.

NEMATODE SURVEY

By MARIA T. CINQUE
Agricultural Extension Agent,
Nassau County Cooperative Extension,
Garden City, NY

Nematode problems, especially on turfgrass, have mostly been associated with the south. In recent years there have been some unexplainable problems on Long Island Golf Courses. It was therefore decided to see if nematodes were playing a part in those problems.

The soil samples were taken between June and August. This is the time of the year when nematode populations are usually at their highest and damage from plant-parasitic nematodes is most evident. In most cases, the Golf Courses sampled had problems during the hot weather of previous years, that sounded like they could have been caused by populations of nematodes. Others were chosen because they were having problems that could not be attributed to a disease, insect or cultural practices.

In most cases, soil samples were taken from both the greens and fairways, where damage was evident, soil samples were taken from right outside of the chlorotic or necrotic areas at a depth of six to eight inches, with a soil probe.

Many samples were checked for the presence of insects and diseases and nutrient levels were also determined.

Not all nematodes are capable of causing injury to plants, only those which possess a stylet are considered to be parasitic. Nematodes are extremely small round worms and CANNOT be seen without the aide of a microscope. The stylet which they possess is even smaller and in some species is rather difficult to determine.

The following nematodes were isolated from Long Island Golf Courses.

NEMATODE	COMMON NAME
Criconemoides sp.	Ring
Hoplolaimus sp.	Lance
Tylenchorhynchus sp.	Stunt
Pratylenchus sp.	Lesion
Longidorus sp.	Needle
Tichodorus sp.	Stubby Root

All of the above named nematodes do possess a stylet which can cause injury to the grass plant. A stylet is a narrow (microscopic) hollow, slender tube which the nematode uses to withdraw plant juices and therefore hindering the plants ability to take up water and nutrients.

The damage seen during the stress period of the summer was mostly chlorosis, where the turf looked as if it hadn't been fertilized, even though it had been. In most of these areas, high populations of the Ring Nematode, *Criconemoides* sp. (300-1,000/100 cc of soil), had been found. Other damage observed was a complete killing out

of the turf (penncross bentgrass) on greens. In these areas, high populations of the Lance Nematode *Hoplolaimus* sp. (350-950/100 cc of soil) were found.

Less damage was observed during periods of cooler temperatures rather than those of high temperatures. It was also observed that in periods of moisture stress, damage from plant-parasitic nematodes was more evident.

Sampling to Continue

I would like to continue sampling Long Island Golf Courses for the presence of plant pathogenic nematodes. The sampling techniques for nematodes is different than for other soil tests. The soil to be tested should be taken just outside of the chlorotic or necrotic areas and to a depth of 6 inches or as far as the roots go down. The grass from the plug can also be included in the sample. It is better to use a soil sampling tube rather than a hole cup cutter. Take samples around the entire areas, mix the soil and submdt 2 cups of soil for analysis.

Samples should be kept out of the sun and kept COOL (refrigerated) until they are brought to the lab. If you send samples in, be sure that my name is on the box and mark it in bold letters: NEMATODE SAMPLE - REFRIGERATE.

Samples should be sent to MARIA T. CINQUE, Nassau County Cooperative Extension, 320 Old Country Road, Garden City, New York 11530. There is a \$6.00 charge per sample or \$10.00 to Nematology Lab, Cornell University, Ithaca, N.Y. 14853.

Late June to early September is the best time to sample for plant-parasitic nematodes.

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TOP DRESSING

By EARL GREY
Indian Creek Country Club

As our teeth chattered at 6:30 A.M. January 13, 1979 the reality of the weatherman's forecast two days prior was now present! The thermometer now registered 43° as compared to 75° just the day before.

Forehand knowledge of the probable weather we were about to experience motivated us to finalize our last minute details for topdressing all 18 greens as well as our practice putting green.

The night before we were to get started we loaded a truck full of 70% sand 30% muck sterilized. This we parked inside the maintenance building to insure dry topdressing and also for a cleaner operation. We additionally prepared our top dressing machine, truckster, dragmat, shovels, etc. so that we could move quickly to the operation site immediately the next morning.

Before we charge No. 1 green it would be good to note that we had been foliage feeding our Tifton Dwarf Greens with 6'N-12'Fe-6'Sul at 15 lbs per acre in 125 gallons of water every 5 to 7 days. The roots had been receiving a steady diet of 17-2-7 I.B.D.U. 5% quick release at 2 lbs act nitrogen per 1,000 sq. ft. every four weeks. This formula was sufficient considering the erratic weather we were experiencing the past 30-45 days. We were also topdressing every 14-20 days at one yard mix per 5,000 sq. ft. with an automatic topdressing machine.

Until Jan 3rd our greens were still growing but a more severe test was to be dealt with this day with 43° looming over the course. Another unique feature about this chilly morning was that everyone had this undying love for hot coffee which could be observed by the reluctance to leave it and to join the cold outside!

We closed in on green #1 quickly and in 10 minutes at 6:50 A.M. #1 was topdressed. We then tied our spreader to the utility vehicle for faster transport and proceeded to green #2. With time being foremost at 7:50 A.M. we sent a man with the utility wagon (when not being needed) to green ÷ 1 to finish dragging in the soil. Immediately behind him followed a triplex greensmower with baskets to help clean any debris left over on the green. And at 8:05 A.M. our first green was ready for play and we allowed one full hour for drying.

The program was completed by working through lunch to 1 P.M. We were able to avoid play. Our greens average 6,500 sq. ft.

The next mornings temperature read 53° and a warming trend followed. A day later we observed that the course had lost some vibrance, but our greens held their color and growth pattern! We attribute this continued growth on our Tifton Greens in part to the sweater-like approach topdressing has, partly covering and warming them in the cold winter months.

TOP DRESSING DURING HEAVY WINTER PLAY

MINI TIPS TO SPEED TOPDRESSING PROCEDURE DURING PLAY:

- A. Greens should be as dry as possible! Irrigating early the night before or not at all is best! This will make the operation a cleaner one.
- B. Load dry topdressing on a truck and park it inside a covered building to insure dry dressing and save morning loading time.
- C. Begin operation in the center of green in a circular fashion and work toward outside edge to avoid driving over dressing which may clump and prevent or slow drying.
- D. For speedier traveling, transport power top dresser with utility wagon between greens.



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Our customers have been wanting a rugged mid-sized rotary that really maneuvers.

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It's the amazing Jacobsen Turfcat.

Because it's so maneuverable, it gets your medium-sized mowing jobs done faster and better than ever.

You can have it with either a 50" or 60" deck. (They're interchangeable.) You get a smooth, even cut with practically no scalping because the fully articulated deck closely follows ground contours.

It trims close like a hand mower. The deck raises and

lowers hydraulically for curb climbing and transport. And you can adjust cutting heights from 1" to 4".

What's more, the wide track 3-wheel design gives it great slope-hugging ability.

And you can steer and maneuver while you change speeds because of the foot-operated hydrostatic drive.

The husky 18-HP Kohler engine makes hill climbing a breeze.

The Turfcat from Jacobsen. Rugged. Quick. Maneuverable. Just what you've been waiting for.

Ask us for a demonstration. And ask us for more reasons why this is the hottest mid-sized rotary in the business.

The more you hear about the amazing Turfcat, the more you'll know we've been listening to our customers.

We hear you.

DEBRA TURF & INDUSTRIAL EQUIPMENT CO.

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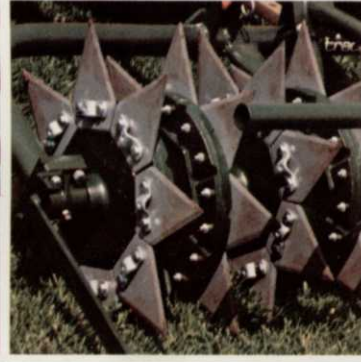
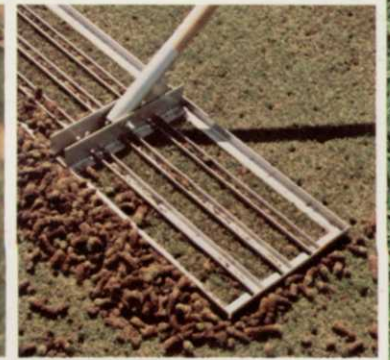
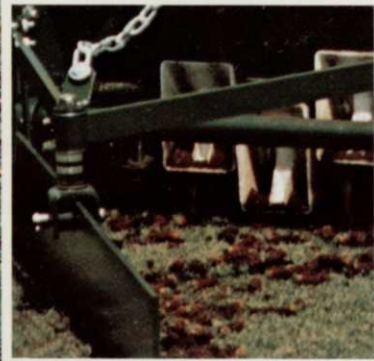


Hector

TURF & GARDEN, INC.

and
RYAN®
present...

RYAN[®] TURF-CARE EQUIPMENT 1979 CATALOG



GREENS AERATION

Your greens suffer through more use, abuse and compaction than any other turf area on your course. Golfers, caddies, superintendents and maintenance crews are constantly compacting the soil and grasses on them until water and fertilizer are unable to penetrate to root systems.

So, how do you combat these common yet serious problems? By aerating with Ryan® Turf-Care equipment.

Ryan Turf-Care equipment is specifically engineered to penetrate and remove a measured amount of soil, grass and roots. This allows for root expansion, water absorption and fertilizer penetration. Yet Ryan Turf-Care equipment is fast and efficient on the job.

Aeration with Ryan equipment is normally done once in the Fall and once in the Spring. But if your greens are easily compacted, aeration up to 6 times a year may be necessary.

So keep your greens springy, rich and deep-rooted with the standard of the industry in turf care... Ryan aeration equipment.



Greensaire II tines penetrate up to a full 3 inches.

GREENSAIRE® II

The self-propelled Greensaire II was specifically designed for greens care. This versatile aerator offers 4 sizes of tines ranging from 1/4 to 5/8 inch in diameter. These tines penetrate the green up to 3 inches on 2-inch centers removing 36 cores from every square foot. It will aerate up to 8,000 sq. ft. per hour.

In addition, the Greensaire II covers a wide 24-inch swath and with an optional windrow attachment, makes for easy core cleanup on the green.

GREENSAIRE II SPECIFICATIONS MODEL 544801

Width	24" swath, 47¾" overall.
Speed	Aerates up to 8,000 sq. ft. per hour—Transport (Std.) over 4 mph.
Tines	Hollow, tapered, made of case hardened steel. Two sets of ½" diameter tines standard. Hydraulic lowering and raising.
Depth and Spacing of Penetrations	3" deep on 2" centers.
Engine	4-cycle, 8 hp with 6 to 1 gear reduction.
Drive	Roller chain throughout, except V-belt to hydraulic pump. Full automotive-type differential.
Clutch	Multiple disc clutch.
Connecting Rods and Bearings	Cast aluminum with automotive-type insert bearings on ductile iron crankshaft.
Tires	Pneumatic turf tires. Front 11 x 4.00-5. Rear 13 x 6.50-6.
Lubrication	Cams, horizontal push rods and bearings run in oil in sealed cast cam case. All other lubricating points are pressure grease fittings.
Weight	805 pounds.
Optional Equipment	¼", ⅜" and ⅝" tines. Windrow attachment. Carbide tipped ½" tines.

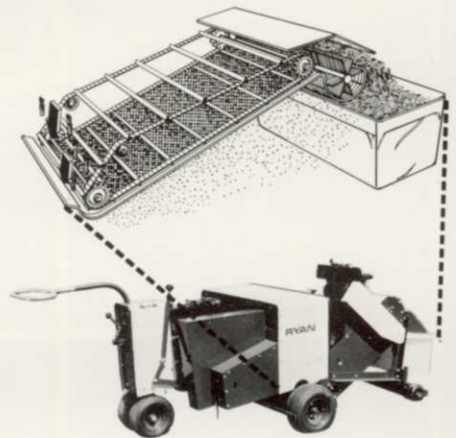


Greensaire II with optional windrow attachment.

CORE PROCESSOR

The Ryan Core Processor is a proven self-powered unit that fastens exclusively and securely to the Greensaire II.

The Core Processor catches the cores the Greensaire II ejects during its aerating process. Separates most soil from thatch and plant material, sifts the good soil back on the green, and catches the leftover material in a big 2.3 cubic foot debris catcher.



You save money and manhours because you aerate, top dress and collect thatch all in one pass while leaving your greens in playable condition.

CORE PROCESSOR SPECIFICATIONS MODEL 544809

Width	41½" overall.
Height	35½" overall.
Length	43½" overall.
Engine	4-cycle, 3 hp, with 6 to 1 gear reduction. Recoil starter.
Drive	V-belt. 1 to 1 drive ratio engine to separator brush (550 rpm max.).
Drive	#40 roller chain—2.5 to 1 drive ratio (220 rpm max.).
Conveyor	Steel, detachable chain with aluminum attachment links.
Conveyor Speed	19.4 flights/min. to 330 ft./min. max.
Separator Brush	Polypropylene bristles. Also serves as a cleaner for conveyor flights.
Separator Screen	Triple shoot woven wire.
Gate	Expanded metal carbon steel.
Wheels	Dual-castered 5" dia. x 3" wide solid rubber. Articulated mounted.
Wheel Base	Fore & aft: 32½" Side to side: 32¾"
Guards	Drive belt—chain guarded with 18 gauge metal guards.
Attachment	Hooked onto attachment arms bolted to sides of Greensaire II cam case. Locked on by spring detented locks on arms.
Debris Catcher	Polypropylene & vinyl with metal handles 11½" x 11½" x 29¾"—2.3 cu. ft.
Weight	278 lbs.



CORE PROCESSOR

RYAN

GREENSAIDE II

RYAN

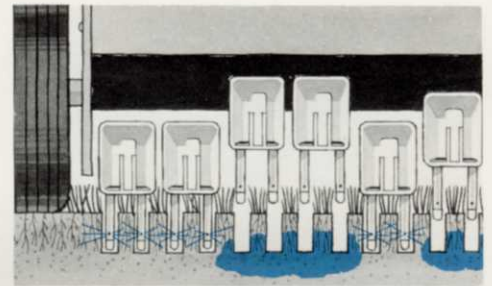
10HP



GREENSAIRE® II INJECTOR

The Ryan Greensaire II Liquid Injector is the latest addition to the Ryan Turf-Care system for golf courses.

The Injector is engineered to inject chemicals at root level through four tiny jets in each tine. This results in less chemical waste, less total use of chemicals, and less chemical runoff. Because, with the Injector chemicals don't have to be "watered-in" to be effective, and nematodes living on root systems are controlled.



In addition, the job is done quickly. One man can aerate and inject up to 8,000 square feet in an hour; putting in 36 holes per square foot.

To use the Injector, simply attach the Ryan injector tines and valve system to any Greensaire II aerator. Connect the main hose to a chemical tank with 150 to 300 pounds of pressure per square inch, and you're ready to care for your turf the Ryan way.

GREENSAIRE II INJECTOR SPECIFICATIONS MODEL 545430

Gallons Injected Per 1000 Square Ft.	7.25.
Depth	Up to 3"
Pattern	2" x 2" (36 holes per square ft.).
Swath	24"
Max. Working Pressure	300 PSI.
Construction	Corrosion resistant material with ceramic parts at high wear points.

GREENSAIRE® 16

The Greensaire 16 is the original Greensaire. It's in use at hundreds of golf courses across America and is the standard of the industry.

Like the Greensaire II, its tines penetrate up to a full 3 inches, it puts 36 holes in every square foot of turf, and 4 sizes of tines, from 1/4 to 5/8 inch in diameter are available.

The Greensaire 16 is powered by a hefty 6½-hp 4-cycle, air-cooled engine that lets one man aerate a 16-inch swath and up to 4,000 square feet of turf an hour. For easy cleanups, an optional windrow attachment is available.

GREENSAIRE 16 SPECIFICATIONS MODEL 544843

Width	16" swath, 35½" overall.
Speed	Aerates up to 4000 sq. ft. green in approximately one hour—Transport—(Std.) over 3½ mph.
Tines	Hollow, tapered, made of case hardened steel. Two sets of ½" diameter tines standard. Lowered and raised by hand lever.
Depth and Spacing of Penetrations	Over 3" deep on 2" centers.
Engine	4-cycle, 6¼ hp with 6 to 1 gear reduction.
Drive	Roller chain and dual V-belts.
Clutch	Belt tightener clutch.
Connecting Rods and Bearings	Cast aluminum with insert bearings on crankshaft end and ball bearings on wrist pin end.
Crankshaft	Ductile iron with ball bearing mains.
Tires	Fully pneumatic turf tires, 10 x 3.50-4.
Lubrication	Cams, horizontal push rods and bearings run in oil in sealed cast cam case. All other lubricating points are pressure grease fittings.
Weight	495 pounds.
Optional Equipment	Windrow attachment: ¼", ⅜", and ½" tines; Carbide tipped ½" tines.

LEVELAWN™

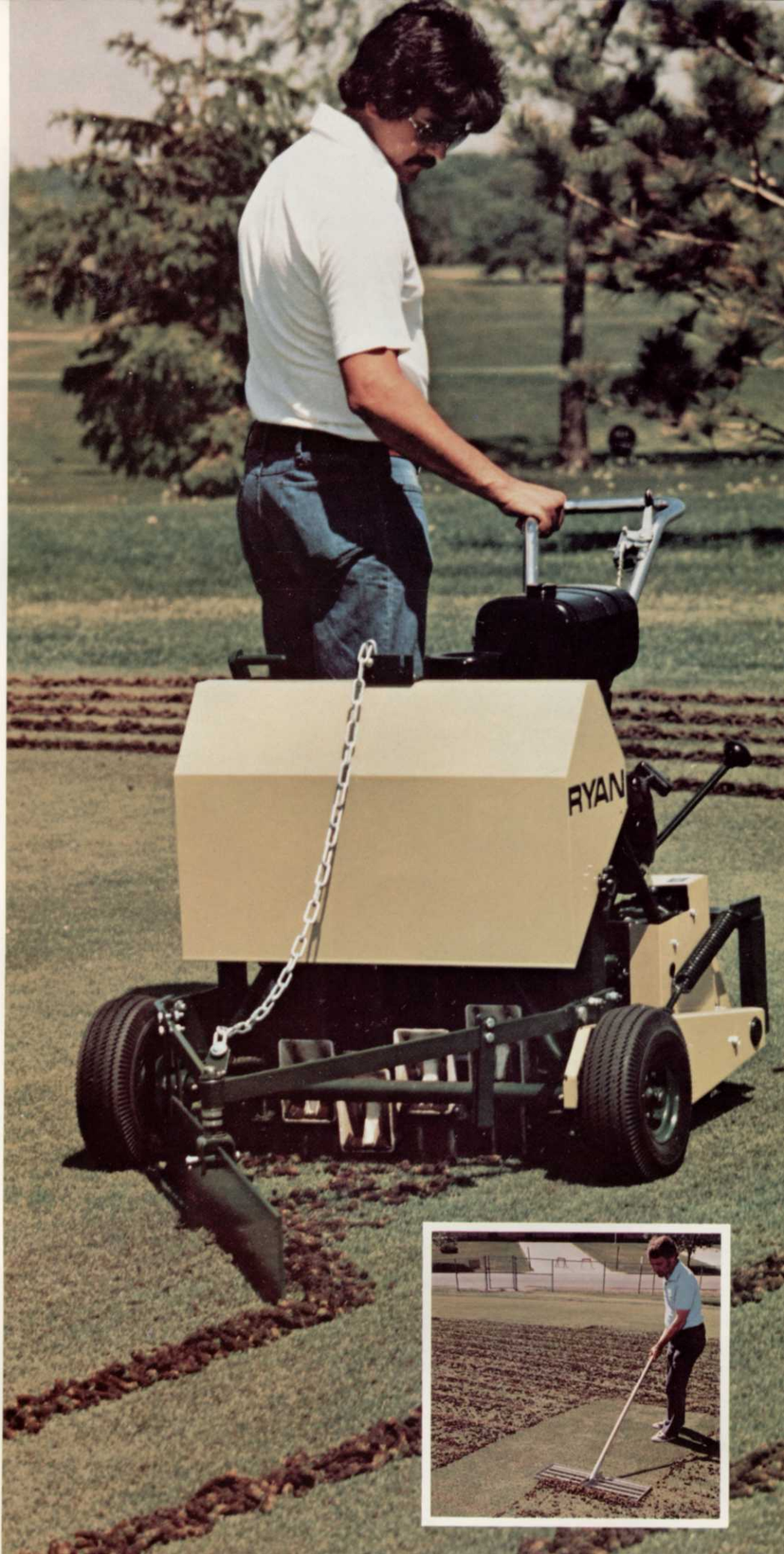
The Ryan Levelawn is a combination core rake and top dressing leveller. It's a lightweight, easy-to-handle tool that makes core cleanup simple.

To use the Levelawn, push it over the green to be smoothed out and your aeration cores will pile up easily . . . 30 inches at a time.

And the Levelawn's five levelling edges make it ideal for the many spreading and top dressing materials that will be put on your greens throughout the year.

LEVELAWN SPECIFICATIONS MODEL 544738

Rake Head	Welded-steel construction.
Rake Head Size	10" x 30"
Handle	Hardwood with steel pivot (180°) head attachment.
Handle length	6 ft.
Weight	5.5 lbs.



LARGE AREA AERATION

Golf course fairways, athletic fields, parks, playgrounds, and many other large turf areas need aeration too. Over a period of time, athletes, bands, ground crews and spectators contribute to compacting soil and grasses on these areas. Compaction problems even occur with seasonal changes in temperature and weather.

To relieve such a broad spectrum of compaction problems, aeration with Ryan Large Area Aerators is recommended.

By removing specific amounts of soil, thatch and roots, Ryan aerators help promote softer, springier turf areas; areas that make for better playing surfaces, and allow water and fertilizer to be easily absorbed.

Ryan aeration equipment can also save you money by improving your overall turf maintenance program. Several size and shape tines are available for various weather conditions and soil and grass types. Ryan equipment has been proven efficient and durable through years of on-the-job use around the world.

Ryan Large Area Aerators . . . for the big jobs.

TRACAIRE®

For large level turf areas such as athletic fields, Ryan recommends you aerate with the Tracaire. Tracaire is easy to use and mounts on a tractor 3-point hitch. It has a wide 6-foot aeration swath, and can be equipped with coring, slicing or deep spoon tines. A 12-foot dragmat used for breaking up cores while aerating is also available.

TRACAIRE SPECIFICATIONS

MODEL 544423

12 wheel

Width of Swath 6 feet.

Over-All Width 75"

Aerating Pattern 6" x 6"

Operating Speed Up to 10 mph.

Aerating Wheels 68 lb. (without tines) weight per wheel, eight tines per wheel. Bronze bushings on 1 1/4" dia. axles.

Dragmat 12' wide by 10' long. 6 gauge steel wire mesh with knuckled edges. Heavy steel bar on leading edge. Brackets and chains included.

Tines 8 per wheel. One set standard, choice of coring (1/2" or 3/4"), slicing (7 1/2" or 6" overall length) or open spoon. Wheels can be mounted with double set of tines.

Hitch Standard 3-point tractor hitch.

Frame 2 1/2" OD extra strong tubular steel.

Lubrication Pressure grease fittings.

Weight 1,037 pounds.

Optional Equipment 12' x 10' dragmat.



CORING TINES

SLICING TINES

OPEN SPOON TINES

RENOVAIRE®

The Ryan Renovaire is ideal for controlling thatch and aerating compacted turf on rolling or undulating land. Because a Renovaire follows the "lay of the land."

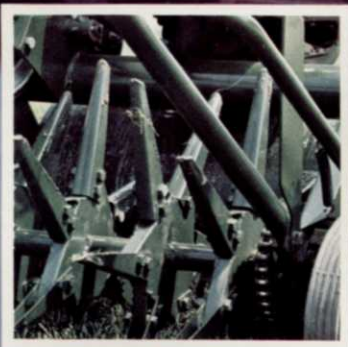
This large area aerator features tine wheels that are independently mounted in pairs, a design that permits maximum tine penetration in low as well as high areas.

Renovaire is fast, too. One man can aerate a 6-foot wide swath at speeds up to 10 mph. And your Renovaire can be equipped with a 12-foot wide dragmat to break up aeration cores during aeration.

RENOVAIRE SPECIFICATIONS MODEL 544317

Width of Swath	6 feet
Over-All Width	8 feet
Aerating Pattern	6" on center (approx.)
Operating Speed	Up to 10 mph
Transport Speed	Can be towed behind truck or car at normal driving speed.
Aerating Wheels	Twelve spaced at 6" intervals, 75 lb. weight per wheel, eight tines per wheel. Clamped to frame in pairs.
Tines	8 per wheel, 96 per set. One set standard, choice of coring (1/2" or 3/4"), slicing (7 1/2" or 6" overall length) or open spoon. Wheels can be mounted with double set of tines.
Transport Wheels	4.80/4.00 x 8" six-ply pneumatic tires.
Side Rails	3/4" x 2" flat bar steel
Hand Hydraulic Pump (Optional)	2,500 psi capacity
Lubrication	Pressure grease fittings
Weight	1445 pounds
Weight Trays	Set of 6 included
Dragmat (Optional)	12' wide by 10' long, 6 gauge steel wire mesh with knuckled edges. Heavy steel bar on leading edge. Brackets and chains included.
Direct Tractor Hook-up	Use hydraulic hose with connectors to connect to tractor hydraulic system and to Renovaire cylinder. (Obtain locally).
Optional Equipment	12' x 10' dragmat.





LAWN AERATION

LAWNAIRE® III

The Ryan Lawnaire III is a professional aerator that was designed for home lawns and other areas where a larger aerator is unnecessary. Self-propelled by a rugged 4-cycle engine, the Lawnaire III aerates quickly across a 19" swath. Its water-filled drum adds up to 55 pounds of weight for tine penetration up to 2½" deep.

The uniform pattern of holes left by the Lawnaire III allows air, water and fertilizer to reach roots, aiding expansion and growth.

A single clutch-throttle lever on the handlebar makes operation of the Lawnaire III simple. And an optional tote trailer is available for convenient transportation.

LAWNAIRE III SPECIFICATIONS MODEL 544850

Engine 4-cycle, 3-hp Briggs & Stratton #80252 with 6 to 1 gear reducer. Recoil starter. Piston displacement 7.75 cu. in. (127cc). Governor set at 3300 RPM-no load. 2 qt. fuel tank. Lo Tone muffler.

Clutch Belt tightener type-controlled from handlebar.

Chassis Welded construction.

Drive Primary: V-Belt—4L section to clutch idler. Secondary: #40 roller chain to tine assembly. Transport: #40 roller chain to barrel.

Axles ½" dia. bolted to side plate with Oilite bearings both ends.

Lubrication Grease fitting in each axle hub.

Reduction Speed reducer to aerating tine wheel 11.6 to 1. Speed reducer to transport water barrel 9.75 to 1.

Wheels One water barrel front 11" dia. (6.6 gal. capacity) 2 semi-pneumatic 8 x 1.75 with sealed ball bearings.

Speed Transport: 178 F.P.M.; Aerating: 150 F.P.M.

Tines Spoon-type, formed from ½" medium carbon steel, sharpened and hardened for long life. 30 tines per aerator.

Aerating Width 19"

Aerating Depth Up to 2½"

Aerating Pattern Approx. 3¼" x 7" center to center.

Controls Single lever, clutch-throttle lever on handlebar.

Net Weight 145 lbs. dry; 200 lbs. (aerating drum full of water)

Dimensions Width 28"; height in aerating position 38" approx.; height in transport position 47"; length 48" approx.

TOW LAWNAIRE®

For larger grounds and turf areas the tow-type Lawnaire is ideal. The tow-type Lawnaire can be pulled by most 7-hp garden tractors or riding mowers, and delivers the same superior performance as the Lawnaire III. And for varying turf conditions, a choice of coring, slicing or open-spoon tines is available with the tow-type Lawnaire.

TOW-TYPE LAWNAIRE SPECIFICATIONS MODEL 554702 TRACTOR-DRAWN

Width of Swath 36"

Overall Width 45"

Aerating Pattern 6" on center (approx.).

Tines 8 per wheel. One set standard, choice of coring (½" or ¾"), slicing, open spoon. Double set of tines may be mounted on each wheel.

Hitch Pin type. Attaches to garden tractors and larger riding mowers. Operates at mowing speeds.

Weight 516 lbs.



MOWING

COMMERCIAL MOWER

For performance, reliability and sheer ruggedness, in our opinion, there's no match for the Ryan Commercial Mower. Its hard-working, 2-cycle engine keeps the power coming, even in tall or dense grass. And a solid state electronic ignition means quick starts with no points to adjust or replace.

The Ryan Mower gives you total control, with 2 engine speeds and 5 adjustable cutting heights. The big, 1.25-gallon fuel tank means fewer refills. And a quick fold-down handle makes storage and transportation easy.

On-the-job durability comes from a tough 12-gauge steel housing. For additional protection, the engine is surrounded by a tubular steel frame.

And to further reduce downtime, the Commercial Mower features Ryan's exclusive modular parts replacement system. So instead of wasting time and manpower replacing a single part, you can quickly replace the entire component.

COMMERCIAL MOWER SPECIFICATIONS MODEL 544857

Cut	20"
Height of Cut	5 positions (1½" to 3½")
Housing	12 ga. steel
Engine	OMC 2-cycle
Starting	Finger-tip starting
Ignition	Solid state electronic
Throttle	Two speed
Muffler	Under the housing
Wheels	Needle bearing steel wheels
Fuel Tank	1¼ gal.
Weight	76 lbs.
Colors	Green & evergreen
Handle	Fold down, quick release



POWER RAKES

Ryan power rakes are designed to remove the proper amount of thatch from turf areas. Thatch is a term describing dead and dying plant materials that collect between the soil and living blades of grass. Even though thatch is the result of good growth, too much of it can prevent air, water and fertilizer from reaching plant roots.

The "average" home lawn should be power raked in the spring and once more in the fall for thatch removal, renovation or reseeding. Fine turf areas, like a golf course green may need monthly thatch removal. And Ryan has the power rakes to get the job done.

THIN-N-THATCH

The Ryan Thin-N-Thatch power rake was designed especially for dethatching home lawns. It's a lightweight machine with simplified controls that make it easy for anyone to dethatch like a pro. There's even a fold-down handle for easy storage and transportation.

But the Thin-N-Thatch delivers the same kind of professional performance you get from the larger Ryan power rakes. An efficient 3-hp engine drives carbon steel flail blades across a 15" swath of turf, dethatching and cutting out low-growing weeds. Height adjustment lets you cut from 5/8" above ground to ground level.

The Thin-N-Thatch also includes a reel clutch and flexible rear shield for safety.

THIN-N-THATCH SPECIFICATIONS MODEL 544848

Engine 4-cycle, 3-hp Briggs & Stratton #80202, w/rewind starter, piston displacement 7.75 cu. in. (127cc), 3600 RPM no-load. Dual element air cleaner, manual governor control, and low-tone muffler.

Clutch Spring loaded belt tightener-type. Large 2 3/4" dia. backside idler w/sealed ball brg. for long belt life & automatic take-up for stretched or worn belt. Reel clutch control at operator station for convenience and safety.

Chassis Sides 12 ga. sheet steel, deck 14 ga. sheet steel, welded construction. Internal box section stripper plate reduces recirculation and stiffens chassis.

Drive 4L-section belt from engine to reel. Sheaves, 3" O.D. at engine, 4" O.D. at reel.

Axle 1/2" dia. rod held in movable relationship to chassis by adjusting levers.

Reduction Engine to reel 1.33:1.

Wheels (4) 8 x 1.75 smooth tread semi-pneumatic tires, w/ball brgs. and lube fittings. Front wheels individually adjustable in 1/4" increments through 3" range by walking action of adjusting levers. Rear wheels bolted to chassis (two locations available).

Wheel Base 15 3/4" at level position.

Reel Speed 2700 RPM. Flail tip speed 5390 FPM.

Reel Support Spherical O.D. sealed ball bearings mounted in 2-bolt flanges.

Blades Flail blades made from 1/8" high carbon steel and hardened. Have carbide hard facing along lower edge. Effective flail reel O.D. 7 5/8".

Handlebar 7/8" x 18 ga. zinc plated tubing. Handle folds down for convenient low clearance loading.

Rear Shield Flexible shield prevents objects from being thrown at operator. Flexes to rear to allow debris to escape.

Cutting Width 15".

Cutting Depth Reel adjustable from 5/8" above ground to ground level.

Net Weight 75 lbs. w/flail reel.

Dimensions Width—21 3/4"; height (folded 23 1/2"), (working 40"); length (folded 32 1/2"), (working 51").



MATAWAY

The Ryan Mataway is the heavy-duty power rake that dethatches and deep-slices large turf areas fast. Its powerful 10-hp engine, coupled with an extra-wide 19" swath, lets you cover about 10,000 square feet per hour.

The Mataway is designed to deliver the professional results you need. Snap-out reels let you easily select the type of blade and blade spacing required. A micro-screw adjustment assures precise slicing depth. Reverse reel (upmilling) provides a cleanly cut groove.

Self-propelled with handlebar control make the Mataway as convenient as it is efficient.

MATAWAY SPECIFICATIONS MODEL 544283

Width 19" swath, 34½" overall.

Reel Easy-change, snap-out reels.* Reverse reel direction.

Blades Carbide tipped, 1/16" straight blades on 1½" spacing standard.

Depth of Cut Micrometer screw adjustment for any desired depth within 1½" range.

Engine 4-cycle, 10-hp.

Controls 4 on handlebar.

Drive Front wheel by gear box and roller chain, triple V-belts, engine to reel.

Clutch Belt tightener.

Tires Fully pneumatic—4.10/3.50-4.

Lubrication Oil splash in gear case—pressure grease fittings.

Weight 320 lbs. (with 544265 reel).

Optional Equipment 1/32" and 1/8" thick blades available. Blade spacers for increasing spacing in increments of 1/8" from minimum spacing of 1/2". Flail blade reel.

*Patent No. 3,439,747





REN-O-THIN® III

With the 5-hp Ryan Ren-O-Thin III power rake and optional 6-bushel capacity catcher attachment, you can dethatch and catch in one operation. In addition, the Ren-O-Thin's floating axle follows land contours and the micro-screw height adjustment allows you to obtain precise dethatching depths.

A special S-shaped trailing shield deflects debris downward away from the operator when the catcher is not used. And three interchangeable reels are available for varying turf conditions.

REN-O-THIN III SPECIFICATIONS MODEL 544837

Width	29 1/8"
Height	35 7/8" at handlebar.
Length	53 3/8" to front handlebar.
Net Weight	109 lbs. less reel.
Engine	5 hp, 4-cycle with rewind starter.
Wheels	Rear: Individually adjustable; Front: Micro-screw adjustment with lockable, floating wheels to follow land contours.
Clutch	Spring loaded belt tightener-type. Spring assures automatic takeup of belt slack.
Tires	4 semi-pneumatic, smooth tread tires. Front: 8 x 1.75; Rear: 10 x 2.75.
Drive	4L- section V-belt from engine to reel.
Chassis	Formed steel, welded construction. Debris baffle minimizes recirculation, conserves power, makes catcher attachment feasible.
Blades	Hardened, high carbon steel with carbide edges. Thicknesses: 1/32", 1/16", 1/8", fixed straight, 1/8" flail.
Cutting width	18"
Cutting depth	Reel adjustable from 1" above ground to 7/8" into ground.
Reel speed	2,700 rpm.
Optional equipment	Easy-to-change reels: Flail-type, 1/8" carbide-faced blades at 1" spacing. 1/16" fixed-type at 1 1/2" spacing. 1/32" fixed-type at 3/4" spacing and 1/8" fixed-type at 2" spacing. Wheel Scraper Kit. Catcher assembly.



REN-O-THIN® IV

The 7-hp Ryan Ren-O-Thin IV is designed for professionals, as well as homeowners. It's a power rake that can be used for breaking up cores, or dethatching on greens, tees and lawns.

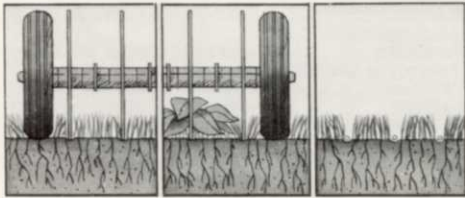
It's a power rake that boasts a 4L-section V-belt drive and ball-bearing wheels, and a unique chassis baffle that minimizes recirculation.

In addition, Ren-O-Thin IV has a floating front axle with a micro-screw height adjustment. A spring-loaded reel clutch control on the handlebar. And an S-shaped trailing shield. Making this quality built power rake perfect for your dethatching needs!

The Ryan Ren-O-Thin IV . . . proven performance on the job.

REN-O-THIN IV SPECIFICATIONS MODEL 544838

Width	29 1/8"
Height	35 3/8" at handlebar.
Length	53 3/8" front to handlebar.
Net Weight	126 lbs. less reel.
Engine	7 hp, 4-cycle with rewind starter.
Wheels	Rear: Individually adjustable; Front: Micro-screw adjustment with lockable, floating wheels to follow land contours.
Clutch	Spring loaded belt tightener-type. Spring assures automatic takeup of belt slack.
Tires	4 semi-pneumatic, smooth tread tires. Front: 8 x 1.75; Rear: 10 x 2.75.
Drive	Dual 4L-section V-belt from engine to reel.
Chassis	Formed steel, welded construction. Debris baffle minimizes recirculation, conserves power, makes catcher attachment feasible.
Blades	Hardened, high carbon steel with carbide edges. Thicknesses: 1/32", 1/16", 1/8", fixed straight, 1/8" flail.
Cutting width	18"
Cutting depth	Reel adjustable from 1" above ground to 7/8" into ground.
Reel speed	2,700 rpm.
Optional Equipment	Easy-to-change reels: flail-type—F, 1/8" carbide-faced blades at 1" spacing. 1/16" fixed-type at 1 1/2" spacing. 1/32" fixed-type at 3/4" and 1/8" fixed-type at 2" spacing. Wheel Scraper Kit. Catcher assembly.
Feature	Reversible handle for upmilling.



Thins running stem grasses.

Cuts out low-growing weeds.

Tiny slits catch seed, minimizes water runoff, fertilizer washes into soil.



SOD CUTTING

Today, Ryan makes small, powered sod cutters that can cut up to 135 feet of sod per minute. Machines that allow small or large users to take advantage of the benefits of sodding versus seeding.

Ryan also makes larger, more powerful sod cutters that not only cut up to 187 feet of sod per minute, but cut it into strips and roll it automatically. These field-proven cutters can be operated almost continually, even under wet soil conditions.

HEAVY-DUTY SOD CUTTER

The Ryan Heavy-Duty Sod Cutter is rugged, dependable and a quality built piece of equipment for professional use. The eccentric is driven by heavy-duty spur gears. One man can cut up to 187 feet per minute in high gear. And the cutoff model offers automatic vertical cutoff adjustable from 1 to 9 feet.

In addition, it has a sound reputation for getting the job done; built on years of actual in-the-field use.

HEAVY-DUTY SOD CUTTER SPECIFICATIONS

CUT WIDTH	NET WEIGHT	SPECIAL EQUIPMENT	SOD CUTTING METHOD
12"	391	—	Walkbehind
12"	481	Auto Cutoff	Walkbehind
16"	436	—	Walkbehind
16"	522	Auto Cutoff	Walkbehind
16"	743	Auto Cutoff	Sulky Roller
18"	446	—	Walkbehind
18"	551	Auto Cutoff	Walkbehind
18"	748	Auto Cutoff	Sulky Roller

Engine 12-hp w/recoil starter.
Ground Speed 135 to 187 ft. per minute highgear.
 121 to 150 ft. per minute lowgear.

Cutting Thickness Up to 2½", lever controlled.

Engine Clutch Belt tightener-type.

Drive Two A-section V-belts engine to gearcase. Gears and roller chain to drive wheels; gears to blade eccentric shaft. All gears heat treated. Two forward speed transmission has dog clutch to disengage blade.

Lubrication Oil splash in gearcase. Pressure grease fitting elsewhere.

Drive Wheels 2 wheels, 8" diameter with knobby tread rubber tires vulcanized to hubs.

Rear Wheels 8x2.50 tires with sealed roller bearings.

Auto Cutoff Roller chain drive, friction disc clutch and brake, sod strip length adjustable from 1 to 9 ft.

SULKY ROLLER ATTACHMENT

Wheels 4.80/4.00-8 pneumatic tires with roller bearings.

Hitch ½" diameter pin.

Rolling Rack Springloaded, adjustable for sod of various lengths 6' to 9'.



JR. SOD CUTTER

The Jr. Sod Cutter is the original Ryan sod cutter. It has been proving itself for years, wherever small sod-cutting jobs are required.

The Jr. Sod Cutter gets its muscle from a proven 7-hp engine that lets one man cut up to 135 feet per minute, up to 2-1/2 inches deep, in 12- or 18-inch swaths.

The Jr. Sod Cutter is engineered to last too, with its heavy-duty gearbox and overall rugged construction. For loading and transporting convenience, an optional tote trailer is available.

JR. SOD CUTTER SPECIFICATIONS MODELS 544844, 544845

Width of Cut 12" Model and 18" Model.
Ground Speed Variable with engine speed up to 135 ft. per minute.
Thickness of Cut Up to 2½".
Engine (Recoil Start) 4-cycle, 7 hp.
Drive A-section V-belt, engine to gear case. Double roller chain to blade eccentric shaft; gears and roller chain to traction wheels. Transmission has separate dog clutches to disengage cutting blade and traction drive.
Engine Clutch Belt tightener-type.
Drive Wheels Two 8" diameter knobby tread rubber tires vulcanized to cast iron hubs.
Lubrication Oil splash in gear case. Pressure grease fitting elsewhere.
Weight 12" model, 294 lbs. 18" model, 338 lbs.
Blade Pitch and Depth Controls Hand lever adjustments.
Optional Equipment Blades for aerating, trenching, and laying flexible pipe or line. Tote trailer.

TOTE TRAILER

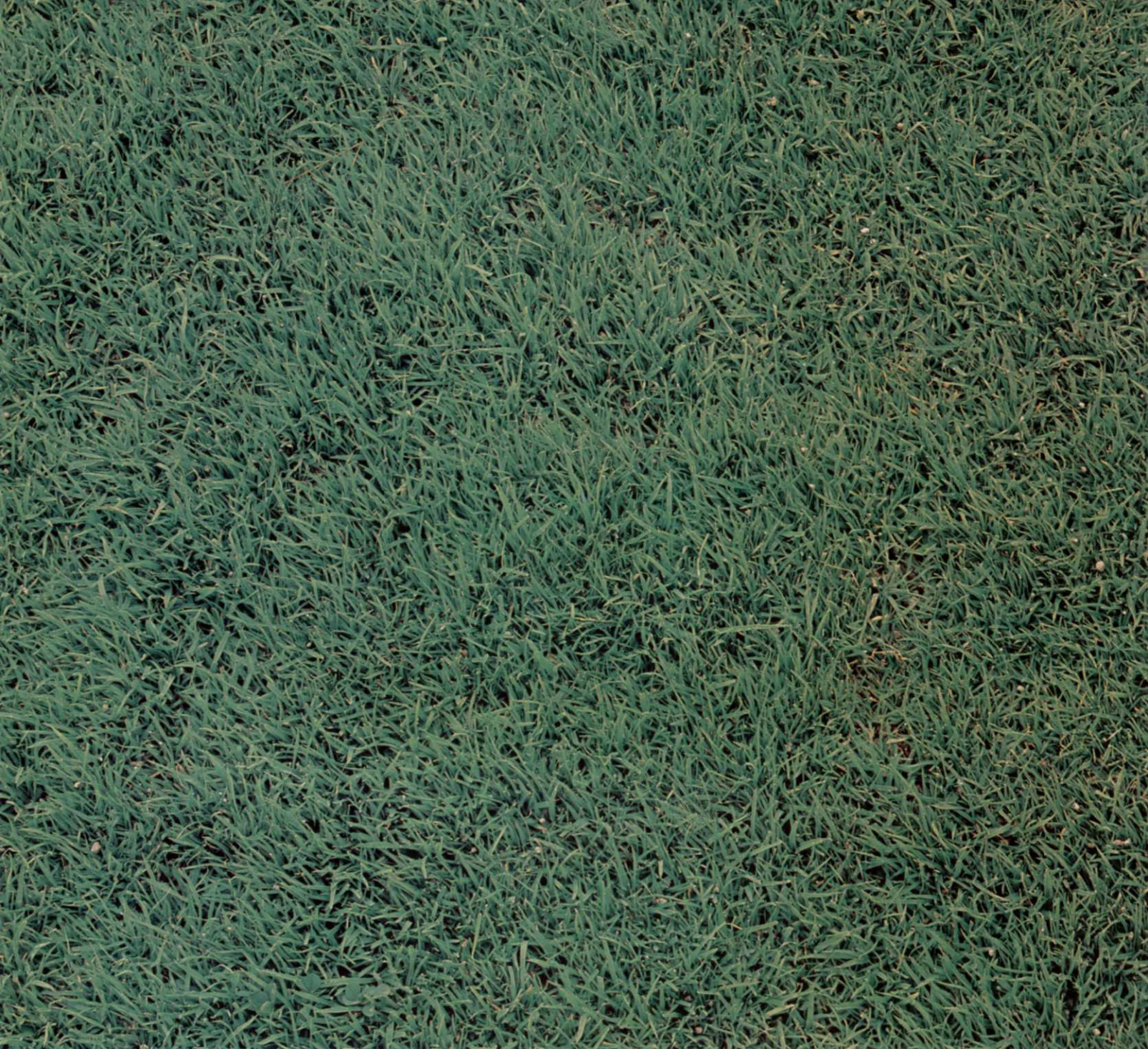
The Ryan Tote Trailer is designed specifically for the Jr. Sod Cutter. The Tote Trailer can help you save money by saving time and reducing manhour costs through loading and transportation.

Standard equipment includes fenders and lights.

TOTE TRAILER SPECIFICATIONS MODEL 544856

Length 72".
Width 56".
Wheels 2 pneumatic 4.80/4.00 x 8", 2-ply tires on steel rims with tapered roller bearings.
Hitch Heavy-duty cast steel coupling, fits 1½" or 2½" ball—includes safety chain.
Weight 135 pounds.





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Elizabeth Arden Golf Classic

By IRENE JONES

The \$100,000 L.P.G.A. Elizabeth Arden Classic was held on C.C. Aventura's South Course February 15 - 18 with 104 of the world's finest women golfers participating. Great names from the tour included recently named 1978 Rookie of the Year, 1978 Player of the Year and number one money winner of 1978 Nancy Lopez; number two on the money list Pat Bradley and number three Jane Blalock.

Geographically the tournament was ideally situated this year. Aventura sits right on the county line between Dade and Broward. The gallery turn out proved to be the largest ever to attend an L.P.G.A. event in South Florida; with all proceeds going to the benefit of the American Cancer Society.

Mother Nature proved to be a true lady . . . if we could have ordered the ideal weather for each day we could not have had it finer. Temperatures ranged from the low 60's at night to the high 70's during the day.

According to Tournament Director John Montgomery Jr., "The overseeded bent grass greens were terrific, the rough was tough, and the over all course was in meticulous condition."

Victory came as Amy Alcott watched her 25-foot birdie putt sink on the third sudden death playoff hole. She beat Sandra Post and claimed the \$15,000. first prize. This brings her tournament wins up to six. Both Post and Alcott finished regulation play with one-over-par 73s and 72 hole totals of 213. Tied for third at an even 216 were Pat Bradley and Jan Stephenson.



Amy Alcott walks up to green #18 enroute to first victory of the 1979 LPGA Tour.

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Dan Jones, CGCS receives The Leo Fesser Award from President George Clever for the best article in "The Golf Superintendent" during 1978

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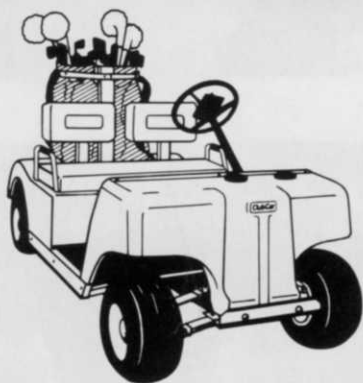
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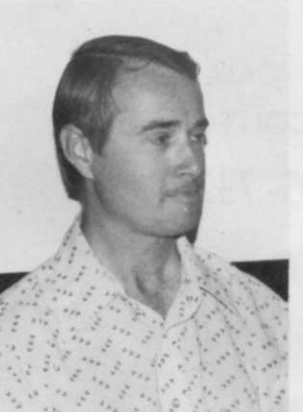
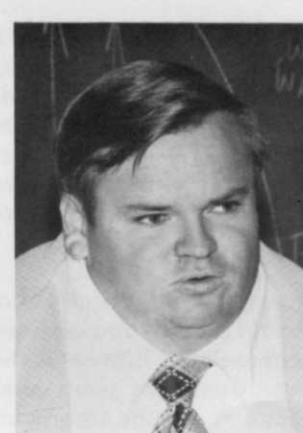
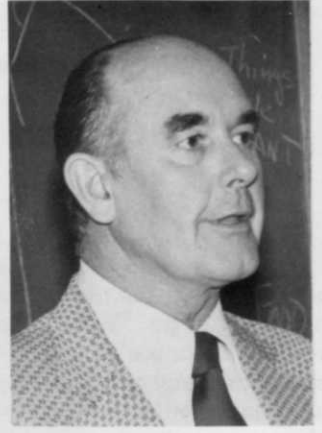
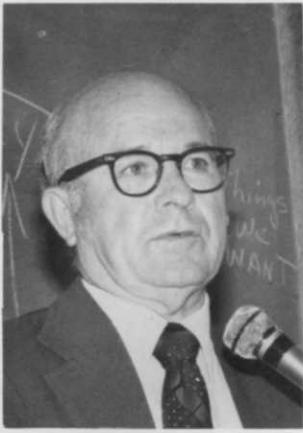
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IFAS TURFGRASS FIELD DAY - January 9, 1979, University of Florida, Agricultural Research Center - Ft. Lauderdale. More than 200 people traveled from all of South Florida to listen, look and learn more about turf. Dr. Ennis and his staff worked diligently this past year and their efforts were quite evident.

Photographic report on these two pages by Harry McCartha.





Top row left to right:
 Dr. W. B. Ennis, Jr. Director, A.E.
 Dudeck, E. O. Burt, L. E. Watson.
 Second row: W. J. Carpenter, L. J.
 Daigle, R. B. Whitty, H. G. Myers.
 Third row: R. A. Atilano, R. H.
 Zerba, G. W. Swan, P. Busey.
 Bottom row: G. H. Snyder, C. A.
 Lowrey, Jim Reinert.

EFFLUENT — New Water Style

By ROBERT L. SANDERS, C.G.C.S.

The superintendent stood at the golden gate. His head was bent low. He merely asked the man of fate which way he ought to go. "What have you done," St. Peter said, "to seek admittance here?" "I maintained a Country Club on earth for many and many a year." St. Peter opened wide the gate and gently pressed the bell. "Come in," he said, "and choose your harp — you've had your share of hell."

And now we are talking about having to use "dirty water", "once used water", "effluent water", or "reclaimed water". How many of you today use reclaimed water? How many would like to use effluent water? There may come a time when we, as superintendents will have no choice. Recycling appears to be our key to survival. Recycling of many of our resources is here to stay. And it is correct!

There is absolutely no reason we have to have fresh water pumped out of the ground to water our turf while millions of gallons of "once used" water is wasted and allowed to run down dry washes, into rivers or into our lakes. First we must recycle in order not to use up our water resources. Second, federal laws will soon make it more and more difficult to simply waste effluent. And third, public opinion as to ground water pumping may cause the use of effluent and this could happen to you.

In early 1976 the city of Tucson, had plans to construct a Robert Trent Jones course. The drawings were complete, land was purchased and the construction contract was signed. Public opinion caused the mayor and council to stop construction the day it started. The reason was water — the use of one million gallons per day of fresh pumped ground water and it cost the city of Tucson \$250,000 not to build the course.

To my knowledge, golf courses are the only legal use of effluent at this time. All this talk about effluent and we have not determined exactly what effluent really is. Effluent is the liquid that comes out of a sewage treatment plant after completion of the treatment process. A sewage treatment

plant is basically a big water cleaning machine. It consists of a series of tanks, screens, filters and other devices to separate out the wastes in sewer water.

As raw sewage enters a plant for treatment, it flows through screens which remove large objects such as rags, rocks and sticks. Then the sewage passes through a huge grinder. Next it passes through a grit chamber where sand, grit and small objects are allowed to settle to the bottom. Some suspended solids also settle out here. After the grit and etc. are removed, the sewage still contains large amounts of dissolved organic and inorganic matter as well as suspended matter. At this point the speed of flow is reduced and more suspended solids sink to the bottom of the tank. This mass of solids is called raw sludge. Now remember raw sludge and how we got it because we are coming back to it later. This sludge is removed from the tank for further treatment (as with milorganite) or disposal. This is as far as some plants treat sewage and the liquid remaining is pumped for turf.

If secondary treatment is to be, there are two main methods of treatment: 1. the trickling filter process and, 2. the activated sludge process. The trickling filter is a bed of stones from three to ten feet deep over which sewage is sprayed so it can trickle down through the layers of rock. Bacteria from the sewage collects on the rocks and consumes most of the organic matter in the sewage. The cleaned water flows out through pipes at the bottom of the filter and is treated with chlorine to kill the remaining bacteria. This water is now discharged from the plant and can be utilized for plants. The activated sludge speeds up the work of the bacteria in sewage by mixing sewage, recycled sludge (full of bacteria) and huge amounts of air. The sludge with its load of bacteria is mixed with the sewage and air. The bacteria then consumes the organic matter in the mixture as it sits for several hours. Then the mixture flows to another tank where the solids are allowed to settle to the bottom. The cleaned water is chlorinated and discharged. Some sludge is activated with additional

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