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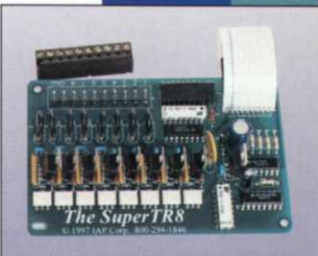
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Number 11 green Championsip Course in the foreground. In the background, parallel holes dominate the parkland layout that winds through many of the trees planted by Oberlander himself. Photo by Daniel Zelazek.

early involvement in the associations.

“In this business you never stop learning. Attending meetings and being involved in what’s going on is one of the best educations a superintendent can get.”

“The business has changed a lot over the years. I think golf course superintendents overall are getting more respect, but the stricter regulations and higher expectations are burning people out faster. I really feel sorry for the younger superintendents these days. I think they are under a lot of pressure with so many people looking over their shoulders.”

Nurtured by his love for golf and the desire to create and be part of a harmonious working environment, Oberlander says hopefully one day down the road he might like to own his own golf course. At 44 years old, Oberlander has plenty of time to pursue that dream. Meanwhile, he’s enjoying working and living on Florida’s Nature Coast.

Seven Rivers Chapter

History: The Seven Rivers Chapter was formed in 1991 to provide travel relief for West Coast members who lived well north of the Tampa-St. Petersburg area. Named for the seven rivers flowing in Citrus County, the chapter serves superintendents from the Gainesville-Ocala-Brooksville area.

New Approach: In trying to avoid some of the problems of big chapters, the Seven Rivers GCSA took a different approach to membership. They established a 3:1 superintendent to vendor membership ratio. Vendor memberships are by company, not individuals, and the companies must be members of the Florida Turfgrass Association. Only one person from the company may attend meetings, except for a couple of special meetings during the year. The companies are charged a higher dues rate, but they are not asked for any other support the rest of the year. Beverages and refreshments are paid by the chapter from the funds of all supporting vendors. It must work. There is a waiting list to join.

Founding members: Jeff Hayden, Glenn Oberlander, Tim Sever, Dave Hoggard and Stuart Bozeman were among the first to meet and discuss forming the new chapter. Legend has it that Glenn was called from the room for a phone call and while he was away, the others voted him in as the first president. Glenn swears it was a set up.

Activities: The Seven Rivers Chapter has distinguished itself for all time by the organization and operating of the annual Envirotron Classic each April at the World Woods of Golf Pine Barrens and Rolling Oaks courses. With the generous support of the World Woods ownership, which donates the use of the courses, the Seven Rivers GCSA has been able to raise nearly \$272,000 for equipment and research at the University of Florida. Glenn Oberlander has been the chairman and chief whip for the event all seven years.

Officers for 1999-2000: Paul Illgen, World Woods of Golf, president; Bob Marrino, Magnolia Valley GC, vice president; Buddy Keene, Gainesville CC, external vice president and secretary; Stuart Bozeman, Seven Rivers G&CC, treasurer. There are currently 112 members of the Seven Rivers GCSA.

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THE FLORIDA GREEN



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What Have You Done for Me Lately?

BY DAVID COURT, CGCS

FGCSA Membership Chairman

What have you done for me lately? This is a question asked by many people in a variety of situations. Maybe it's Steve Spurrier or Jimmy Johnson saying it to their quarterbacks. Closer to home it could be a green chairman asking his golf course superintendent. It really hits hard when a superintendent asks this of his local chapter or

state association, "What am I getting from the FGCSA for my \$70?"

Publications

First in publications you get the best magazine in the country produced by superintendents for superintendents, *The Florida Green*. 3,000 copies of the magazine are circulated to members, green chairmen, club managers, golf course builders, architects, turf researchers and other VIPs in the golf industry.

The FGCSA newsletter, *The Green Sheet*, is produced bimonthly and is a fact-filled publication that keeps members up to date with a calendar of upcoming events, highlights of FGCSA board meetings, legislative issues, public and media relations and educational opportunities.

The *FGCSA Membership Directory* is published annually and is sent out to all members throughout the state. It even has a nice cross reference in the back to let you locate another member by course and chapter.

Staff

Our state association has two of the

best staff members that an association could have. Marie Roberts, our association manager, is always there to help out. If you are looking for information about a job change, she has that information for members only. She assists the board members and committee chairmen carry out their duties. A 15-year FGCSA employee, Marie keeps the association's books and financial records, works as advertising manager for the *Florida Green*, puts together the *Green Sheet* and publishes the Membership Directory.

Joel Jackson, our director of communications, stays busy as the editor of *The Florida Green* magazine and *Green Sheet* newsletter. He also represents the FGCSA members at meetings of allied associations, government relations and public relations.

Joel has been selected to the board of directors of the Agriculture Institute of Florida and the advisory board of the Florida Golf Course Owners Association

He is also a member of the media-based International Network of Golf. It's easy to spot Joel at a function. He's the guy with the camera and tape recorder.

Education

The FGCSA partners with local chapters to host several GCSAA Regional Seminars throughout the year. These seminars can be taken by superintendents, assistants or other key staff members. CEUs are always available toward certification at these seminars. This is a great way to keep up with your continuing education for your current and future positions.

The FGCSA hosts additional credit-earning GCSAA/Etonic Leadership seminars at the Poa Annuia Classic each May in Naples and at the annual Florida Turfgrass Association Conference and Show along with practical concurrent education sessions.

The FGCSA also partners with industry representatives to put on a series of pesticide safety seminars around the state to provide opportunities for superintendents and pest control technicians to earn CEUs toward renewal of restricted pesticide licenses.

Turf Research

The FGCSA is well known for fund raising and research support not only in Florida but also nationally. Much of the effort can be recognized by the work done on the Otto Schmeisser Research Green at the University of Florida's Ft. Lauderdale Research and Education Center.

The FGCSA has also supported the development of the G.C. Horn Turf Research Center and the Envirotron Turfgrass Research Laboratory located in Gainesville.

The FGCSA is a charter member of the GCSAA Platinum Tee Club (\$5,000/year) and pledged an additional \$25,000 to the GCSAA's "Investing in the Beauty of Golf" campaign which supports practical, on-course turf research projects.

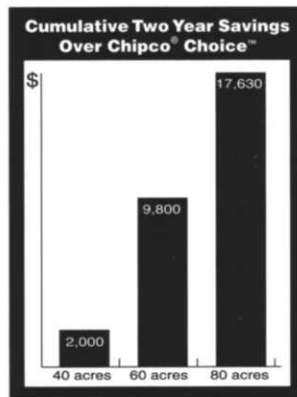
An FGCSA member serves as co-chairman on the FTGA Awards committee to help select worthwhile turf-related projects for funding and the FGCSA and its local chapters annually donate funds from special events to the FTGA to be designated for golf turf research.

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Welcome to the Microbial World



The role of this dynamic community in turfgrass management has raised a variety of opinions, questions, and products.

BY MATT NELSON

USGA Agronomist, Northeast Region

The soil microbial community consists of a wide array of organisms with numerous and many yet-to-be-understood complex interactions (14). Although studies of soil microbiology have been conducted for decades, scientists have recently made considerable progress in furthering our understanding of microorganisms and their function in soils supporting turfgrass growth.

Public outcry and opposition to the use of synthetic fertilizers and pesticides have prompted much of the recent research.

While very useful findings have been obtained through many painstaking and novel research strategies, these studies have yielded the realization that considerably more research will be necessary to develop solid recommendations for managing soil microbial populations. This article will review soil microbiology and discuss how to select and investigate the use of various products and management techniques. The intent is to pro-

vide information for golf course superintendents and other turfgrass managers so they can objectively evaluate the plethora of products that claim to produce better turf by influencing soil microorganisms.

Soil Microbiology

A productive, biologically active soil can contain as many as 45 quadrillion microorganisms in the rootzone of 1,000 square feet of turfgrass (19). This population consists primarily of bacteria, actinomycetes, fungi, and algae. Within each of these groups of organisms are many diverse genera and species whose populations fluctuate widely both spatially and temporally. Among the factors contributing to this variation are energy sources, nutrients, water availability, temperature, pH, atmosphere, and the genetics of the organism (6).

The result is a very complex and highly competitive system influenced by a combination of biotic and abiotic forces. The specific function and characteristics of the constituents of the microbial community are not straightforward and are

not thoroughly understood.

Fungi are involved in organic matter decomposition, mycorrhizal associations, and turfgrass diseases. Mycorrhizal associations are known to improve nutrient and water uptake, and also stabilize soil aggregates. In fact, mycorrhizal associations have been shown to provide interspecific transfer of phosphorus and other nutrients (3).

Endophytic fungi form associations with plants and discourage insect predation. Actinomycetes decompose organic matter, particularly complex organic molecules such as cellulose and chitin. Actinomycetes are also capable of producing antibiotics that may confer disease suppressive qualities (15, 22).

The bacterial populations in soils contribute a range of benefits to plant growth. Included in these are nutrient cycling, soil aggregation, solubilization of immobile elements, competition with pathogenic organisms, organic matter decomposition, and the production of phytohormones.

Bacterial populations and their associative functions are diverse and highly significant to plant productivity. Bacteria tend to utilize simple organic compounds such as plant exudates, while fungi and actinomycetes are more proficient users of complex organic compounds (6).

Much of the activity described above occurs in the region of the soil environment influenced by roots, known as the rhizosphere. Within this region from the root surface outward approximately 10mm is found enhanced nutrient cycling, exudates that affect pH, redox potential, and nutrient availability; symbiotic associations with soil microbes; colonization by microorganisms; interactions with roots and pathogens; and metal mobility and complexation. More simply put, this region is the dynamic interface between plants and soil where microbial function is in action.

Grasses have a significant amount of rhizosphere due to their fibrous and extensive root systems. Although our understanding of the organisms, processes, and dynamics is increasing, there has been relatively little discovered that

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RONSTAR ^d	M	H	NR	M	M	NR	NR	NR
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would enable turf managers to exploit the rhizosphere for improved turfgrass health. Researchers have, however, used mineral nutrition to affect rhizosphere pH and control root-infecting pathogens (4, 23). Beyond this, there is a host of unsubstantiated product claims that purport to favorably affect rhizosphere processes. In turfgrass systems, there is a significant lack of research to validate these claims, not the least of which include the lack of repeated studies and findings at diverse sites or across a variety of soil systems.

Most soils supporting turfgrass growth contain a very active and diverse microbial population. Some people have alleged that the use of synthetic fertilizers and pesticides reduces or eliminates the microbial community by altering the pH of the soil or causing direct and indirect toxicity to organisms. Except for the presence of inert ingredients in some emulsifiable concentrate formulations that have caused toxicity, preliminary results from one ongoing study indicate that pesticides do not adversely affect most non-target microorganisms (16). Due to the high productivity and rapid turnover of turfgrass roots, as well as the high lignin content in the stems and leaves, organic matter and microbial habitat are rarely deficient in turf grass systems (12).

The one system that may limit microbial activity due to a lack of favorable habitat is a newly constructed high-sand-content root zone, likely due to reduced nutrient and water-holding capacity. Keep in mind, however, that the advent of the sand rootzone system and sand top dressing arose to address severe agronomic difficulties, namely soil compaction and poor drainage of native soil greens. Sand-based rootzones have created physical characteristics that allow golf course superintendents to provide superior playing conditions and also maintain an oxygenated root zone. Microbial populations generally will stabilize 3-5 years after establishment, so amendments to the sand that can facilitate a more rapid colonization of the rhizosphere should lend stability to the system (6). These amendments would

include various organic types, including composts and/or inorganic amendments. The challenge of establishing turfgrass on new, sand-based rootzones could be due in part to the lack of sufficient microbial activity to buffer the system from environmental extremes and harmful pathogens

Soil Management and Microbial Enhancement

Testing for Soil Microbes

Undisputed is the important role microorganisms play in plant and soil health. The difficulty is in quantifying and qualifying that role. Recent advances in molecular testing capabilities have enabled fairly accurate quantification of the microbial component in soils. While this will not yield a clear understanding of the diverse function and interaction of the various organisms, it is a beginning point for assessing microbial health in soils. Keep in mind that microbial populations fluctuate widely across sites and over the course of a season, however, so testing for microbial activity may produce somewhat confusing results until a large-enough database can be assimilated. This currently may not be feasible or cost effective, and it will certainly take time. However, microbial testing may provide comparisons of soil that supports healthy turf versus soil struggling to support turf. Be sure to account for other factors that may be limiting growth, such as sunlight, air circulation, drain-

age, fertility, traffic flow, etc. (13). Soil testing for microbes may help assess whether microbial activity is influencing turfgrass quality.

Biostimulants

Biostimulant is a loose term that includes microbial inoculum, energy sources for microbes, soil conditioners, plant hormones, and other non-nutritional growth-promoting substances. In recent years, products containing both biostimulants and fertilizers have further muddled this definition. This makes differentiating between fertilizer response and biostimulant response difficult, if not impossible. No doubt this is precisely what the manufacturers of such products have intended, since the non-nutritional component alone may not elicit a plant response.

One group of biostimulants is plant hormones. These products may contain one or more of the following: cytokinins, gibberellins, auxins, abscisic acid, and ethylene. When growing under normal conditions, plants have adequate levels of hormones for normal growth and development. Most physiological processes in plants involve an interaction of several hormones, and individual hormones have several functions. Further, many hormones have different functions in different plant species (8). Normal hormone production can be influenced by environmental and cultural stress. Different species of plants, growing in different environments, with different

Soil Microbes

Bacteria: Single-celled organisms without a nucleus. Perform an important role in organic matter decomposition, nutrient cycling, soil aggregation, competition with pathogens, production of phytohormones. Also form symbiotic associations with plants.

Actinomycetes: Filamentous bacteria. Decompose complex organic matter molecules like chitin and cellulose, produce antibiotics, and regulate bacterial populations.

Fungi: Very good degraders of organic matter. Mycorrhizal and endophytic fungi form beneficial associations with plants. Most turfgrass pathogens are fungi.

Algae: Autotrophic organisms. Some fix nitrogen. Excess nutrients can result in an unwanted bloom.

Protozoa: Important in nutrient cycling and organic matter decomposition. Feed on bacteria and control bacterial populations.



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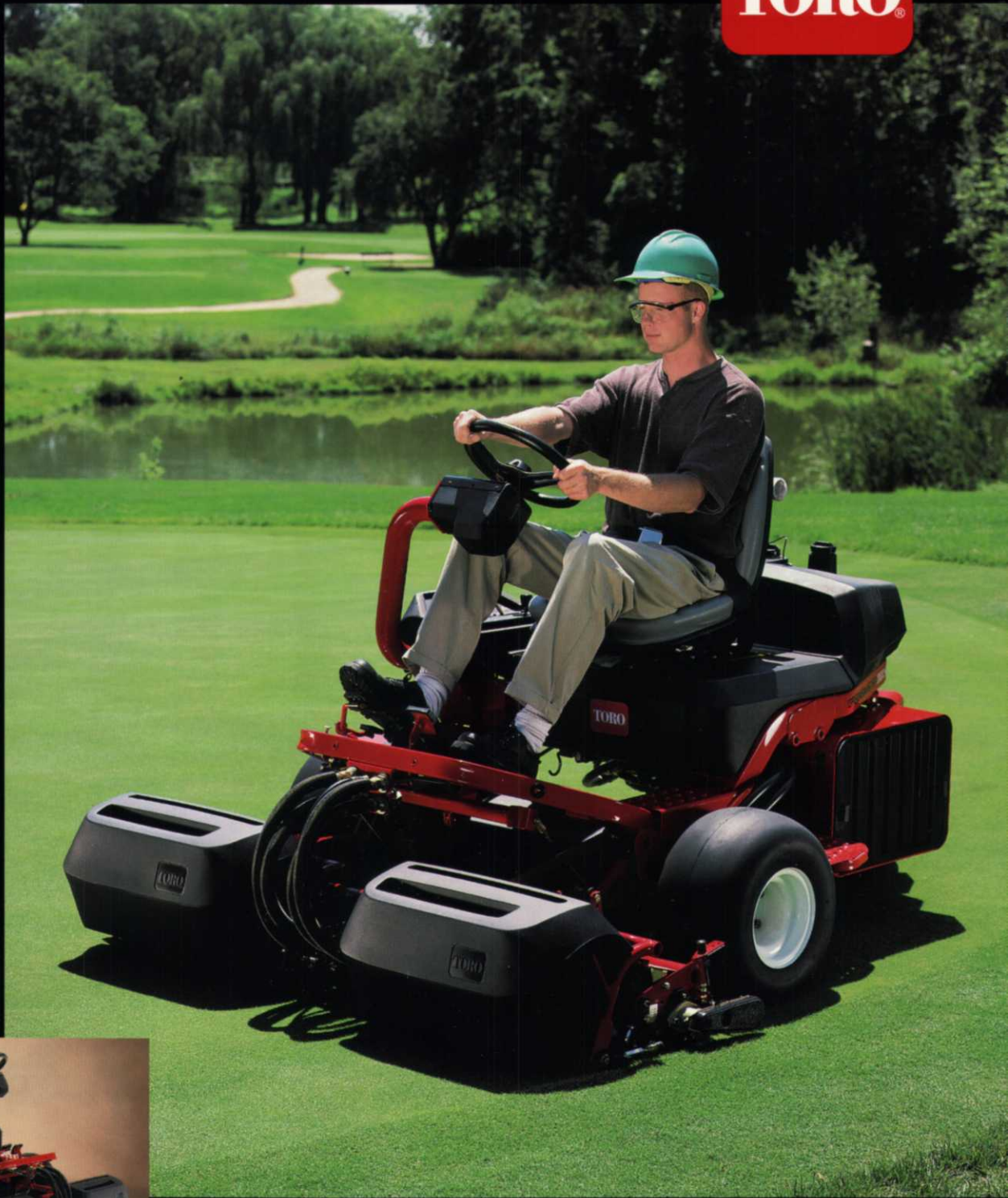
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APPLICATIONS.



Greensmaster 3250-D

Unmatched diesel power, innovative design and a lighter footprint make this the ideal greensmower for greens and surrounding areas.

PERFORMANCE PLUS

- Industrial wide-finned radiator resists plugging

- Powerful 21 hp Daihatsu® diesel engine designed for ample reserve power and low noise

- Easy add-on 3WD option for unmatched performance in hilly areas

- Larger tires feature more sidewall flexing ability for reduced compaction

- New cutting unit suspension system for increased cutting performance



POWER Large 21 hp Daihatsu 3-cylinder, liquid-cooled diesel for years of dependable service. The heavy-duty design features an industrial radiator with widely spaced fins to resist plugging.



COMFORT A Toro innovation, "joystick controls" activate all functions of the cutting units, making it simple and convenient. Operator comfort is further enhanced by precision power steering, hydrostatic drive and a newly designed, highly-durable, adjustable high-back seat.

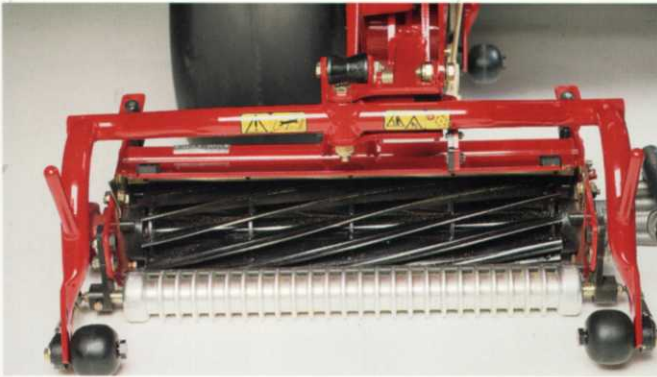


VERSATILITY There has never been a greensmower with as much versatility as the new Greensmaster 3250-D. A large 21 hp Daihatsu diesel engine provides the performance needed for use on greens and all areas around greens. Available **3WD option** further increases productivity and versatility by eliminating slippage when working around elevated greens and tees, especially on dewy turf early in the morning.

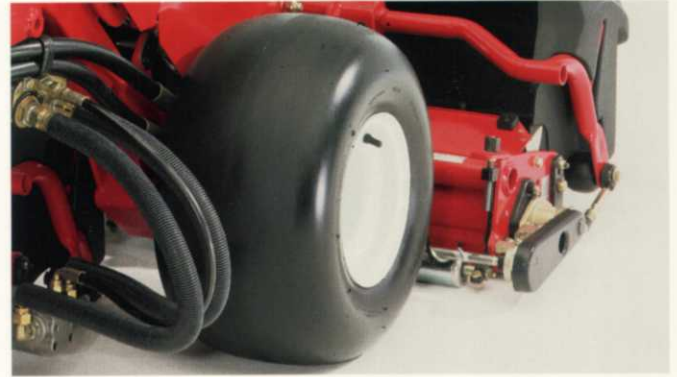


ENVIRONMENT FRIENDLY The unique engine design allows for higher torque at lower RPM's, meaning noise and vibration are kept to an absolute minimum. Plus the 3250-D is biodegradable oil ready. An optional Turf Guardian® leak detection system is available.

INNOVATION



QUALITY OF CUT A newly-designed suspension system increases cutting performance, allows for mowing with or without baskets, and facilitates easy removal of center cutting unit. Redesigned cutting units reduce turf marking, improve grass throw in heavy conditions and are easier to service. And a new basket design results in improved grass collection and clean after-cut appearance.



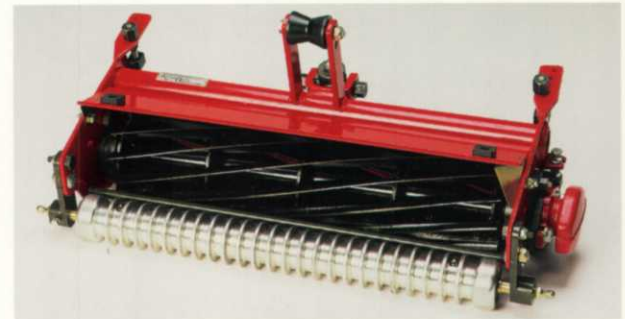
LIGHTER FOOTPRINT A significant breakthrough in greensmower tire technology means the Greensmaster 3250-D tires are gentler on the turf than any other greensmower tire. Large 19 x 10.5-8 tires feature a new, more flexible sidewall design for compaction relief on greens and less scuffing in turnaround areas.

ACCESSORIES

Toro offers an impressive selection of accessories to further increase the productivity of the Greensmaster 3250-D.



THATCHING REEL Variable blade spacing lets you customize your mower to each specific need. Spiral pattern blades effectively remove thatch.



GROOMING REEL Promotes upright, denser turf by helping control thatch build-up.



GREENS SPIKER Spiking reel penetrates the turf surface for aeration and leaves sizable holes for preparation of topdressing.



GREENS TRI-ROLLER Roller effectively smoothes playing surface for faster ball roll when desired.

GREENSMASTER® 3250-D



GREENSMASTER 3250-D

Engine	Briggs and Stratton/Daihatsu 850D 3-cylinder liquid-cooled diesel engine, 51.9 cu. in. (850 cc) displacement. Full-pressure lubrication, oil filter. 21.0 hp (15.7 kW) at 3600 rpm, 14.5 hp (12.3 kW) at 2600 rpm. Engine governed to 2750 rpm high idle, 1500 rpm low idle (no load).		
Fuel Capacity	6 gallons (22.7 liters)		
Traction Drive	Hydrostatic piston pump, closed loop system. Foot pedal forward and reverse; infinitely variable. Two front-wheel orbit motors, 10.3 cu. in./rev. displacement.		
Ground Speed	Forward-mowing speed is variable from 2 to 5 mph (3.2 to 8 km/h), adjusted by stop on pedal mechanism. Mow speed setting does not affect transport speed. Maximum Greensmaster 3250-D transport speed is 8.8 mph (14.1 km/h), may be reduced by adjusting stop in footrest pan without affecting mow speeds. Reverse is 2.5 mph (4.0 km/h) maximum.		
Turf Compaction	10 psi (.68 bar) average at recommended minimum tire pressures, with a 200 lb. (91 kg) operator, and cutting units down.		
Steering	Power steering. Open center, non-load reacting steering valve with power beyond for raise/lower circuit and hydrostat charge circuit. 13.0" (33 cm) round steering wheel. No-tool quick adjust steering arm position, with arm motion allowing a wide range of operator sizes. Steering cylinder has 1.50" bore x 6.25" stroke with through-shaft design for accurate straight line steering.		
Controls/Gauges	Raise/lower-mow lever. Functional control lever (neutral, mow, transport). Foot operated traction drive and brakes. Hour meter and 4 bulb warning cluster. Hand operated throttle. Mechanical engine speed control. Water-in-fuel warning light.		
Electrical Features	Maintenance-free 12 volt battery with 530 minimum cold cranking amps at 0 degrees F. and 85 minutes minimum reserve capacity at 85 degrees F. 40 amp alternator, circuit fused at 40 amps. Ignition switch/key. Seat switch. High temperature engine kill override switch. Harness terminals, fuse slot, and console switch location available for optional lights installation.		
Sound Level	GR3250-D Reels Off Reels On	Operator Ear 83 dBA 84 dBA	At 25' 73 dBA At 75' 62 dBA
Overall Dimensions	Width of Cut: Wheel Tread: Wheel Base: Overall Length (w/baskets): Overall Width:	59.0" (150 cm) 50.5" (128 cm) 48.6" (123 cm) 93.9" (238 cm) 68.0" (173 cm)	Overall Height: Net Weight (no fuel, no operator): Weight w/reels (no fuel, no operator): Reel Speed:
Tires	Three 19 x 10.5-8, 2-ply pneumatic tubeless demountable and interchangeable. Smooth tread. 8" (20.3 cm) rim for high tire flexing.		
Tire Pressure Recommended	8-12 psi front 8-15 psi rear		
Brakes	6" drum type mechanical with rack and pawl lock for parking.		
Seat	Contour seat with high backrest. 7" (17.8 cm) fore/aft slider adjustment with two mounting positions, allowing 9" (22.8 cm) total seat travel. Operator manual in tube mounted on the seat back for easy access.		
Certification	Certified to meet ANSI specification B71.4-1990 and European CE standards.		
Warranty	Two year limited warranty. Refer to the Operator's Manual for further details. Briggs & Stratton provides a two year commercial engine, and a lifetime Magnetron® ignition warranty.		

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