

Some cancellations even TURFLON can't prevent.

When your customers move away from you, the best herbicide in the world can't make them stay. But when more than 24% of LCO customer losses are due to poor weed control—as cited in one recent study—then it's time to take a look at your herbicide.

TURFLON®: Superior control. For outstanding control of a wide spectrum of broadleaf weeds, there's nothing like TURFLON herbicide. It even gets the stubborn Hard to Control weeds—oxalis, ground ivy, wild violet, spurge and the like—that other herbicides often miss. So your customers stay happy... and stay with you. And you have fewer complaints, fewer costly callbacks, fewer cancellations.

New herbicide chemistry. The active ingredient in TURFLON, triclopyr, is the first new herbicide chemistry to come along in years. It stays where it's sprayed, won't migrate through soil to harm ornamentals and other off-target species.

It's safe to established cool-season turf, and has a proven safety record for humans and animals.

Proven in use. TURFLON herbicide performance has been thoroughly proven... in years of testing and in day-to-day use on LCO route trucks across the country. Operators who have used it find that often one treatment with TURFLON does what other products fail to achieve in two or more treatments.

Choice of formulations. Whatever you need, there's a TURFLON formulation for you. Choose an amine for broadcast use, or an ester for spot application. Whichever you select, TURFLON herbicide gives you outstanding performance, every time.

You can't keep your customers from moving away. But you can keep them from moving to your competition because of poor weed control. Keep them, and keep them happy, with TURFLON herbicide.

TURFLON*

Fewer weeds, fewer cancellations.



*Trademark of The Dow Chemical Company

7002

U(versa)TILITY VEHICLES

Less known in public circles than its glamorous cousin the golf car, utility vehicles perform a myriad of tasks in industries ranging from golf to garbage.

by Jeff Sobul, assistant editor

During a recent National Football League exhibition game, a player incurred a severe dinger to the head. It was enough of a blow to keep anyone from getting him off the field upright. So on to the field to retrieve the injured man cruised an odd-looking three-wheel vehicle with a flat bed—a utility vehicle.

Drive past any construction site and you notice that these vehicles are performing any number of tasks. In fact, these things are just about everywhere. And with less than 20 companies producing them, the opportunity to enter the market exists.

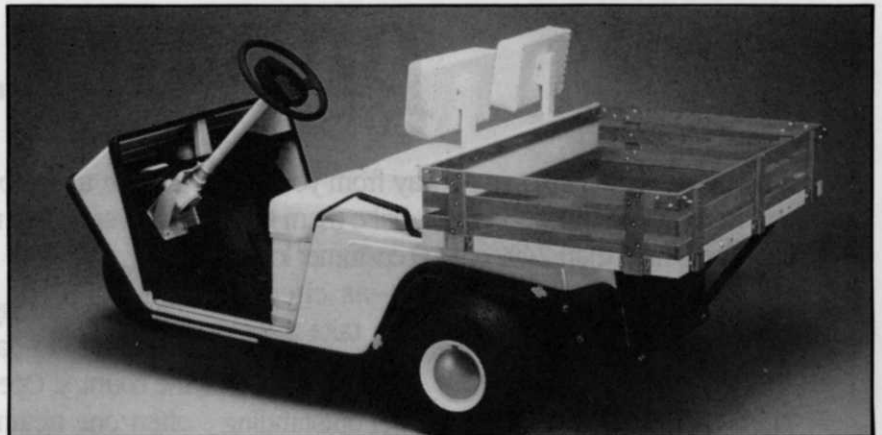
Ronald Skenes, E-Z-Go Division of Textron, believes the utility vehicle (U.V.) market is growth-oriented. "As long as golf course construction continues, that will be one area where there will be new growth," he notes.

E-Z-Go has only been in the utility vehicle market for a few years, originally starting as a golf car manufacturer. The company has essentially created two lines for its utility vehicles, a heavier industrial and a lighter turf vehicle line.

John Deere & Co. recognized the opportunity presented by the market, entering it in January with the AMT-600, "a whole new concept in off-road vehicles," according to Deere's Bob Tracinski.

The AMT-600 is the first utility vehicle to drive on a five-wheel chassis, which Tracinski says adds stability.

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Melex Cargo Carrier



**UTILITY VEHICLE
SPECS**
Page 34

Club Car Carryall II



Cushman Eagle



Daihatsu Hijet

The long and the short of high-capacity rotary mowing.

The HR-15. Long on mowing. Short on costs.

With a massive 188 inch cutting swath, the HR-15 takes long, powerful strides over all types of terrain. So it can chop the most demanding mowing schedules down to a money-saving size.

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Based on the time-proven reliability of the Jacobsen F-Series Tractor, this rugged, self-contained mowing unit is designed for long hours of dependable service. With your choice of decks: rotary or our unique new fine-cut flail.

Three interchangeable rotary decks—each with its own hydraulic control — are constructed of heavy gauge steel for long life under the toughest conditions. Plus large caster wheels and anti-scalp rollers help give you a super-smooth, manicured finish over all types of turf. Even over rough terrain.

And Jacobsen's three interchangeable "fine-cut" flail



The HR-15 is also available with "fine-cut" flail decks. Jacobsen exclusives for a superb quality cut.

decks provide a smoother, more even cut than any other flail on the market — even in tall grass. The flail's hooded, full-width discharge helps prevent windrowing, and eliminates much of the danger of discharged objects — a big plus when mowing around crowded parks or institutions.

The HR-15 also features a 20-gallon fuel tank, enough for a full day of mowing. And the rugged 78-hp Perkins diesel and radiator are mounted up front, out of the way of clippings and debris, for clean, cool operation.

Plus creature comforts like power steering, conveniently located controls, and the cushioned, shock-absorbing seat with back rest, minimize operator fatigue.

The HR-15 high-capacity mower from Jacobsen. It shortens up the longest mowing jobs. For more information, or to arrange a free demonstration, contact your Jacobsen Distributor. Remember, lease and finance plans are available.

**JACOBSEN
TEXTRON**

Jacobsen Division of Textron Inc

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UTILITY VEHICLE GUIDE

MANUFACTURER	MODEL	ENGINE	PAYLOAD	ADDITIONAL INFORMATION
CHI Industries P.O. Box 1148 Benton Harbor, MI 49022-1148	Haul Master HX-4660	16 hp 4-cycle	500 lbs	2 seats 4-wheel
	Haul Master HH-1216	16 hp 4-cycle	500 lbs.	2 seats 3-wheel
Club Car Inc. P.O. Box 4658 Augusta, GA 30907-3000	Carryall I (gas)	8.5 hp 4-cycle	250 lbs	2 seats 4-wheel
	Carryall I (electric)	2 hp	250 lbs.	2 seats 4-wheel
	Carryall II	8.5 hp 4-cycle	500 lbs.	2 seats 4-wheel
Columbia ParCar One Golf Car Rd. Deerfield, WI 53531	Utilitruck (gas)	2-cycle	800 lbs.	2 seats 4-wheel
	Utilitruck (electric)	electric	500 lbs.	2 seats 4-wheel
	Runabout (gas)	2-cycle	750 lbs.	2/4 seats 4-wheel
	Runabout (electric)	electric	500 lbs.	2/4 seats 4-wheel
Cushman Turf Care Div. of OMC Lincoln P.O. Box 82409 Lincoln, NE 68501	Eagle 550	8.5 hp 4-cycle 12.5 hp (optional)	800 lbs.	Polyurethane body
	Eagle 550, 551, 552 553, 554, 555	8.5 hp 4-cycle 12 hp air-cooled electric	800 lbs.	Metal frame
	Turf-Truckster 530, 532	22 hp 4-cycle	1500 lbs.	530: 3-wheel 532: 4-wheel
	Runabout	22 hp 4-cycle	1500 lbs.	3-wheel
Daihatsu America, Inc. 4422 Corporate Center Los Angeles, CA	Hijet	4-cycle 3-cylinder	1500 lbs.	6 body types
John Deere & Co. John Deere Rd. Moline, IL 61265	ATM 600 (gas)	8.5 hp	600 lbs.	5-wheel configuration
E-Z-Go. Div. of Textron P.O. Box 388 Augusta, GA 30913-2699	XT-300 (electric)	6.5 hp	1,000 lbs. (includes operator & passenger)	—
	GTX 300 (gas)	8 hp	1,000 lbs.	2 seats
	XT-500 (electric)	6.5 hp	1,000 lbs.	Bed size: 44"×28"×8"
	GXT 800 (gas)	8 hp	1,000 lbs.	6 attachments
	GXT 1500 (gas)	18 hp	1,500 lbs.	Bed size: 52"×54"×12"
Hahn Agri-Turf Turf Products Division 1625 N. Garvin St. Evansville, IN 47711-4596	Multi-Pro 44	16 hp Kohler	1,500 lbs.	Converts to bed, spreader, sprayer
Melex USA Ltd. 1200 Front St. Suite 101 Raleigh, NC 27609	Cargo Carrier (electric)	21.1 hp	330 lbs.	2 seats 3-wheel wood or steel side
	4-Passenger (electric)	21.1 hp	—	4 seats 4-wheel
Toro Commercial Products 8111 Lyndale Ave. So. Minneapolis, MN 55420	Workmaster	14 hp Kohler	1,000 lbs.	3-wheel
Turf Vac 15701 Graham St. Huntington Beach, CA 92649	Sundancer Model 1	11 hp Briggs & Stratten	1,100 lbs.	3-wheel
	Sundancer Model 4 & 8	18 hp Briggs & Stratten	1,500 lbs.	3-wheel



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*Skip Harrison, Superintendent
Bloomingdale Country Club
Brandon, Florida*

Mixing Gator turf-type perennial ryegrass and Sabre *Poa trivialis* provides a superintendent with a handsome, thick, dark green turf with excellent putting and mowing qualities.

Sabre is the renowned domestic variety of *Poa trivialis* which is very dark green and extra-fine bladed. Unlike older foreign varieties which were often contaminated with *Poa annua*, Sabre is *Poa* free.

It's a fast germinating, shade tolerant variety which thrives during the winter months and fades quickly when hot weather arrives.

Gator was developed by hybridizing dark green, heat tolerant U.S. varieties such as Derby and Regal with denser and lower growing European turf-type ryegrasses.

Gator soared into prominence after a shining performance in a year-long trial at Mississippi State in 1981 and has since proved its qualities on many prestigious courses.

Sabre and Gator – in combination they produce "great" or "superior" turf, take your pick.



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He sees stability, and general safety, to be one of the needs manufacturers must address in off-road vehicles.

Other improvements

Another need facing utility vehicles seems to be lowering maintenance cost and boosting efficiency. "They need longer life, more efficient air-cooled engines with more sophisticated engines," say Ron Kimball and Walt Olmstead of C.H.I. Industries, Benton Harbor, Mich., makers of the Haul Master. They also see a need for larger alternators, better fuel, air and lubrication systems.

According to Kent Hahn, general sales manager for Hahn Agri/Turf products, U.S. manufacturers were awakened to cost-effectiveness problems a few years ago when Japanese companies such as Daihatsu America introduced more economical machines.

He feels that U.S. companies have been taking strides to correct the problem. He notes that Hahn recently switched to the new Kohler Magnum computerized engine.

The future

The trend in the past and present for utility vehicle manufacturers has been to build a vehicle that can do a multitude of tasks. However, Hahn sees manufacturers going to more specialized vehicles. His company's Mutli-Pro 44 is designed to perform only chemical and fertilizer applications.

On the flip side, Daihatsu America's Hijet is one of the more versatile vehicles, adding to a basic chassis any number of options designed to expand the vehicles performance. The Hijet has been available in the U.S. for only eight years. The company is in the process of setting up a new distributor network, with about 45 appointed as of mid-August, the goal being between 100 and 150 by the end of the year. **LM**



John Deere AMT-600



E-Z-GO GXT-800



Toro Workmaster



Hahn Spray Pro 44

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Choose from different model sizes, with operating capacities ranging from 600 to 4000 lbs.



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Turn out more work and return more profit to your business with a versatile Bobcat skid-steer loader. Bobcat loaders offer a wide variety of attachments to help you do your job better, whether it's dumping, loading or digging. Choose from different loader model sizes, with operating capacities ranging from 600 to 4000 lbs. to fit your needs.

Regardless of size, all Bobcat loaders are well-built and offer outstanding agility in tight areas, attachment versatility, rugged durability, easy maintenance and operation, reliable parts and service, comfort, and top performance.

Bobcat loaders. Take a turn for the best in performance and value. 

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bobcat® EXCAVATORS


Choose from five models with digging depths ranging from 67" to 160".



GO FULL CIRCLE

Run circles around your work with a compact Bobcat hydraulic excavator. Choose from five models with digging depths ranging from 67" to 160". Regardless of size, all Bobcat excavators feature a 360° rotating cab and smooth hydraulics to give you the power you need, where you need it.

Bobcat excavators are compact and maneuverable. They work close to buildings and turn in tight areas — ideal for digging basements and footings, utility cable and pipelines, even swimming pools. They're designed with the operator in mind for comfort and efficiency. Rubber-mounted engines reduce noise and vibrations, and long control levers cut the amount of force needed for effective control.

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From compact, walk-behind models to diesel-powered riders, Bobcat trenchers feature engineering advances that make trenching simple. Even do-it-yourselfers can use a Bobcat trencher, and do a professional job.

Whether it's construction, utility lines, irrigation or plumbing, you'll trench straight and fast with a Bobcat trencher. Choose from four models, with digging depths ranging from 24" up to 60". Features include infinitely variable digging speeds, easy-to-reach controls, and hydrostatic drive.

Bobcat trenchers are built in the Melroe tradition of quality workmanship and backed by Melroe's strong dealer network for service and parts.

Bobcat Trenchers. Technologically advanced. Simple to operate. 

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BLUE-GREEN ALGAE AND BLACK LAYER

Continuing research at Iowa State University suggests the causes of black layer on golf greens. Only when the causes are determined can appropriate remedies be determined.

by Clinton F. Hodges, Ph.D., Iowa State University



Photo 1: Black layer usually occurs about one-half to three inches below the green's surface.

A gradual increase in the construction and use of high-sand content golf greens in the last 20 years has brought into focus the need for research on microbiological ecosystems that develop in these greens.

Many high-sand content greens develop problems shortly after new construction or renovation of greens. Problems range from increased activity of non-pathogenic micro-organisms and soil-borne pathogens, unpleasant odors, and impaired drainage. Many of these problems, or combinations, result in poor growth or loss of turf.

One problem that is of special interest to golf course superintendents in the U.S., Canada and Australia is a condition called "black layer." Although the expression adequately describes the condition's appearance, it provides little insight into its causes.

Researchers and superintendents have proposed many theories on black layer's causes. Theories range from types of chemicals applied to greens, to nutritional and/or chemical imbalances in the sand greens, to biotic factors such as algae and bacteria. The ideas differ, but most seem to

agree that the disorder is related to water problems and to anaerobic conditions.

In this respect, black layer might better be described as anaerobic decline of creeping bentgrass, as has been suggested by Houston Couch, Ph.D.

There seem to be two primary types of black layer development, surface and subsurface layering. Surface black layering develops at the surface of the green and extends downward, forming a layer one to three inches thick. Subsurface black layering generally occurs about one-half to three inches below the green's surface. The layer may range from one-quarter inch to more than one-inch thick (Photo 1).

The mix between the surface of the green and the top of the subsurface layer may appear normal in color, or may show a slight darkening.

Subsurface black layering may be more complex on old soil-type greens where sand top dressing has been initiated. In most instances where black layer occurs under these conditions, the layer is where sand and soil meet. If alternating applications of sand and other top dressing mixes have been

applied to the green, the black layers may occur as a series of thin bands (one-quarter inch thick or thinner). Although black layer develops most aggressively in high-sand content greens, it can occur in greens with a relatively high soil content. The black layer in high-soil content greens is generally thin and at the surface, often directly under a thin thatch layer.

Black layer shows a number of variations on high-sand content greens. The layer may involve an entire green, but more often it develops in portions of the green. Low areas of a green, or shaded areas with poor air movement, may show the most successful development and the more severe damage. But the disorder is by no means restricted to such areas. The layer itself (especially subsurface) may be discontinuous, or be composed of unconnected circular-to-oblong globules of black layer material.

The cause-and-effect relationship between black layer and dead turf seems to be very complex. Perhaps one of the least-noted facts about black layer is that not all black-layered greens result in dead turf. It is not uncommon to find healthy turf on high-sand content greens with a distinct subsurface layer. Such greens may not have optimum infiltration or drainage, but the turf can be maintained.

When turf is lost in association with black layer, it dies in a relatively nondescript pattern. The grass can die rapidly by turning a straw to reddish-straw color; or occasionally, the afflicted areas may become chlorotic prior to dying and becoming straw-colored.

A variety of odors is emitted from black-layered greens with dying turf. The odors are not associated with healthy turf on greens with or without black layering. They have been de-

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	RUGBY	
	PARADE	
FESCUE	SCALDIS HARD	
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	GALWAY TALL	
SCADGRASS	PENNFINE	

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