

Example 2

Assume: sprayer applies 200 liters (l) of water/ha

Total plot area: 2m x 5m = 30m²

Solution: use proportions

$$\frac{\text{liters/ha}}{\text{m}^2/\text{ha}} = \frac{X \text{ liters}}{30\text{m}^2} = \frac{200 \text{ liters}}{10,000 \text{ m}^2} = \frac{X \text{ liters}}{30\text{m}^2}$$

$$X = \frac{200 \times 20}{10,000} = 0.6 \text{ liters for 3 plots}$$

Since 0.6 l is the exact amount of water needed to spray 30 m², the researcher might decide to use one liter as the total volume for each three plot series. The remaining 0.4 l is used to check the nozzles and allow for error. The amount of herbicide can then be calculated for one liter.

Example 3

Compound: atrazine

Desired Rate: 2 kg ai/ha

Total plot area: 3 plots, 2m x 5m each = 30m²

Assume: sprayer applies 200 l of water/ha

$$\frac{\text{grams/ha}}{\text{liters/ha}} = \frac{x \text{ grams}}{\text{liters}/30\text{m}^2} = \frac{2000 \text{ grams}}{200 \text{ liters}} = \frac{x}{1 \text{ liter}}$$

$$X = \frac{2000 \times 1}{200} = 10 \text{ grams active ingredient}$$

The commercial product (c.p.) required if the formulation is an 80 percent active wettable powder can be calculated as follows assuming 100 g of c.p.:

100 g c.p. = 80 g ai

$$\frac{\text{Grams of commercial product}}{\text{grams of active ingredient}} =$$

$$\frac{x \text{ grams commercial product}}{10 \text{ grams active ingredient}}$$

$$\frac{100 \text{ grams}}{80 \text{ grams}} = \frac{X}{10 \text{ grams}}$$

$$\frac{10 \times 100}{80} = 12.5 \text{ grams commercial product for 1 liter of water}$$

Field sprayers

Three methods of calibrating field sprayers are:

Method 1

- (1) measure one hectare, acre, or other land unit;
- (2) fill the sprayer with clean water only;
- (3) spray the area at a predetermined speed and pressure;
- (4) refill the sprayer measuring the amount of water needed to do so.

The volume of water consumed provides the calibrated rate of liquid application to be used for calculating the amount of herbicide required.

The same method can be used for a smaller area:

Method 2

- (1) place a marker at each end of some convenient length test strip, i.e., 100 meters;
- (2) fill the sprayer with clean water;
- (3) spray the measured test strip at a predetermined speed and pressure;
- (4) refill the sprayer measuring the amount of water needed to do so and solve the following equation:

$$\text{liters/ha} = \frac{10,000 \text{ m}^2/\text{ha} \times \text{liters used}}{\text{strip length} \times \text{width of spray swath}}$$

Example 4

Water consumed: 8 l

Length of test strip: 100 m

Width of spray swath: 6 m

$$\text{liters/ha} = \frac{10,000 \times 8}{100 \times 6} = 133.3$$

Another technique for calibrating:

- (1) fill the sprayer with clean water;
- (2) operate the sprayer at a predetermined pressure;
- (3) use vessels to collect the water spray discharged from one-third of the nozzles simultaneously during one minute;
- (4) have the sprayer move at field speed, then measure the distance travelled in one minute.

The amounts collected for each are measured, then averaged. The average delivery for one nozzle multiplied by the total number of nozzles equals the total discharge.

Example 5

Plots (replications) to be sprayed: 3

Plot size: .25 ha

$$\text{Area} = 3 \times .25 = .75 \text{ ha}$$

$$= .75 \times 30\% = .975 \text{ ha}$$

or rounding off, 1 ha.

$$\text{liters per ha} = \frac{8 \times 10,000 \text{ m}^2/\text{ha}}{6 \times 100} = 133.3$$

The above article was excerpted from the *Field Manual for Weed Control Research*, published by the International Plant Protection Center, Oregon State University, Corvallis, Oregon.





The QUALITY STANDARD of the INDUSTRY!

Saves Time!

Increases Profits!

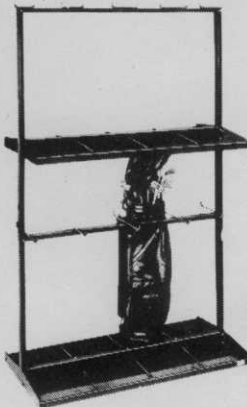
The BEST quality all-purpose self-contained golf ball dispenser on the market. Automatically washes, counts, stores and dispenses balls into baskets for customers. Coin, token or remote control operation. Always on the job! **CALL or WRITE!** Get details and literature of Ball-O-Matic and Bucket Boy dispensers, they pay for themselves!

(219) 234-0075

TEUTONIX INC.

P.O. Box 1895
South Bend, IN 46634

Write 113 on reader service card



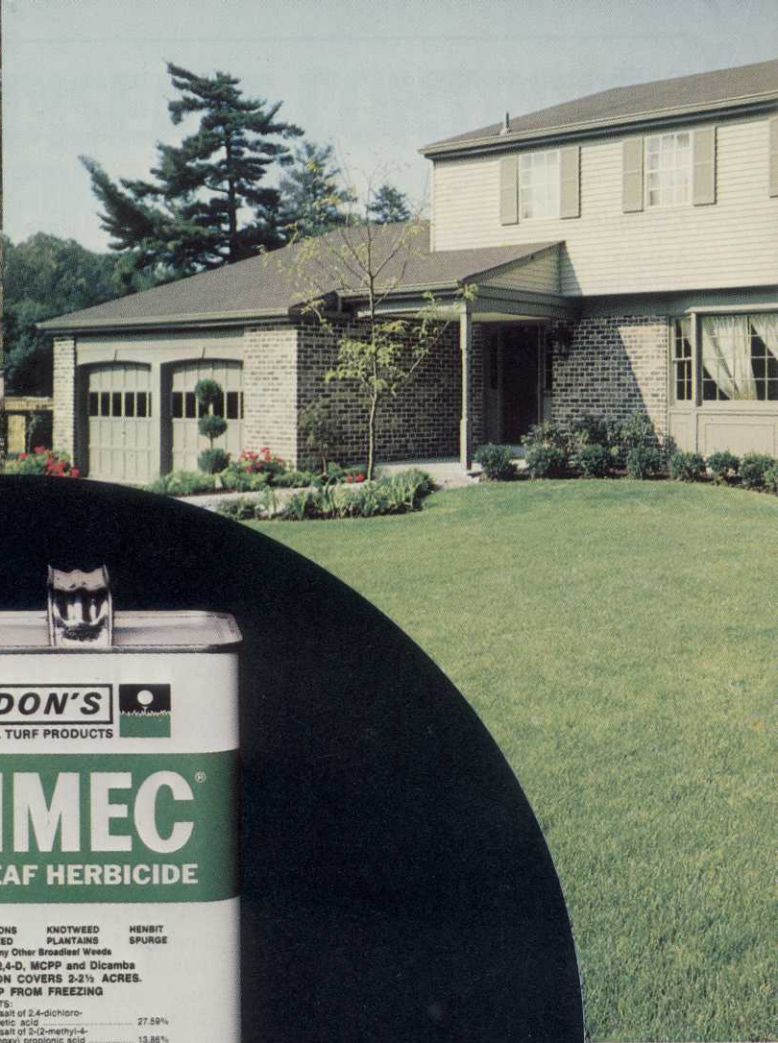
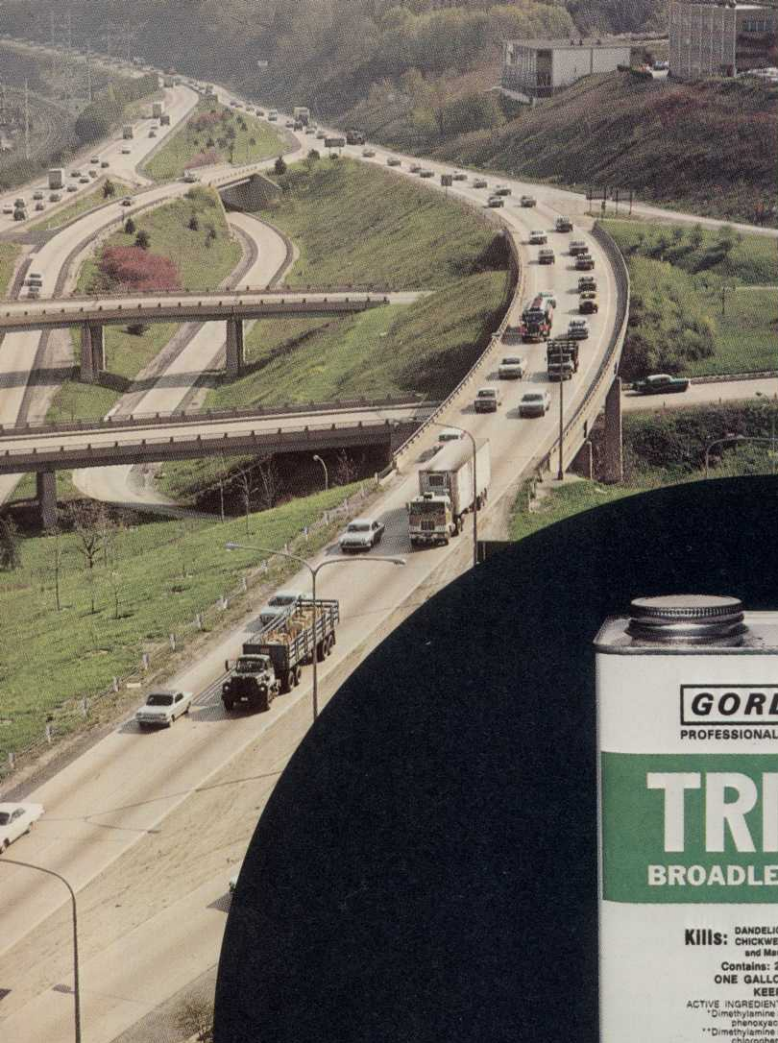
INCREASE EARNINGS, SERVICE & SPACE
Remodel your present storage space, update with **NEW Stafford VERTICAL BAG RACKS**

- Wear and tear of golf bags is completely eliminated
- Damp bags dry faster — no mildew
- Faster, easier storage
- Provides a neat appearance
- Easy to install and add more as needed

Your members will like the extra convenience and care. Your pro shop profits from 40% more space these racks make available. Double unit shown holds 16 bags, size 2' x 4' x 6'-6" high, gives 12" x 12" space for bags. Single unit holds 8, size 1' x 4' x 6'-6" high. Sturdy steel. Bags set solid on tapered shelves. Send us your floor measurements, we will plan a layout and quote you — no obligation. U.S. and Canadian patents. Send for folder.

The A.G. STAFFORD Co. 2000 Allen Ave., S. E.
Box 8877, Canton, O. 44711
Phone 216/453-8431

Write 122 on reader service card



GORDON'S 
PROFESSIONAL TURF PRODUCTS

TRIMEC[®]
BROADLEAF HERBICIDE

Kills: DANDELIONS KNOTWEED HENBIT
 CHICKWEED PLANTAINS SPURGE
 and Many Other Broadleaf Weeds

Contains: 2,4-D, MCPP and Dicamba
ONE GALLON COVERS 2-3 1/2 ACRES.
KEEP FROM FREEZING

ACTIVE INGREDIENTS:

**Dimethylamine salt of 2,4-dichloro-phenoxyacetic acid	27.58%
**Dimethylamine salt of 2-(2-methyl-4-chlorophenoxy) propionic acid	13.86%
***Dimethylamine salt of Dicamba (3,5-dichloro-p-anisic acid)	2.70%
INERT INGREDIENTS	55.78%
Total	100.00%

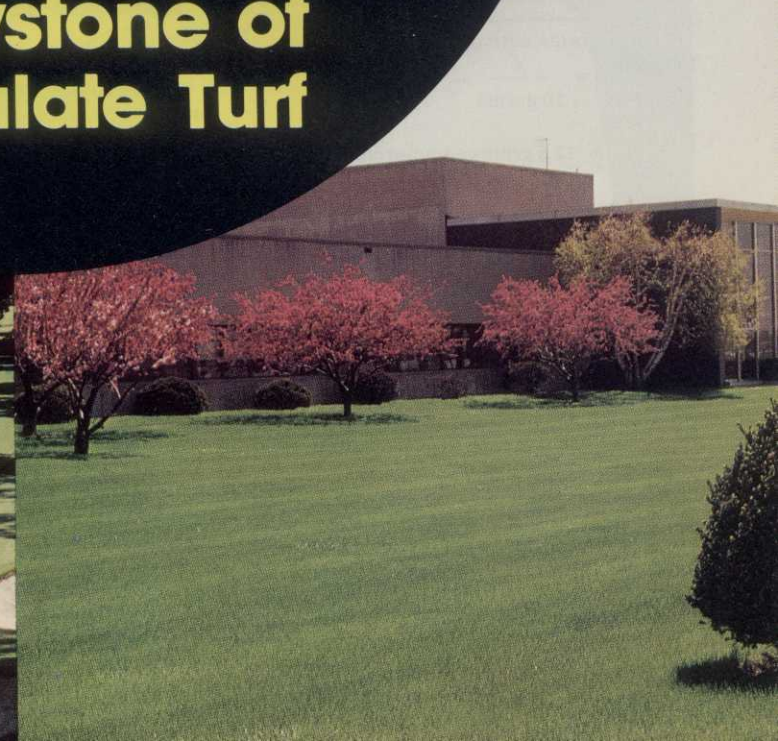
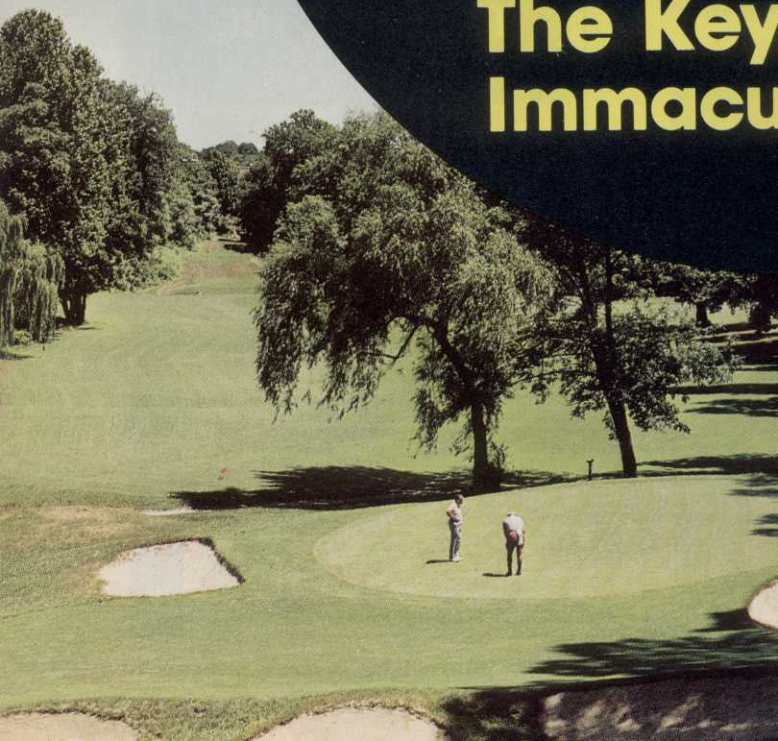
*2,4-dichlorophenoxyacetic acid equivalent 2.2 pounds per gallon or 23.50%
**2-(2-methyl-4-chlorophenoxy) propionic acid equivalent 1.1 pounds per gallon or 11.48%
***3,5-dichloro-p-anisic acid equivalent 0.22 pounds per gallon or 2.20%

CAUTION: Keep Out of Reach of Children
See Back Panel for Additional Cautions

*Trimec is a registered trademark of F.B.I.—Gordon Corporation, U.S. Patent No. 3,284,156.

NET CONTENTS ONE U.S. GALLON
(3.785) LITERS

The Keystone of Immaculate Turf



*It still costs less
to go first class.*

Immaculate weed-free turf not only looks better, it also costs less.

**Read how Trimec® Turf
Herbicide can save you time
and money, and make
your work more fun.**

It costs less to go first class.

How many times have you heard that old truism? You know it's a fundamental fact of everything in life, but in no other phase of today's economy is it more graphically demonstrated than in the world of weed control in professional turf management.

When a turfman tries to skimp along with a narrow-spectrum herbicide on the theory that it will control the major eyesores like dandelions and chickweed, and will cost less per gallon than Trimec — he opens the door to an endless chain of problems and expenses.

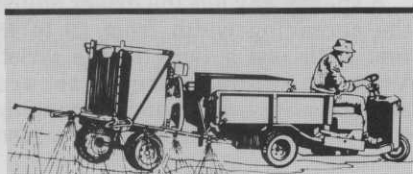
Perhaps the worst consequence is the emergence of some ugly weeds of the hard-to-kill variety that he once considered to be so rare that he didn't even think of them as a problem in his area. And, when these weeds come, they come as a crowd... out of nowhere.

Of course, you know where they came from and why they came. They're the natural consequence of using a narrow-spectrum herbicide in an area that is fertilized and watered.

The hardy weeds (which were not controlled by the narrow-spectrum herbicide) are nourished by the fertilizer and water, and fight with the grass to fill the vacancy left by the demise of the sensitive weeds. Some of them win, and weeds that were once obscure become prominent.

There's really only one efficient way to cope with the problem, and that is the Trimec way.

Trimec is the one turf herbicide with a broad enough spectrum to



How many species of broadleaf weeds will Trimec control?

We are still looking for the economic broadleaf weed that Trimec will not control when applied at the right times and rate. If we ever do find such a weed, we will be very surprised. No other selective herbicide can match the broad spectrum of Trimec.

get those hard-to-kill weeds right along with the common, sensitive ones. How many species of broadleaf weeds will Trimec control? We are still looking for the economic broadleaf weed that Trimec will not control when applied at the right times and rate. If we ever do find such a weed, we will be very surprised. No other selective herbicide can match the broad spectrum of Trimec.

Yet, with all this power, Trimec is friendly to the environment in terms of safety to grasses, because no ingredient in Trimec is at a phytotoxic level.

And when you get to the bottom line, Trimec is less expensive than its less-effective contemporaries because it requires less

chemical per acre for maximum weed control, and it saves labor costs because it does it right the first time so you don't have to do it over. Thus, when you use Trimec, you not only look good to the greens committee... you also look good to the finance committee.

Only Trimec gives you all of these benefits

- Controls the widest range of broadleaf weeds
- Gets hard-to-kill species with one treatment
- Wide safety margin for lawn grasses
- Minimum hazard from root absorption
- No vapor action after application
- Effective weed control in wide temperature range
- Unique formula overcomes water hardness problems
- Treated areas may be seeded within two weeks
- Non-flammable and non-corrosive in use
- Product stable several years above 32° F.
- Biodegradable; friendly to the environment
- Bentgrass formula also is available.

In summary

The Trimec record speaks for itself. No other turf herbicide available today is the equal of Trimec, not only in providing superior broadleaf weed control, but also in terms of safety to grasses — and in total cost. No wonder an overwhelming majority of golf course superintendents agree: *Dollar for dollar and acre for acre of immaculate, weed-free turf, Trimec is the most efficient broadleaf herbicide on the market ... period.*

See your authorized Gordon distributor, today.

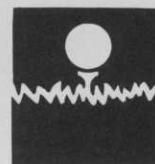
Trimec® is a registered trademark
of PBI/GORDON Corporation,
U.S. Patent No. 3,284,186.

GORDON'S

PROFESSIONAL TURF PRODUCTS

G pbi/gordon
CORPORATION

300 SOUTH THIRD STREET
P.O. BOX 2276
KANSAS CITY, KANSAS 66110
913-342-8780

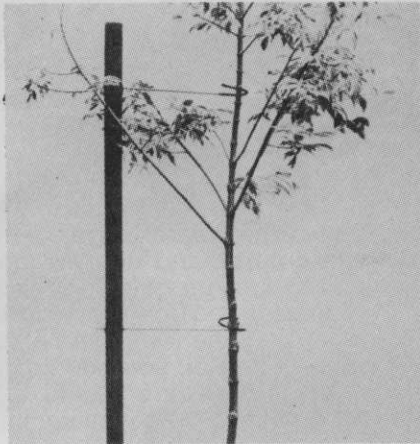


Write 127 on reader service card



Products

Guy wire



Straight Tie supports young trees

Straight Tie guy wires are simple, neat and easy to install, saving both time and material. Made from 9-gauge galvanized wire, they have a 360-degree loop at one end and are covered with a weather resistant sleeve to protect the tree from damage along with special self-locking fasteners. Straight Tie allows newly planted trees, up to 1-1/2 caliper to be supported with just one stake. Straight Tie allows the tree to move naturally so it develops properly.

Write 205 on Reader Service Card

Adjustable width spreader



Vicon units are multipurpose

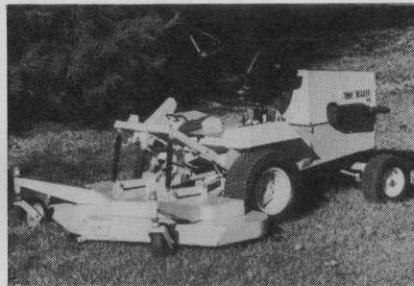
Vicon has developed the first adjustable width seeder-spreader with a futuristic design that eliminates "dead corners," according to Dennis Schwitters, President. The hoppers

are shaped like a television tube with rounded corners. The multipurpose machines can be used for any type job a superintendent has in mind—fertilizing, seeding, applying herbicides, insecticides—with accuracy. Schwitters says coverage is thorough, continuous and accurately metered from start to finish, even on hilly fairways.

A special key lets the driver adjust the spreading width from 20 to 45 feet with just a twist of the wrist. Vicon's seeder-spreaders are available in seven models ranging from a hopper load of 400 to 2400 pounds.

Write 208 on Reader Service Card

Diesel mower

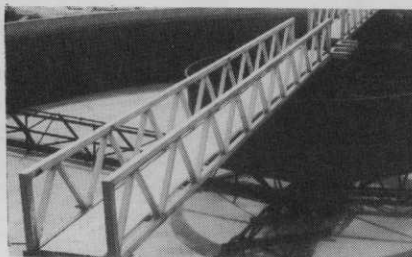


Howard Price has 27-hp, 72" unit

The Turf Blazer 727 with its 27-hp Yammar liquid cooled diesel engine and 72-inch cutting head combines diesel lugging power, durability and fuel efficiency with the trimming capabilities of an out-front offset deck. A foot-pedal controlled hydrostatic transmission provides speed variation from 0-10 mph forward and 0-5 mph in reverse—a mowing capacity up to 3.7 acres per hour, depending on conditions. Optional attachments include a 52-inch, two-stage snow blower, rotary broom, roll-over protection and cab.

Write 204 on Reader Service Card

Aluminum bridges



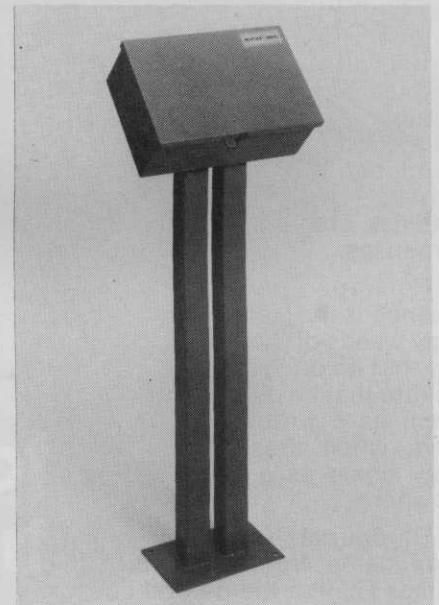
10-page brochure contains details

A new 10-page brochure contains detailed descriptions and specifications of A E F Aluminum Bridging Systems, Walkways and Towers. They are designed and built to support personnel, pipes, conveyors, cable-trays, ducts and other utilities.

Standard models spanning over 100 ft. are pre-engineered and of modular construction for maximum economy and ease of assembly (no field welding). Made of high strength, light weight, corrosion-resistant aluminum alloys, they require no painting and are virtually maintenance free.

Write 207 on Reader Service Card

Controller pedestal



Weather-matic's features dual posts

Weather-matic's new dual-post pedestal now has two separate, roomy channels for the 24V and 115V wiring. This new model SSRP pedestal is used with Weather-matic controller models SSR, CC-10, and SC-10 to wire the automatic controller and valves of the underground irrigation system. The new model SSRP pedestal posts are of heavy gauge, welded steel and finished with corrosion resistant, blue enamel over primer coat.

Write 206 on Reader Service Card

We put a lot into our Turf-Truckster.

One of the most dependable vehicles for moving your crew around is the 3- or 4-wheel Cushman® Turf-Truckster.® But it was also designed for more than just transportation.

Equipped with an optional PTO and hydraulic system, both models accept a wide range of special, add-on turf maintenance equipment. So with just one Turf-Truckster you can haul, dump, grade, seed, spray, spread, top dress, and aerate. Plus, we've increased the payload capacity of the Turf-Truckster to 1,500 pounds* So you can carry more than ever before.

But there's more to a Turf-Truckster than versatility. There's a rugged 18-hp engine that's built to take on your turf. It comes with a standard 2 to 1 auxiliary transmission. A transmission built to allow a gear driven PTO to be attached directly to it. And common sense engineering makes the Turf-Truckster steer clear of the repair shop, too.

The 3-wheel model gives you the maneuverability of a tight 17' turning circle, while the 4-wheeler has seating



room for two. And it just takes minutes to add any of the Turf-Truckster's accessory pieces, thanks to Cushman's pin-disconnect system. No bolting, no hitching. Just snap two or three pull pins in place and you're ready to hit the turf.

If a good transportation/hauling vehicle is all you need, though, look at the Cushman Runabouts. There's an 18-hp two-seater, and a fuel-slingy 12-hp one-seater model. Both Runabouts are economical to own. And like any Cushman vehicle, they're built tough.

There's nothing like a Turf-Truckster or Runabout to get more work done, in less time and with less manpower. For a closer look at what goes into, or behind, a Cushman vehicle, return this coupon today.

81-CUT-4

*Rating for vehicle equipped with 9.50-8 rear tires.

Show me what you put into a vehicle, Cushman.

- I'd like a demonstration of the Turf-Truckster (3-wheel or 4-wheel). (Circle One)
 - I'd like a demonstration of the Runabout (12-hp or 18-hp). (Circle One)
- I'm interested in seeing these Turf-Truckster attachments: Aerator; Sprayer; Top Dresser; Grader/Scarifier; Flatbed/Dump Box; Cyclone Seeder/Spreader.
- Send me your new 1981 catalog.

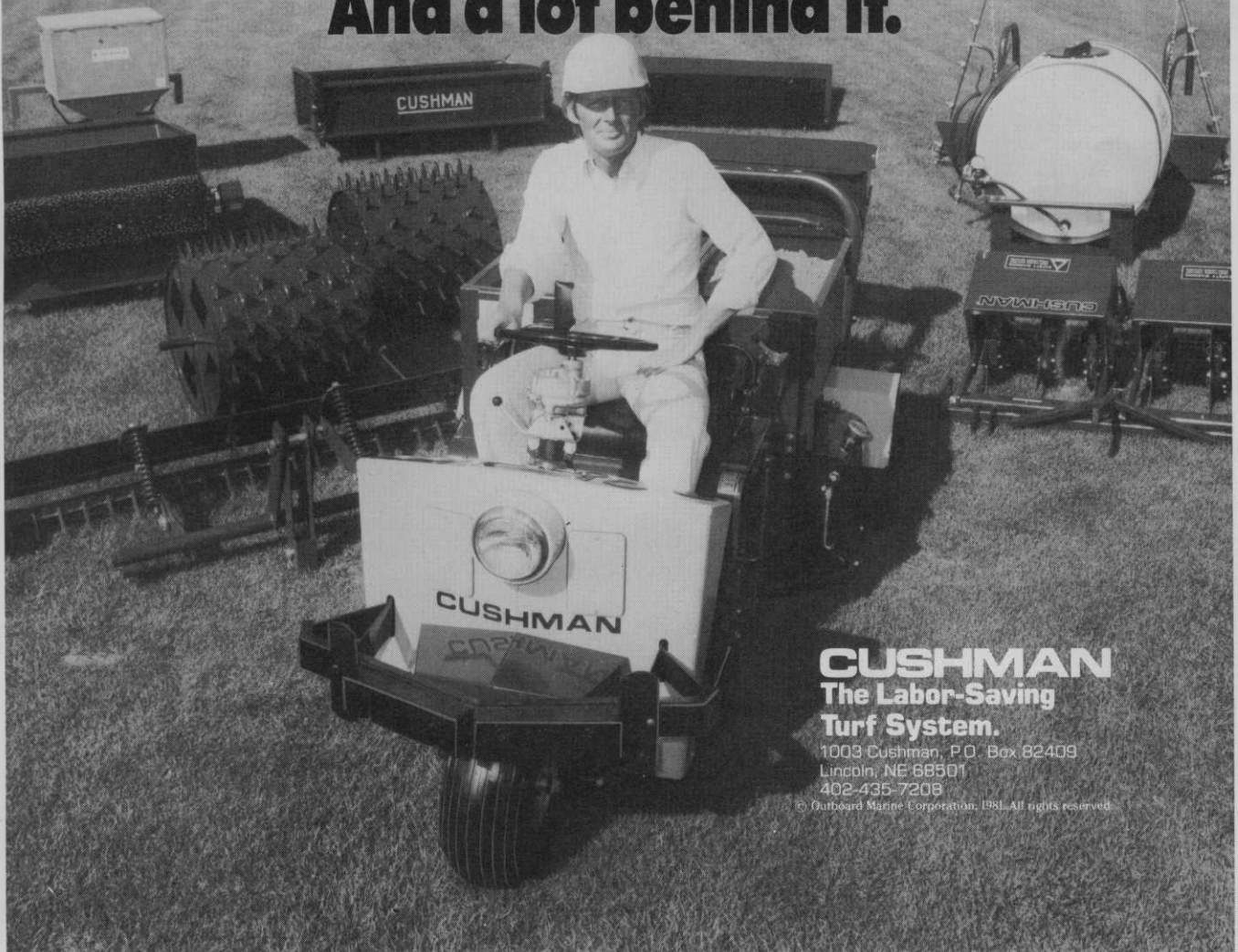
Name _____

Title _____

Address _____

City _____ State _____ Zip _____

And a lot behind it.



CUSHMAN The Labor-Saving Turf System.

1003 Cushman, P.O. Box 82409
Lincoln, NE 68501
402-435-7208

© Outboard Marine Corporation, 1981. All rights reserved.



Classified

April issue closes March 9
 May issue closes April 8
 June issue closes May 8
 July issue closes June 9
 August issue closes July 10

When answering ads where box number only is given, please address as follows: Box number, % Golf Business, Dorothy Lowe, 7500 Old Oak Blvd., Middleburg Heights, Ohio 44130. Rates: All classifications 65¢ per word. Box numbers add \$1 for mailing. All classified ads must be accompanied by cash or money order covering full payment.

Mail ad copy to Dorothy Lowe, Golf Business, 7500 Old Oak Blvd., Middleburg Heights, Ohio 44130.

BUSINESS OPPORTUNITIES

WANT TO BUY OR SELL a golf course! Exclusively golf course transaction and appraisals. Ask for our catalog. McKay Golf & Country Club Properties, 15553 N. East Street, Lansing, Michigan 48906. Phone 517 484-7726.

HELP WANTED

TAKE CHARGE GREENSKEEPER for 18 hole resort golf course, good terrain, good equipment, needs supervision and direction. Individual must have proven record of accomplishment. Send complete resume and salary history to Domenic DiGirolamo, General Manager, Devil's Head Lodge, P. O. Box 38, Merrimac, WI 53561.

MISCELLANEOUS

GOLF CART FLOOR MATS. New nylon reinforced rubber mats for Harley 3 wheel carts. \$17.75 per set. C.O.D. or send payment to Rice Die Cutting, 8831-33 Ave., Kenosha, Wis. 53142.

POSITIONS WANTED

PRO-GREENSKEEPER desires to locate in southeast. Prefer nine hole private or assistant greenskeeper at larger resort club. 30 years experience. Write P.O. Box 15, Newark, New York 14513.

USED EQUIPMENT

USED GOLF CARS—Harley-Davidson gas 3 wheel, 1973 thru 1978. Quantities, prices and years will vary, but usually a large supply to choose from. Boylan Leasing, Inc., 607 N. Main, Plainwell, MI 49080. 616 685-6828.

BOWIE 800 gallon Hydro Mulcher-Seeder. Make offer. 800 547-4905.

USED CARTS, most makes and models. Priced at or below wholesale. Golf Car Systems-PA, P.O. Box 216, Johnstown, PA 15907. Interested buyers call collect 814 536-7871.

ASSOCIATIONS

Michigan Association of Public Golf Courses

15553 N. East St., Lansing, MI 48906
 517/484-7726

Promoting public golf through cooperative action. If you operate a public golf course in Michigan, call or write now for membership information.

Oregon Golf Course Owners Association

905 NW. Springhill Dr., Albany, OR 97321
 503/928-8338

Promoting public golf and excellence in private-enterprise course operations. Any private owner in Oregon welcome to quarterly meetings. Call or write for details.

Next month in
 GOLF BUSINESS
 Symposium on
 Sand Topdressing

Turfgrass diseases

Fertilizing bermudagrass

The life cycles of
 warm season insects



Advertisers Index

J.L. Adikes Co.	35
The Anderson Co.	11
H.J. Baker	39
Club Car Inc.	26,27
Cushman Turf	45
DOW Chemical USA	37
Eagle Vehicles	25
Excel Ind., Inc.	29
PBI Gordon	42,43
Gould Batteries.....	13
International Seeds, Inc.	7,28
Jacobsen Mfg.	Cover 3
Loft's Pedigreed Seed	Cover 4
Milwaukee Sewerage Commission	38
Mobay Chemical Corp.	22,23
Monsanto.....	13
O.M. Scott & Sons.....	4,5
Plant Marvel	36
Rhone-Poulenc	18,19,33
Safe-T-Lawn	14,15
A.G. Stafford	41
Sunbelt Seeds, Inc.	Cover 4
Tee-2-Green	Cover 2
Teutonix	41
Toro Turf	9
TUCO Agric. Chemicals.....	40

THE MUSSER INTERNATIONAL TURFGRASS FOUNDATION

Please send contributions in care of:

Dr. Fred V. Grau
 P.O. Box AA
 College Park, MD
 20740



Sales Offices

ATLANTA: 3091 Maple Dr., Ste. 312, Atlanta, GA 30305 (phone 404/233-1817)



JAMES R. BROOKS
 National sales manager



BOB BEAVERS
 Northeastern manager



ROBERT A. MIEROW
 Northwestern manager

SEATTLE: 1333 NW. Norcross Seattle, WA 98177 (phone 206/363-2864)

You just can't buy a better greens mower.



It's been proven time and again, day after day, acre after acre. You just can't buy a better cutting greens mower. For a very convincing demonstration, call your Jacobsen Distributor.

JACOBSEN
TEXTRON

Jacobsen Division of Textron Inc.

Jacobsen: You just can't buy any better.

Write 170 on reader service card