

TURF TRUCKSTER SYSTEM

Because the flexibility of the Cushman Turf-Care System saves you time and money. Here's how!

The System is built around the rugged, versatile 18 hp Turf-Truckster, 3- or 4-wheel model. With this one power source and options, you can haul, spray, spike, spread and top dress. And

save as much as 35% on equipment in the process.

Because, instead of buying separately powered units for each job, you buy only the Turf-Truckster and the modular Cushman accessories you need. So you pay less in total for equipment... and have only one power unit to maintain.

But that's not all.

The System is also a time saver that can cut your labor costs. Accessories mount on the back of the Turf-Truckster. Your men do their work quickly, efficiently... and then move on to the next job at speeds up to 22 mph. There's less wasted traveling time, so you get more work out of each hour of labor cost.

The Cushman Turf-Care System. Versatility, superior performance, economy. It's a tough system to beat.

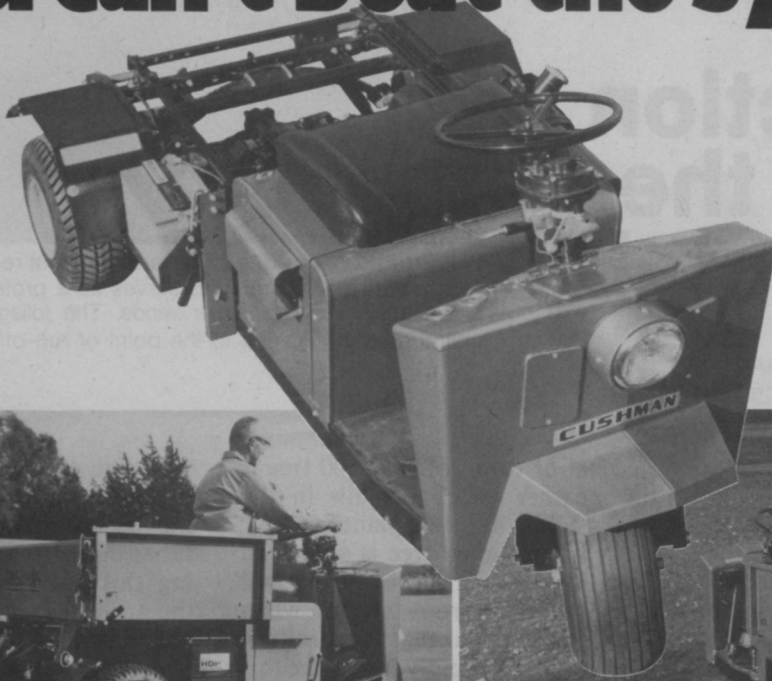
Write today for your free Cushman Turf Care Catalog.



CUSHMAN® TURF-CARE EQUIPMENT

DMC-Lincoln, a Division of
Outboard Marine Corporation
6117 Cushman Drive
P. O. Box 82409
Lincoln, Nebraska 68501

You can't beat the system.



Protection from the Unpredictable

By L. L. BAUMGARTNER
Consulting Ecologist

THE DEATH of a prized tree, regardless of its dollar value, is undoubtedly a great disappointment to the landowner who paid for it, the landscape architect who recommended it and the arborist who planted and cared for it. A tree that initially cost \$100 to plant may easily cost \$150 to replace. However, the application of \$1 worth of an anti-desiccant might well have saved the tree and spared the inconvenience of transplanting.

Paul Kramer is quoted from *Plant and Soil Water Relationships* as saying "more plants are injured or killed as a result of transpiration exceeding water absorption than by any other cause." There are few arborists who disagree.

The skills involved in digging a tree and preparing a proper planting site can be controlled. The procedures for proper post-planting care can also be practiced. The one unknown factor dictating the

survival or death of the \$100 tree is the weather which prevails in the weeks following transplanting.

A transplanted tree is separated from 75 to 95 percent of its original water-gathering root system when dug. It is essential that it reproduce new root hairs rapidly to replace this loss. Regrowth of new roots may require only days or a few weeks. But dry weather during this critical period can produce severe water stress known as "transplanting shock" which can wilt or kill the plant. On the other hand, there may be little or no transplanting shock if the subsequent weather is wet and humid.

Since weather is unpredictable, an insurance against possible adverse growing weather is desirable to both save an investment and assure customer satisfaction. This is the justification for an anti-desiccant.

The life supporting water for a plant is extracted from the soil by

very fine root hairs tightly attached to individual soil particles. It is moved upward through conductive tubes in the stem to the leaves. During this passage, water constitutes the primary medium for all the complex chemical processes required to convert simple elements to complex organic plant foods, and it distributes these foods to their proper locations in the plant. Among other functions, water is also credited with the task of keeping plants cool.

Considering the importance of water to the health and wellbeing of a plant, a surprisingly small fraction of the total water intake is essential to maintain life. Perhaps not more than five percent is incorporated into plant tissue. Nevertheless, the plant water supply must continually be replaced, or existing water must be conserved by reducing transpiration loss to an acceptable level.

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Wilt-Pruf NCF provides an organic film that reduces transpiration in recent transplants and also serves as a protectant for established plants against drying winter winds. The foliage should be sprayed until thoroughly wetted to the point of run-off.

"I'VE NOTICED ON P.G.A. COURSES I'VE PLAYED THAT HARD USE AREAS SEEDED IN MANHATTAN PERENNIAL RYEGRASS HOLD UP BETTER, LOOK BETTER AND PLAY BETTER THAN OTHER GRASSES. . ."

Patuk C. Fitzsimons



Fitzsimons on CERTIFIED Manhattan

TURF-TYPE

PERENNIAL RYEGRASS

- GREAT FOR HARD USE AREAS
- UNIFORM DARK GREEN COLOR
- FINE TEXTURED—BLENDS WELL WITH OTHER GRASSES

Manhattan Perennial Ryegrass was selected and developed by Dr. C. Reed Funk, Rutgers University. Manhattan develops a uniform dark green leafy, dense turf with leaf blades as fine as many Kentucky bluegrasses.



Pat Fitzsimons, who tied the world record score of 58 on a 6,000 yard course, tees off on the No. 1 Manhattan tee at Salem Golf Club course, Salem, Ore., where he shot his record score.

Certified Manhattan is grown by the
MANHATTAN RYEGRASS GROWERS ASSOCIATION
P.O. Box 415 · Hubbard, Oregon 97032

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Slow Release IBDU — Promising New Tests

By DR. W. H. DANIEL, Turf Specialist, Purdue University

A 31 PERCENT nitrogen source which dissolves slowly. That's what George Haddad, then of Swift & Co., told me when he first mentioned IBDU in 1967. Now, as 1974 closes, a look back into our testing in turf research accentuates the comparative values.

Through 20 different tests since 1967 in laboratory, greenhouse, experimental green and larger turf plots, solubility, releases and responses have been recorded.

It should be understood that several other workers, including O. R. Lunt of California, Don Waddington of Penn State, Gaylord Volk of Florida, Paul Rieke of Michigan State, Tom Hughes of Illinois and others have also researched IBDU as part of their programs.

What is IBDU?

IBDU is a compound with each molecule a standard size which deteriorates by hydrolysis or dissolving. Isobutylidene diurea IBDU is made as a precipitate powder and uses a by-product of film manufacture. It is very slowly soluble. According to the water insolubility tests (standard in testing of urea-forms and polyforms) IBDU is over

93% cold water in soluble. However, these tests are really designed for urea-forms, to better differentiate molecule sizes, and are inadequate for expressing IBDU characteristics. For example, the initial visual growth response is about 10 days, even when particles are applied. In contrast, the soluble (cold water soluble) fractions of urea-form as sold, show expected initial response in 3-5 days.

Another laboratory test used in nitrogen assay is a calculated Availability Index based on fast to slow release portions. When standard IBDU is ground to a fine powder, the solubility and availability are increased. See Table 1.

Solubility is Slow

When a few pellets of IBDU are placed in a beaker for several weeks and the water is changed often, the particle still appears similar. Large particles lasted more than three months as kept in water. Principle: even a low concentration in solution around the particle surfaces slows down further solution. (Like cold iced tea dissolves only so much sugar). Principle: the coarser (and denser) the particle the longer the initial supply could last. So an early

question to the company was, how about a big particle for incorporating into soil during construction of new turf areas such as greens, tees and sodded or seeded home lawns?

Some Tests

In one laboratory test a finely woven nylon cloth was made into small bags and in each we placed equal portions of actual nitrogen (0.2 gm). Figure 1 shows how water was dripped onto each bag and the solution and mechanical movement of soluble portions occurred. The urea (left dish) dissolved readily and crystallized as it dried — its normal salt effect. The uramite (center) shows some salt (the limited urea present) and some fines. The IBDU has very little salts or fines.

In a greenhouse test (figure 2) nine identical bags, each containing 0.2 gm actual nitrogen, were placed into the soil of a two gallon pot of growing ryegrass. Then as normal watering, absorption, leaching and growth occurred, it was reasoned that all the available nitrogen that could move out of the bag would be adsorbed by the adjacent roots.

The portion retained in each bag was measured by retrieving the bag and its contents tested by the Kjeld-

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Table 1. Water Insoluble and Availability Index of IBDU Samples.

Size after Crushing	Water Insoluble Nitrogen %	Availability Index as a number
Standard as bagged	29.9	55 slowest
—14	27.3	61
—20	20.9	77
—40	20.2	97 fastest

Table 2. Comparative Yield of Bluegrass Clippings One Year After Applying IBDU

Size mm	Release	Relative Yield
Very coarse	2.0 (release was slow)	100%
Coarse	2-1	75
Medium	1-.5	70
Fine	.5-.25 (release was earlier)	45
Check	none	35

The new look of leadership in grounds maintenance equipment...

Hesston Front Runner[®] GMT



Drive wheels are well back from the mower allowing the batwings to reach. In tight areas, just raise the retractable batwings.



Vacuum Pickup attachment is self-contained. Optional 15' snorkel vacuums hard-to-reach areas.



Front-wheel hydrostatic drive and four oversize high-flotation tires give unbelievable stability on uneven or sloping terrain.



Tackles mowing jobs head-on with up-front features

This one was designed from the turf up as a true grounds maintenance tractor with new up-front features and attachments to handle tough groundskeeping chores all year long. That's what makes the Front Runner GMT so different from scaled-down farm tractors designed primarily to pull implements. Its cockpit and attachments are up front where they belong for unrestricted visibility. Front-wheel hydrostatic drive provides sure-footed stability and one-lever control of instant forward/reverse and infinitely variable speeds to 11 mph. Articulated steering gives exceptional maneuverability to work easily in tight areas and around obstacles. Choose from 16 or 19.8 hp models.

Cut the grass before the tires flatten it with 48", 60" or giant 80" batwing mower heads. All are front-mounted and hydraulically operated. Mower heads float to follow ground contours, prevent scalping and allow a smooth, level mowing job. Vacuum Pickup attachment gathers clippings as you mow and deposits them into its own 20-bushel collection box — no need for a trailer. You won't find another mower with all the up-front features the Hesston Front Runner has to offer, and we're willing to prove it. Ask your Front Runner dealer for a demonstration.

For mowing, vacuum pickup, snow removal, earth moving, the Front Runner is the new look of leadership in grounds maintenance equipment.



Hesston Corporation, Lawn Equipment Division FR-1-874C
1504 Sadlier Circle S. Dr., Indianapolis, Indiana 46239. Dept. B.
Phone 317 352-0193

Please send me more information on the Hesston Front Runner GMT and the name of my nearest dealer.

Name _____
Company _____
Address _____ Phone _____
Town _____ State _____ Zip _____

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Pennfine Perennial Ryegrass.

Maybe it's got a weakness, but nobody's found it yet.

For three years now, the professional turf community has been putting certified Pennfine Perennial Ryegrass to the test. The results are in:

Pennfine has consistently outperformed other fine-leaved ryegrasses in trials from Pennsylvania to Florida.

More importantly, Pennfine has consistently matched or exceeded the expectations of turf management people on golf courses, athletic fields, sod farms, parks,

cemeteries and public grounds from Maine to California.

No one has reported a real weakness. All the characteristics the Penn State researchers were seeking when they developed Pennfine have proven out in actual application.

Soft fibres to facilitate mowability were the foremost consideration in breeding Pennfine. Both trial data and feedback from the professionals who've used it indicate that Pennfine is the cleanest cutting ryegrass available today.

Pennfine's excellent disease resistance, exceptional decumbency, persistence under a variety of management conditions, fine texture and compatibility with both Kentucky Bluegrass and fine fescue have also been demonstrated. And in the production fields of the Pacific Northwest, a major effort is being made to meet the already heavy demand for certified Pennfine Perennial Ryegrass.

If you would like specific information, write: Pennfine Perennial Ryegrass, P.O. Box 923, Minneapolis, Minnesota 55440.

Pictured is one of the select seed production fields of the Pacific Northwest — this one in the Willamette Valley of Oregon — where certified Pennfine Perennial Ryegrass is produced under controlled growing conditions.




Clean-cutting Pennfine Conventional Ryegrass

Test it yourself, on your own turf with the new Pennfine Test Kit.

It's free. And it contains enough seed to develop a 100 sq. ft. Pennfine test plot, along with technical data and evaluation sheets. So now you can see for yourself, under your own conditions, if Pennfine is really as good as we say it is. You will be able to test it for establish-

ment, mowability, management requirements, persistence and any other qualities that interest you.

If turf quality is important enough to you to warrant this kind of testing, send us the coupon and we'll send you a Pennfine Perennial Ryegrass Test Kit.


PENNFINE PERENNIAL RYEGRASS TEST KIT EVALUATION FORM

The Pennfine Perennial Ryegrass Test Kit

Everything you need to plant and evaluate
your own 100 square foot plot of Pennfine.



SEED

- Please send me the free Pennfine Perennial Ryegrass Test Kit.
- Yes, I'm responsible for turf purchase decisions.



NAME _____

TITLE _____

CLUB OR COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PLEASE NOTE: This offer is restricted to turf professionals, people whose livelihood depends on the establishment and maintenance of quality turf.

MAIL TO: Pennfine Test Kit, P.O. Box 923, Minneapolis, MN. 55440
WTT-11



A. R. J. (Bud) Friedmann, the Sprinkler Irrigation Association's (SIA) first president, cuts the 25th anniversary cake at the annual banquet. The banquet program featured a tribute

to past Association presidents and a slide show, narrated by Lewis W. Barton, tracing 25 years of SIA growth and development.

FLORIDA CONVENTION:

Quarter-Century for Irrigation Association

TURF IRRIGATION has come of age in the Sprinkler Irrigation Association (SIA).

Historically, the SIA, which celebrated its 25th birthday in October, began as an organization of agricultural irrigation equipment manufacturers. But no longer is turf irrigation merely a sideline business. The SIA's membership roster now includes many who are concerned exclusively with turf irrigation systems — manufacturers, distributors and contractors. Many indications of the growing importance of turf irrigation interests within the Association were apparent at the annual fall convention held at the Contemporary Resort Hotel at Disney World, Lake Buena Vista, Fla.

Executive Secretary Walter D.

Anderson commended the Board of Directors for several actions taken during the past year. The Board has acted regarding the Association's annual technical conference by requiring the holding of concurrent sessions when there are subjects not of common interest, such as agricultural-oriented and turf-oriented sessions. This move will result in the dissemination of more information, according to Anderson. The Board also has approved further negotiations with universities to develop sprinkler irrigation correspondence courses in agriculture and turf.

The Association's commodity divisions have been restructured and expanded, and now include two turf divisions — turf distributors and turf contractors — which met for the first time at the convention.

In December of 1973, the Association sponsored an experimental irrigation short course. However, it was recognized that turf and agricultural interests differ, so in 1974, two separate short courses were held. Plans for regional short courses in both turf and agricultural irrigation are currently under consideration, according to Anderson, and the Board has approved employment of a fulltime educational director.

Addressing the assemblage on the current status and future direction of the Association, President John H. Stevens, Pierce Corp., Eugene, Ore., said: "We are rapidly going toward the direction of being a training organization. We are also

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TALK

to us at the GCSAA Show – Booth 119-120 in
New Orleans, February 16-21.

A lot of people are talking about us these days.
And no wonder.

For the past 70 years, we've worked hard to develop and maintain unsurpassed quality control. New and better seed varieties. Strict laboratory supervision. Excellent seed purity and germination.

The results speak for themselves. We are now the proud developers and producers of Bonnie-blue, Sydsport, Majestic and Birka Kentucky Bluegrasses; Koket Chewings Fescue; Lamora Perennial Ryegrass.

We have also become distributors for fine quality seeds from the Northwest: Kentucky bluegrass, perennial ryegrass, annual ryegrass, orchardgrass, red fescue, tall fescue, bentgrass, Timothy, clover and vetch.

So if you're talking more about us these days... maybe it's because we're giving you a lot more to say.

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