

How to stop diseases, kill weeds and make your job easier... all with one company... W.A. Cleary



Fungicides

3336 Turf Fungicide A broad spectrum systemic fungicide that prevents and controls all 6 major turf diseases. Non-toxic, non-mercurial.

Bromosan The newest broad spectrum systemic fungicide for those persistent problem areas or areas that have gotten out of hand.

Cleary's Granular Turf Fungicide A granular — spreadable broad spectrum containing Thiram and Cadmium Chloride. Excellent for SNOWMOLD and for Spring and Summer diseases.

Spotrete 75% Thiram Fungicide can be mixed with PMAS or CADDY. Controls brown patch, dollar spot and snowmold.

Caddy A broad spectrum fungicide that prevents and controls all 6 major turf diseases. Non-toxic, non-mercurial.

Cad-Trete A broad spectrum fungicide containing Thiram and Cadmium.

PMAS (10%) A dual purpose herbicide/fungicide. Safe for the finest turf.

Herbicides

MCPP For selective control of chickweed, knotweed and clover on Bentgrass greens and fairways, Bluegrass and Fescues.

MCPP Plus 2,4-D Controls chickweed, knotweed, dock, dandelion, plantain, ragweed, purslane, pigweed, etc.

Methar 80 An extra high concentrate of Disodium Methane Arsonate Hexahydrate to control Dallisgrass and crabgrass. Completely water soluble.

Methar 30 A high concentrate liquid equivalent to 30% Disodium Methane Arsonate Hexahydrate. A super crabgrass killer.

AMA Plus 2,4-D For the control of Dallisgrass, Silver Crabgrass, plantain, dandelion, knotweed, chickweed and other broad-leaf weeds.

AMA (Super Methar) Amine Methylarsonate, liquid for Crabgrass and Dallisgrass control.



Specialties

All Wet Makes water "wetter" for better penetration in all turf areas, especially thatched or compacted spots.

Clear Spray Liquid Hygrostatic Sticker to protect against wilt and winter kill. Use on transplants, shrubs and evergreens.

Tru-Green Liquid Chelating Agent; may be used in combination with fungicide (PMAS, Caddy, Spotrete, Thimer or Cleary's 3336).

Grass-Greenzit Grass colorant. A permanent green pigment that restores green color to dormant or discolored grass immediately. Not a dye.



Visit us at Booth #1058
in New Orleans

W.A. CLEARY

CORPORATION

"The Company that's going places"

Somerset, N. J. 08873 • (201) 247-8000

BUILT LIKE A ROCK

...Only Stronger!



"Bunton lawn-turf equipment is built to take a beating... it's tough! Like this self-propelled riding mower. Equipped with a cushiony seat and power steering, it can turn on a dime! It can even go over a pile of rocks and still come out cuttin'!" So listen to Rocky Graziano... send for more information today... with Bunton, you can't lose! Available from 8-inch to 52-inch cut.

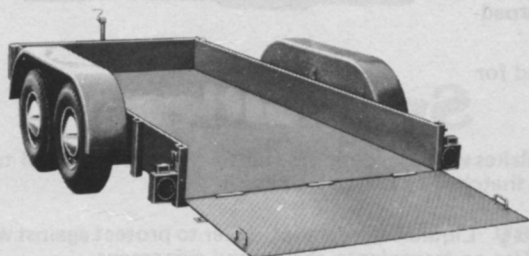


BUNTON CO. 4303 Poplar Level Road, Louisville, Kentucky 40213, U.S.A. Phone 502-459-3810 Telex 204-340

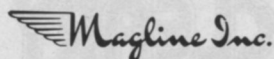
For More Details Circle (156) on Reply Card

a lowbed trailer that tilts

for easy, roll-a-board loading



TILTSTER- the drop-axle tilt-type trailer that handles loads up to 5,000 lbs. Simple and easy to use—one man does the job. Heavy-duty tailgate serves as easy-access ramp for ground level or low-level platform loading. Cut load handling and hauling costs down to size—one man size! Send for product bulletin today.



P.O. Box 261, Pinconning, Mich. 48650. Tel.: (517) 879-2411

Visit us at the Turfgrass Show, New Orleans — Booths 1350-1351

For More Details Circle (150) on Reply Card

meeting dates

Tidewater Virginia Nurserymen's Short Course, Norfolk, Va., Jan. 15-16.

Maine Nurserymen's Assn., annual winter convention, Augusta Civic Center, Augusta, Maine, Jan. 16.

Virginia Eastern Shore Nurserymen's Short Course, Painter, Va., Jan. 16-17.

Washington State Nurserymen's Assn., winter convention, The Inn at the Quay, Vancouver, Wash., Jan. 16-17.

Mid-Atlantic Nurserymen's Trade Show, Greenbrier Hotel, White Sulphur Springs, W. Va., Jan. 19-21.

South Carolina Nurserymen's Short Course, Clemson House, Clemson, S.C., Jan. 19-21.

New York State Arborist Assn., convention, Syracuse Hilton Inn, Syracuse, N.Y., Jan. 19-22.

27th Annual California Weed Conference, Sheraton Inn, Fresno, Calif., Jan. 20-22.

Landscape Ontario, annual congress, Four Seasons-Sheraton Hotel, Toronto, Ont., Jan. 20-22.

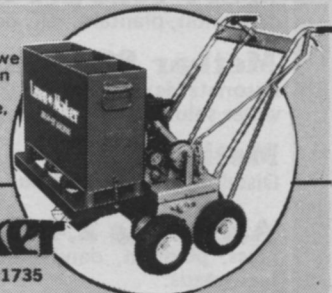
1975 Arborist Seminar, Illinois Commercial Arborists and Cook Co. Extension, Sheraton-O'Hare, Rosemont, Ill., Jan. 21.

New Jersey Recreation and Park Assn., 9th annual symposium, Labor Education Center, New Brunswick Campus, Rutgers Univ., New Brunswick, N.J., Jan. 21.

THIS POWER MACHINE AERATES AND PRECISION-DISPENSES THREE TURF MATERIALS SIMULTANEOUSLY.

seed, fertilizer, controls, etc.

If you service lawns, or plan to, we have a complete "automated lawn service" management, training and marketing program available, free with your LAWN MAKER combine. This machine is also excellent for Greens.



Lawn Maker

57 Verdi St., Farmingdale, N.Y. 11735

For More Details Circle (114) on Reply Card

LEARN PROFESSIONAL LANDSCAPING



We prepare you to cash in on countless money-making opportunities in modern landscaping and show you how, by easy steps, to start your own business part or full time. You will learn latest developments in Modern Landscaping, including creative design—plant propagation—revolutionary new methods of growing in manufactured soils—practical soil testing—growth regulators—the low down on fertilizers—easy ways of plant identification—estimating and contracting. My unique home study course features easy to understand assignments with careful detailed illustrations. Certificate Awarded. May I send FREE, and without obligation, my informative BOOKLET?

LIFETIME CAREER SCHOOLS Dept. A-759
2251 Barry Avenue Los Angeles, Ca 90064

For More Details Circle (141) on Reply Card

Southern Weed Science Society, 18th annual meeting, Southern-Peabody Hotel, Memphis, Tenn., Jan. 21-23.

Connecticut Nurserymen's Assn., 23rd annual nurserymen's short course, Northeast Utilities Auditorium, Berlin, Conn., Jan. 22-23.

Kentucky Nurserymen's Assn., annual meeting, Stouffer's Louisville Inn, Louisville, Ky., Jan. 22-23.

13th Annual Nebraska Turfgrass Conference, Nebraska Center for Continuing Education, Lincoln, Neb., Jan. 22-24.

Georgia Nurserymen's Short Course, New Holiday Inn, Athens, Ga., Jan. 23-24.

Roanoke Virginia Nurserymen's Short Course, Roanoke, Va., Jan. 23-24.

Rocky Mountain Regional Turfgrass Conference, Colorado State Univ., Fort Collins, Colo., Jan. 23-24.

Tennessee Nurserymen's Annual Short Course, Plant Science Building, Univ. of Tennessee, Knoxville, Tenn., Jan. 23-24.

New Jersey Assn. of Nurserymen, annual meeting, Sheraton Poste Inn, Cherry Hill, N.J., Jan. 23-24.

Ohio Chapter, ISTC, 33rd annual meeting, Sheraton-Columbus Hotel, Columbus, Ohio, Jan. 26-28.

46th Annual Ohio State Univ. Short Course for arborists, turf managers, nurserymen, garden center operators and landscapers, Sheraton-Columbus Hotel, Columbus, Ohio, Jan. 26-30.

Southwest Virginia Nurserymen's Short Course, Abingdon, Va., Jan. 27.

Associated Landscape Contractors of America, Inc., 13th annual meeting and trade exhibit, Hilton On-the-Bay, St. Petersburg, Fla., Jan. 27-31.

Turf Management Short Course, Nashville Center of the Univ. of Tennessee, Nashville, Tenn., Jan. 27-31.

11th Annual Northern California Turfgrass and Environmental Landscape Exposition, San Mateo Co. Fairgrounds, San Mateo, Calif., Jan. 29-30.

Reinders Brothers Turf Equipment, 2nd turf conference, equipment show and service clinic, Elm Grove, Wis., Jan. 29-30.

Virginia Turfgrass Conference, Sheraton Motor Inn, Fredericksburg, Va., Jan. 29-30.

1975 California Plant and Soil Conference, Sheraton Inn, Anaheim, Calif., Jan. 29-31.

Pennsylvania Nurserymen and Allied Industry Conference, University Park Campus of Penn State Univ., University Park, Pa., Feb. 4-6.

Weed Science Society of America, annual meeting, Statler-Hilton Hotel, Washington, D.C., Feb. 4-7.

Environmental Horticulture Conference, sponsored by Univ. of California's Cooperative Extension and 11 professional associations, San Jose, Calif., Feb. 5.

Annual Turf and Landscape Conference, N.Y. Turf and Landscape Assn. and the Long Island Gardeners Assn., Tappan Zee Inn, Nyack, N.Y., Feb. 5.

CONEXPO '75, construction equipment exposition and road show, McCormick Place and International Amphitheatre, Chicago, Ill., Feb. 9-14.

Midwestern Chapter, ISTC, annual meeting, Plaza Inn, Kansas City, Mo., Feb. 11-13.

American Institute of Landscape Architects, convention, Marriott Inn, New Orleans, La., Feb. 13-15.

American Society of Consulting Arborists, 8th annual conference, Don CeSar Hotel, St. Petersburg, Fla., Feb. 13-15.

National Arborist Assn., annual winter meeting, Don CeSar Hotel, St. Petersburg, Fla., Feb. 16-20.

rated #1
for overall
performance

.. MAN
MADE



Adelphi
KENTUCKY BLUEGRASS
(U.S. Plant Patent No. 3150)

NOW SETS U.S. GOVERNMENT*
STANDARDS FOR THE
DARK GREEN COLOR OF
ALL FUTURE BLUEGRASSES!

*Source: Plant Variety Protection Office, U.S. Dept. of Agriculture

In 10 years of man-controlled parentage breeding and over 7 years of university and field testing, "Adelphi" has earned a top rating for overall performance.

"Adelphi" offers the features most wanted in turf. Professionals and home gardeners, alike, are making it the most widely accepted and universally acclaimed bluegrass in 30 years.

For good looks throughout the entire growing season ...excellent density...good disease resistance and tolerance to moderately close mowing, it's...MAN-MADE "Adelphi"... A FIRST IN TURF!

For Details Contact:

J & L ADIKES, Inc.
Jamaica, N. Y. 11423

JONATHAN GREEN & SONS
Kearny, N. J. 07032

NORTHRUP, KING & CO.
Minneapolis, Minn. 55413

VAUGHAN'S SEED CO.

Bound Brook, N.J. 08805 • Downers Grove, Ill. 60515

CHALLENGE (from page 10)

We hydro-seeded the course to control erosion, to help get a fast turf cover, and because it does a better job inside bunker lips that are difficult to seed with a drill. Fairways were seeded with a mixture of Baron, Fylking and Park bluegrasses plus Manhattan ryegrass. We planted Penncross on the greens and Exeter Colonial bentgrass on tee-boxes. However, I also seeded several championship tees to Zoysia and am pleased with the result.

We also hydro-seeded the inside of traps. When we returned later to clean our traps, we cut the sod out and placed it along slopes that had been washed out by rain runoff. Thus, the sandtraps served as "mini-sodfarms" while saving labor.

We top-dressed the greens with our sand and peat moss mixture to avoid a layered effect. We used small layers of top-dressing and dragged them in with a Ryan dragmat. As grass emerged, we fertilized the greens with 20-0-16 greens fertilizer and then top-dressed them again. While top-dressing, we cut the greens at 5/16 inch and gradually lowered the height to 3/16 in-



A Caterpillar tractor clears away rock as workers sculpt the Jones-designed golf course out of 100 acres of shale and flint rock along the shore of Lake of the Ozarks.

Root-App™...A New Subsurface Tree Feeding System

A new way to increase your tree care business...
With Root-App, one man can feed more trees per day with less effort than any other method.

Root-App does the work, not the operator. Stones, hard pans, clay or frozen ground...no problem. Root-App is...portable, simple to operate and it's automatic. Above all, it's the fastest root feeding system available anywhere. One man can feed a 10" diameter tree in less than 3 minutes. Concentrated liquid fertilizer is injected as deep as 16 inches with no fuss and no mess. Less holes are required with Root-App as the high pressure radial injection penetrates more soil area.

Send for more information now...

Applied Imagination

Belle Mead, New Jersey 08502
609-448-1004



ches before opening the course.

We seeded in October and early November. Seeding in late fall was a gamble, but it paid off because we had a mild winter and very wet spring. In order to have the course playable for a tournament last May, we used a single-engine airplane to lightly fertilize the course in early March with 30-3-10 to foster rapid growth.

The airplane was necessary because 15 of our fairways had filter six inches deep and had not had time to set. Thus, the course was too soft to be fertilized by ground. We fertilized the fairways again in late April by ground with 19-5-7.

Selecting grass varieties was no simple task, because our course is in the Transition Zone where even individual slopes have their own "micro-climates." We put down five grass varieties with the hope that some of them would take to the soil with extra water, lime and fertilizer. Late this summer we overseeded our fairways with Baron with good results. Zoysia also has fared well and we are thinking about converting to it on fairways next year instead of bluegrass. Zoysia is inexpensive to maintain because it requires less fertilizer, is drought re-

sistant and grows so slowly it needs less mowing.

Another problem we experienced was acquiring sand to fill traps. The nearest suitable sand was 50 miles away along the Missouri River near Jefferson City, Mo. It took four months to complete trap construction and we hauled in 3,000-cubic yards of sand from the river. We used a small skid-loader to clean out the traps. By working an entire trap out from the inside, we avoided any damage to the fairways.

Because our course is bisected by a paved roadway (Missouri-HH), we had to construct a \$35,000 tunnel under it for safe access to the 12th, 13th and 14th holes by our Cushman golf car fleet. The first step was to develop a detour. Then we build part of the 8 x 10-foot reinforced concrete tunnel before repaving the highway.

Building the course was a challenge, but Koplar Enterprises backed me with the best materials, equipment and personnel available to do the job. The course fulfilled a long-time dream by Harold Koplar, especially since Jones has termed it one of the best courses he has ever designed.



Gary Grigg, course superintendent at All Seasons Country Club golf course, checks on construction of a \$35,000 tunnel under a roadway bi-secting the course.

Product Removes Thatch

A new material — called bio de-thatch — made up with micro-organisms and designed to eliminate thatch is now on the market.

It has been patented by Bio De-thatch of Louisville, Ky., and is being distributed by USS Agri-Chemicals. The product is immediately available. It has been and continues to be tested by a number of commercial and university groups.

President Julian Fortney heads the Bio-Dethatch enterprise and is working closely with USS Agri-Chemicals in getting the product introduced to the market. The marketing plans for this involve the entire USS Agri-Chemical distributor network.

Bio de-thatch is a dry-granular material that has been saturated with micro-organisms dried, pelleted, and crumbled which puts the micro-organisms into a dormant condition. When it is applied to the turf and is washed down to the soil surface or thatch build-up area it activates and feeds only on all forms of dead plant matter (plant residue) and digests the plant residue into

humus (mulch) in the soil. Thatch is the accumulation of dead leaves, stems, clippings etc., that builds up between the soil surface and the green vegetation. It can be determined as to depth only by cutting a pie-shaped wedge or using a soil probe and measuring.

Morning dew is sufficient moisture to activate the micro-organisms in bio de-thatch and when activated the direct rays of the sun will deteriorate them so the watering is needed more to wash the material out of the sunlight than to activate the micro-organisms. However, during hot dry weather it is best to keep a good moisture level for approximately the first 48 hours after application because the material may dry out before it can fully activate. Once the thatch build-up area (referred to above) has been reduced sufficiently, the dry dead grass in the lawn will fall into the area where the thatch has been digested, and bio-degrade.

Best time to apply bio de-thatch is when the ground temperature is above 40° provided it is washed down to the soil surface when applied. The best time to apply is early in the spring or early in the fall

because the moisture and temperature levels are the most favorable for good digestion in the shortest possible time. Bio de-thatch



Leon Short bags it!

NITROFORM*
organic nitrogen

The slow-release organic nitrogen that's good for cool season grasses . . . warm season grasses . . . all varieties of turf
STH74-6A*

HERCULES
INCORPORATED

Turf and Horticultural Products, Synthetics Dept.
Wilmington, Delaware 19899

* Registered trademark of Hercules Incorporated.

like mold growing across a slice of bread is continuously growing and feeding on dead plant tissue in all levels of the soil profile. As it digests and converts the residue to mulch in the soil in one area, it then grows to another. Because of this, once fully activated (about 72 hours), the micro-organisms will grow in a warmer more moist area when the soil gets too cold or too dry close to the surface. Too much heat is not a problem. When the temperature is too low or the soil too dry the organisms go dormant and then will reactivate when the soil environment returns to a condition where they can again be active.

When bio de-thatch has overcome the thatch build-up, it is able to keep it under control at all times when an application is made once each year. It is applied at a rate of one pound per 1,000 square feet with a cyclone spreader. (For further information, circle (709) on the reply card. 3%

BlueBird Names Distributor

BlueBird International, Englewood, Colo., manufacturer of BlueBird lawn combers, lifts and engine stands, announced the appointment of American Garden Western (formerly Western Seed) as distributor in Colorado and parts of Wyoming.

Doug Zehrung, BlueBird president, said that American Garden

Western, headquartered in Denver, will market BlueBird lawn combers to all merchandisers of turf care equipment in its area, including lawn and garden stores, nurseries, professional turf care firms and hardware stores. American Garden Western is a subsidiary of American Garden Products Co. of Boston, Mass.

Turf, Ornamentals Session Highlighted at Conference

A session on ornamentals and turf will highlight the first day of the 1975 California Plant and Soil Conference, to be held at the Sheraton Inn, Anaheim, Calif., Jan. 29-31.

Lee Hermsmeier, USDA, will open the program with a discussion of his research on common lawn sprinkler performance. Dennis McLain, Hines Wholesale Nurseries, will outline irrigation practices used in the production of containerized nursery stock. His discussion will include techniques for injecting chemicals into the irrigation system. Dr. John Radewald, UC Riverside, will speak on nematodes and their effects on turfgrasses. Dick Maire, Los Angeles Co. Farm Advisor, will discuss a new technique for establishment of Monterey Pine from cuttings. Dr. Victor B. Youngner, UC Riverside, will present information on the effects of air pollution on turfgrasses. Dr. Scott Arnold, O. M. Scott Company, will give an overall view on what is presently known about Kentucky bluegrass problems caused by the disease Fusarium Roseum.

Leisur-AID Moves to Iowa

Leisur-AID, the lawn and garden distributing division of Aidex Corporation, has moved to its new headquarters in Council Bluffs, Iowa. The new facilities, consisting of five buildings on a 21-acre site, will consolidate various formulating, packaging and distribution entities of Aidex Corp.

Leisur-AID now has four dealer consultants calling on lawn and garden dealers and golf courses in Iowa, Nebraska and portions of surrounding states. A complete line of products for the dealer and grower are carried, according to a Leisur-AID spokesman.

Forest Service Directors Located at Field Stations

Three of five assistant directors for Forest Service research in the northeast are now stationed at field locations, closer to the programs they administer, the problems they must solve and the people they serve.

Under the old system, all five were located at Northeastern Forest Experiment Station headquarters in Upper Darby, Pa. The new organization gives each man jurisdiction over a specific geographic region. In addition, the Station has created a new position of deputy director. The changes were announced by Station Director F. Bryan Clark. The new arrangement will hopefully help Forest Service research to "be more effective in responding to the needs of forest users," said Clark.

R. Duane Lloyd has been named the first deputy director. Lloyd was director of Forest Recreation and Related Human Environment Research in Washington, D.C. before his move to Upper Darby.

Vets Home Superintendent Cited for Beautification

J. Paul Barefoot, superintendent of grounds maintenance and the Landscaping and Transportation Division of the United States Soldiers' and Airmen's Home in Washington, D.C., has received an honor award from the Beautification Division of the Department of Environmental Services.

Barefoot is responsible for maintenance and improvement of approximately 400 acres of grounds, roads and walks, a nine-hole golf course, 20,000 square feet of greenhouse, and transportation and fleet maintenance.

Having held this position for over 10 years, Barefoot said that beautification of the grounds is one of the more important jobs, since the Home is home for over 2,600 retired army and air force veterans. He said that an abundance of shade trees and flower beds plays an important role in the well-being of senior citizen residents.

Barefoot served as president of the Professional Grounds Management Society from 1971 to 1973, and is currently the president of the Mid-Atlantic Association of Golf Course Superintendents.

Robison's
Lawn
and Golf
bags it!

NITROFORM*

organic nitrogen

The nondusting, odorless, pathogen-free organic nitrogen that is ideal for home lawns, too.

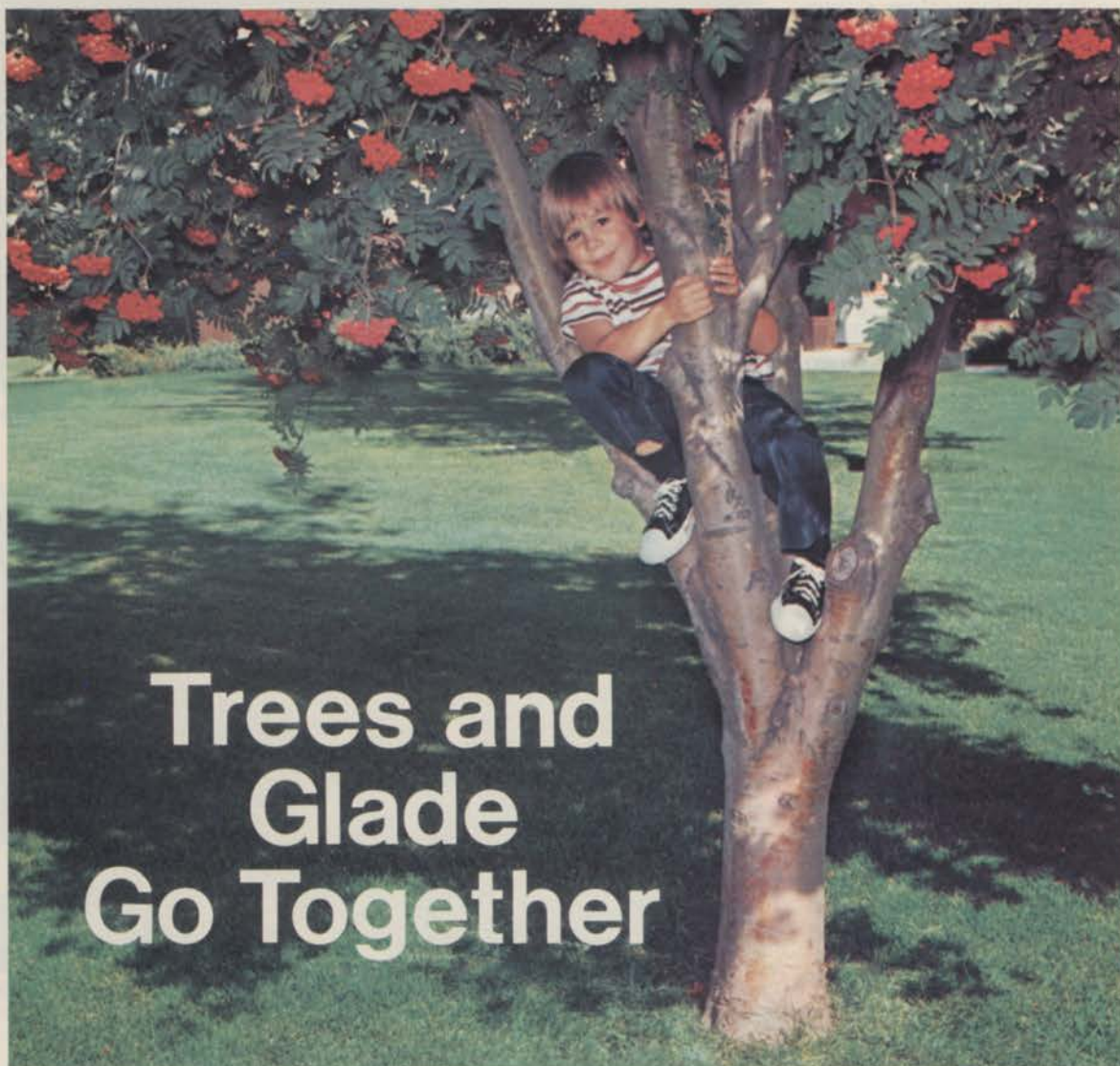
5TH /4-20 A*

HERCULES
INCORPORATED

Turf and Horticultural Products, Synthetics Dept.
Wilmington, Delaware 19899

* Registered trademark of Hercules Incorporated.

For More Details Circle (135) on Reply Card
56



Trees and Glade Go Together

A new natural team, Glade Kentucky bluegrass and trees! Glade performs well in moderate shade, especially when mixed with fine fescues. A selection from Rutgers University (tested as P-29), Glade is an improved, low-growing, medium to dark green grass with fine leaf texture and thick, rapid-growing rhizome and root system. Glade has good resistance to important turfgrass diseases including powdery mildew.

Like boys and trees, Glade and shade go together. Mixed with other elite bluegrasses and fine fescues in moderate shade, Glade is a natural.

Get new Glade at local wholesale seed distributors.

Another fine product of Jacklin Seed Company

Glade
Glade

KENTUCKY BLUEGRASS

For More Details Circle (108) on Reply Card

U. S. Plant Patent 3151

dahl nitrogen assay in laboratory. This gave the relative values shown in Figure 3. The soluble nitrogen onto peat was one standard, and its dissipation from the bag was 97 percent within three days. The slow initial release of IBDU is indicated in the least release shown in the left side of Figure 3.

Generally it has taken ten days for initial color or growth to show from IBDU even where heavy rates and finer particles were used. In contrast, two to three days would be normal for urea or nitrates. In two field tests the coarser IBDU (above 2mm) gave limited response for the first month when applied on nitrogen depleted turf.

The first outdoor research, in 1967, was Purdue's most important with IBDU. We used a small sieve to sort the particles into coarser (above 1 mm — so held on screen) and finer (those through the screen).

This was used side by side in test No. 3 at 2, 4, 6, 8, 10 lbs. N/1,000 sq. ft. as applied 11 July 1967. Throughout 1967 the finer gave more release than the coarser. For the first 50 days, even 4 lbs. of finer produced 70% more clippings than did 10 lbs. coarser. However, the next year the 10 lbs. gave longer and continued response. (Figure 4 shows the color or growth comparisons at 50 days).



Figure 1. Salt and fine particle movement from bags after being dripped into bags and solution dried.



Figure 2. Bag being placed into rootzone of pot. Later retrieved for analysis for residual staying in the bag.



Hill bags it!
NITROFORM*
organic nitrogen



The nitrogen that can be applied with the least danger of burning. No leaching either. Try it!

Turf and Horticultural Products, Synthetics Dept.
Wilmington, Delaware 19899

Registered trademark of Hercules Incorporated. 5TH 74-7 A®

For More Details Circle (136) on Reply Card

Extending this idea, in test 4 on 22 August 67 from one bag of IBDU five sizes were sorted by hand screens as follows: less than .25 mm, .5, 1.0, 2 and more than 2 mm. Figure 5 gives comparative yields of replicated plots at 18, 54 and 119 days of growing weather or 9 Sept. 67, 16 Oct. 67 and 1 May 68. Again, the faster release from finer particles is clearly shown at initial 18 days. Totally, one of more consistent and uniform pattern on bluegrass in this experiment was the 6 lbs. of .5 to 1.0 mm particles. It about doubled yields of the check at each harvest. The coarser particles continued well beyond the 119 days shown. After one year the clipping for one harvest (See Table 2) from equal nitrogen rates illustrates residual release.

Large Particles Research

Would you believe 24 lbs. N/1,000 applied at one time? or 18? or

12? without turf damage or excessive growth? In test 9 we had up to three years of growth response on a putting green where 1 gm. particles (as compressed pillows $\frac{3}{8} \times \frac{1}{4} \times \frac{7}{8}$ inch as shown on Figure 6) were placed at 4 inch depth at 24 lbs./1,000 sq. ft. in a new Purr-Wick green.

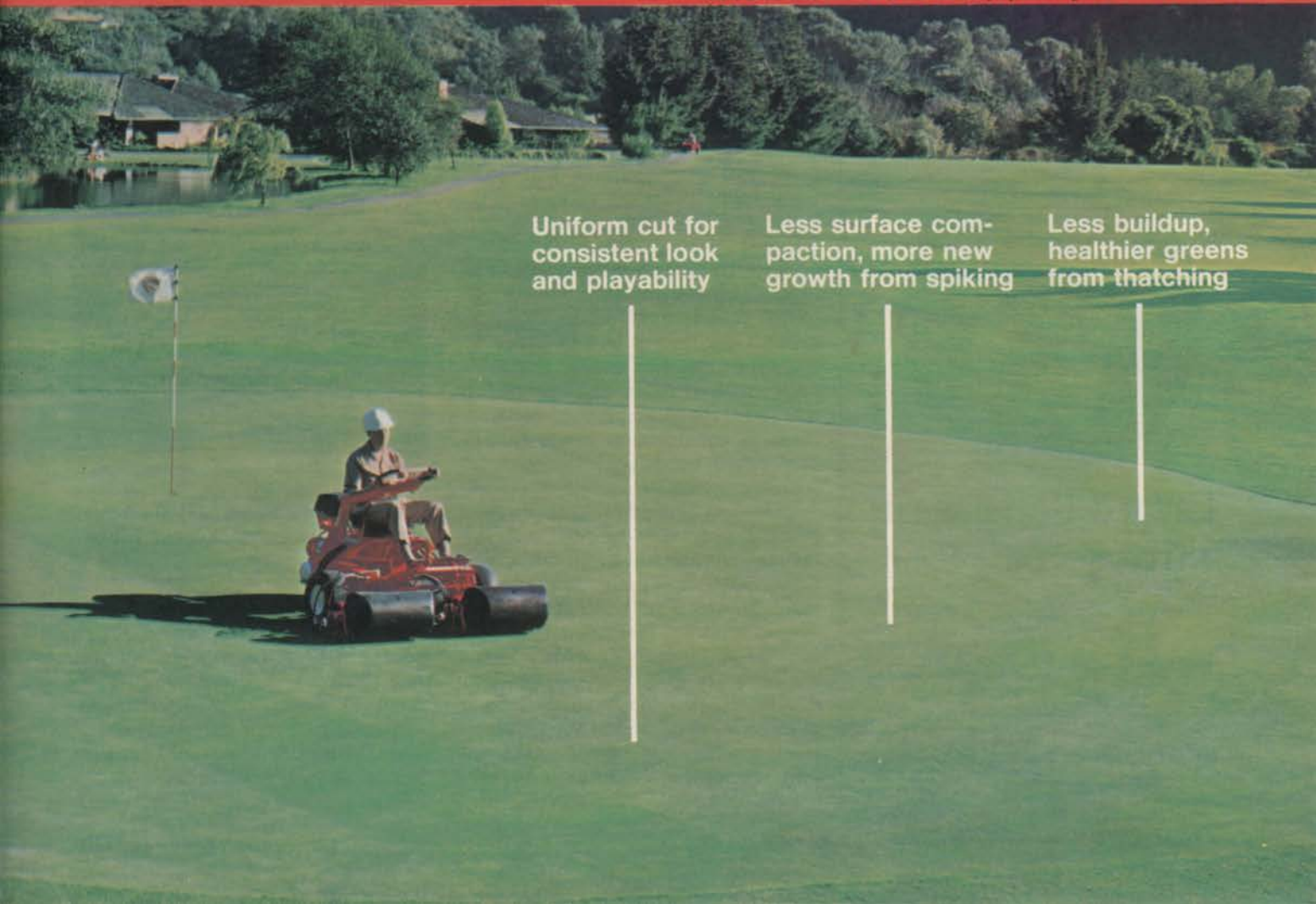
Repeated samplings showed the roots would form a fibrous mass around each particle (almost a cocoon effect). Further, the size of the particles gradually decreased over the three years before completely dissolving.

The author has repeatedly encouraged the manufacturer, Mitsubishi Co. of Japan, and USA licensee, Swift & Co., to develop a coarser grade of $\frac{1}{4}$ - $\frac{3}{8}$ inch diameter as hard pellets for at least two years' release for use in construction. Figure 6 shows representative experimental sizes tested. (Currently a special coarse container

TORO®

You're looking at a team of Toro greens maintenance machines. It's called Greensmaster 3, and it's a triplex greensmower that also spikes and thatches greens. As a greensmower, the cutting heads float free of the traction unit and grass baskets for uniform cutting height – it still has no equal. And now, with Toro-engineered implements, it's equally effective as a spiker or thatcher. Your Toro distributor offers our new one year warranty – and a free trial on your own greens. Call him. Soon.

Toro is an exclusive trademark of The Toro Company, Bloomington, Minnesota. Printed in U.S.A.



Uniform cut for
consistent look
and playability

Less surface com-
paction, more new
growth from spiking

Less buildup,
healthier greens
from thatching

grade is available for ornamental horticulture containers. It also contains fritted P and K, plus minor elements).

One failure was experimentally tried in the fall of '72. An intimate mix of finer IBDU and gypsum plaster was pelleted by rolling and drying. Three sizes, larger (above 3/8 inch), medium (3/8 to 1/4 inch) and small (less than 1/4 inch) were sorted. The initial application was superb as Figure 7 shows. Our high rates were from 8 to 16 lbs. N/1,000. When freeze and thaw came, the particles slumped and thus the hard ball was reduced to a soft patty and the beneficial effect of coarseness was reduced. In contrast, the compressed hard pellets of previous supply have repeatedly been satisfactory.

Over the years grants from companies have supported research on products in the turf program at Purdue. It has allowed a wide and continuous range of testing products. Milorganite has been a long-term standard based on research in early 1950 and much more. Ureaform formulations were extensively tested in later 50's, and one is a standard in current tests. The failures of some peat based, powdered and coated sources are also history. For example, standard osmocote particles have been quite large for use on greens, so cracked easily and was picked up by mowers excessively. In

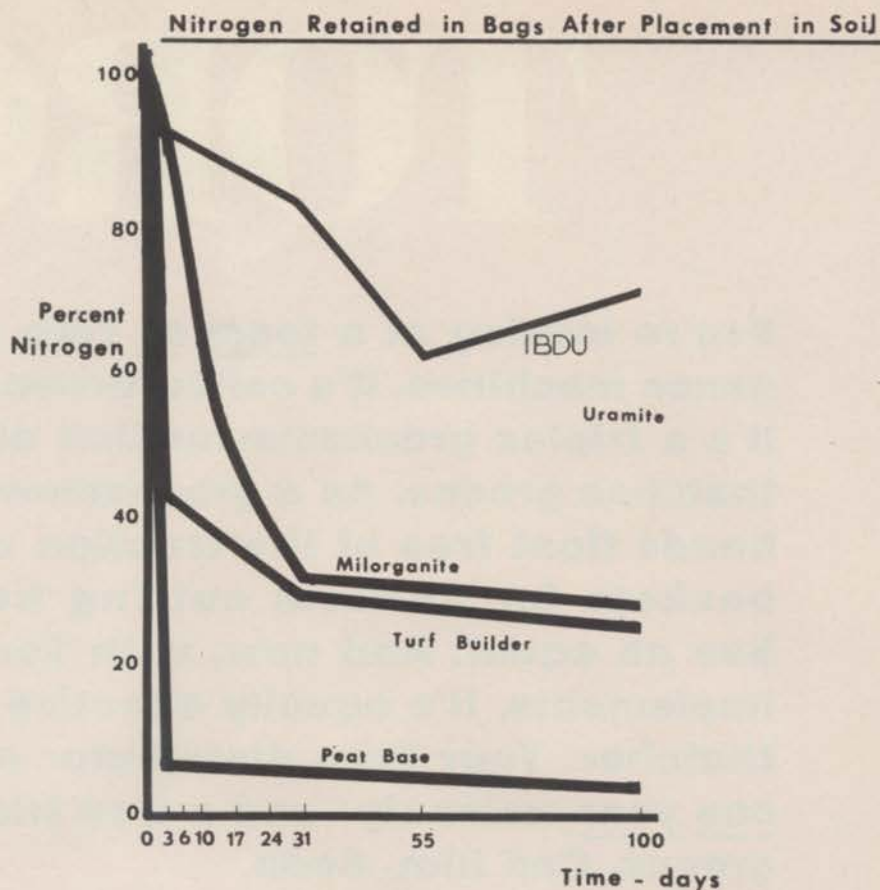


Figure 3. Percent nitrogen retained in bags after placement in soil.

fact, a review shows over 20 products from companies have been tested at Purdue since 1950 for turf, and of these, only four are currently on the market.

A Look Towards the Future

IBDU, like other special slow release nitrogen sources, will continue to be premium in price. The raw products and manufacturing processes are expensive.

Ideally, three sizes of IBDU are needed. (However, only one size, .7 to 2.0 mm is available in '75). For greens, less than 1 mm in order to filter into fine turf easier. For fairways, athletic fields and lawns, 1-3 mm size for annual use. Beyond these, a construction grade of 3-5 mm could be 3 year background release.

The fact that IBDU can be specifically processed to release N at the desired rate offers efficient use of labor both in application and in maintenance. The fact that it is free of potential for leaf burn means it may be applied under widely varying weather conditions. The fact that it can provide nitrogen stored as particles dispersed at the turf surfaces means special benefit as the cation exchange complex (storage ability of a soil) is not so critical.

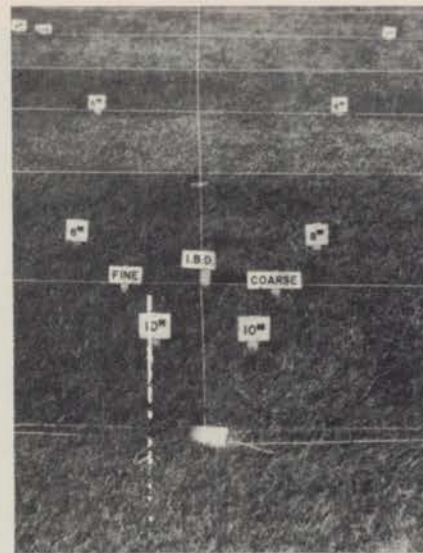


Figure 4. Finer grains on left show more response than coarser on right (taken from the same bag) at 50 days after application on Kentucky bluegrass.

How does this apply to a golf course in 1975? Look at an example — the strong consistent release exceeds 15 weeks, so a turf manager can anticipate repeat applications at about that interval or twice per year in cool season grass areas.

Of greatest potential turf man-



Lawn & Golf bags it!

NITROFORM*
organic nitrogen



The concentrated organic that takes up less storage space. Pathogen-free and odorless, too.

Turf and Horticultural Products, Synthetics Dept.
Wilmington, Delaware 19899

Registered trademark of Hercules Incorporated. 5TH 74-10 A®

For More Details Circle (137) on Reply Card

For More Details On Preceding Page Circle (148) On Reply Card

WEEDS TREES and TURF