

Turfgrass Maintenance Fertilization

Continued from September

Ureaform compounds are synthetic materials made by the chemical union of urea and formaldehyde. Within a given ureaform material there is a series of chemical compounds with varying degrees of solubility and resistance to decomposition. As the soil bacteria decompose these materials, the more easily decomposed materials break down first, followed by each successive compound. Thus, a small amount of nitrogen is constantly being released over a relatively long period of time. This permits the user to apply heavy applications of these materials at rather infrequent intervals. *Care must be taken not to confuse urea (quickly available nitrogen) with ureaform (slowly available nitrogen).*

IBDU (isobutylidene diurea) is an example of a synthetic material that is dependent upon hydrolysis to release its nitrogen. IBDU has extremely low solubility in water. As it is relatively unaffected by temperature, it has the advantage of releasing nitrogen, provided adequate moisture is available, during periods of cool weather when microbial activity is limited. IBDU has also been shown to be more efficient (more of the nitrogen applied is recovered by the plant) than natural organic or ureaform nitrogen sources.

Recommended Fertilizer Programs

Again it must be emphasized that a soil test to determine fertilizer requirements provides the best guide for proper fertilization. When com-

plete soil tests are not used, one of the following recommendations should be followed. Recommendations are based on the use of a complete fertilizer having an approximate 2-1-1 ratio or a straight nitrogen carrying material and a fertilizer application rate of four to five pounds of nitrogen per 1000 square feet per season. These recommendations are for average soil conditions and must be supplemented with additional fertilizer where soils are extremely deficient in phosphorus and/or potash. Where Merion bluegrass predominates in a mixture, increase the rate of nitrogen application by one-half over the quantities listed in the following recommendations.

Proper liming is essential to a sound fertilization program. Lime should be applied in accordance with a soil test. Proper liming creates a favourable soil environment for plant growth and keeps plant nutrients available for plant use. Liming, therefore, provides the most efficient use of applied fertilizer materials.

Program I—Where the fertilizer used contains 35% or more of the total nitrogen as water insoluble nitrogen:

Apply in the spring 15 pounds of a 10-5-5 (1 1/2 pounds of nitrogen) or the equivalent per 1000 square feet.

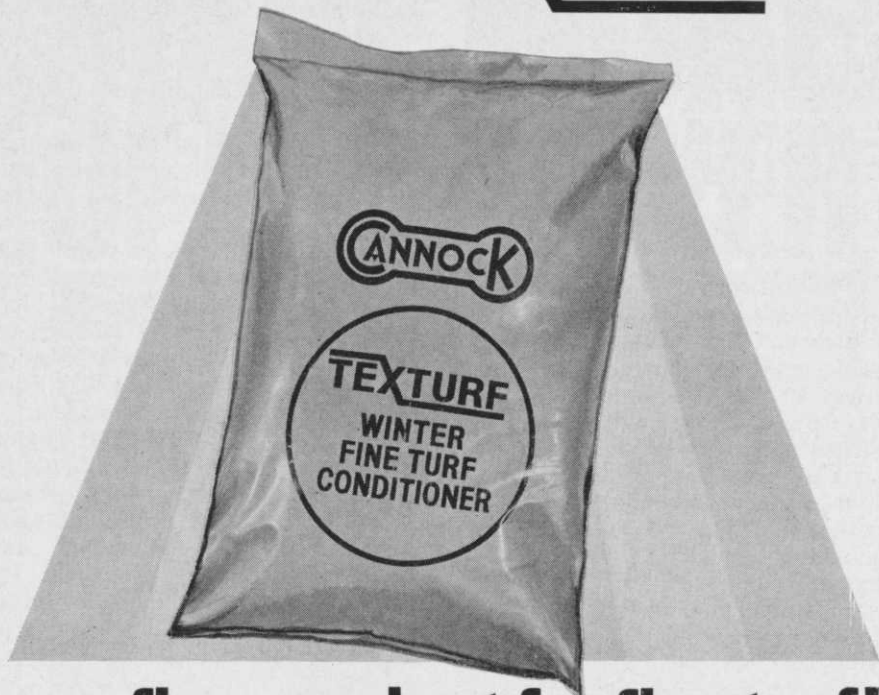
Apply in the fall 25-30 pounds of a 10-5-5 (2 1/2 to 3 pounds of nitrogen) or the equivalent per 1000 square feet.

Program II—Where the fertilizer used contains 15-34% of the total nitrogen as water insoluble nitrogen:

Apply in the spring 10 pounds of a 10-5-5 (1 pound of nitrogen) or the equivalent per 1000 square feet.

Apply in mid to late August and *again* in late September to early October, 15 pounds of a 10-5-5 (1 1/2 pounds of nitrogen) or the equivalent per 1000 square feet.

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Texturf cuts down time and labour by providing for immediate use a carefully blended and balanced winter dressing for golf and bowling greens, and fine lawns.

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You'll be delighted with the greatly improved grass growth and colour in the Spring.

Apply at 2 lbs. per square yard during the Autumn and Winter months.



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Packed in 1 cwt. heavy gauge polythene bags

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Program III—Where the fertilizer used contains less than 15% of the total nitrogen as water insoluble nitrogen:

Apply in late April and *again* in late May to early June, 7 1/2 pounds of 10-5-5 (304 pounds of nitrogen) or the equivalent per 1000 square feet.

Apply in late August to early September and *again* in late September to early October 12 to 15 pounds of a 10-5-5 (1 1/5 to 1 1/2 pounds of nitrogen) or the equivalent per 1000 square feet.

Program IV—Where soil tests shows oils to be high in phosphorus and potassium, nitrogen alone may be applied:

Apply two applications per year in mid spring and mid to late August of 6 to 8 pounds of a ureaform compound (38-0-0) (2 1/4 to 3 pounds of nitrogen) per 1000 square feet.

or

Apply in late April and *again* in June, 20 pounds of a natural organic nitrogen material (5 to 7%) 1 pound of nitrogen) per 1000 square feet.

Apply in mid to late August 40 pounds (2 1/2 pounds of nitrogen) of the same material per 1000 square feet.

or

Apply two applications per year in mid spring and mid to late August of 7 to 9 pounds (2 to 2 3/4 pounds of nitrogen) of IBDU per 1000 square feet.

Precautions

All fertilizer may burn if improperly applied. Fertilizers containing high amounts of quickly available nitrogen will burn more severely than those containing slowly available nitrogen. Natural organic nitrogen materials, IBDU, and ureaform compounds applied alone have very little

tendency to burn. However, complete fertilizers containing slowly available nitrogen may burn because of the potash content.

Always apply fertilizers when the grass leaves are completely dry, and water thoroughly immediately after application.

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NEWS

Elvin Pennants Ltd. exhibited their range of golf and other sports equipment at Motspur Park for the first time, many new items for golf and football were on show.

The 6 ft. and 8 ft. PVC flagpoles are now widely used in golf, football, and rugby, and indeed the Football Association, and Referees and Linesmens Associations have accepted the Elvin Pennants designs for equipment.

The ball washer (golf) is interesting as the greenkeepers can see the level of the water through the perspex front without leaving the tractor during their ground inspections.

The range of equipment includes:—golf green pitchforks, caddie jackets, timber and traffolite tee plaques, signs, pitch and putt equipment, golf score cards, identi-tags, bag labels, instant barriers.

They've done it again!



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today!

Now May & Baker introduce their *NEW systemic turf fungicide* ('Mildothane'-Turf) for the prevention and control of disfiguring fungal diseases such as *Fusarium*, red thread and dollar spot.

Here is a turf fungicide which combines extremely effective systemic action with simplicity of preparation and ease of use.

The publication illustrated above gives full details of this new application of the already well-known 'Mildothane' formulation which can help you to maintain your fine turf in the finest condition.

M&B May & Baker

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Sand for Golf Courses

by The USGA Green Section Staff

An article together with a Table which shows how to assess a sand used on your Golf Course. Each year now brings further certainty into areas where previously guesswork, however experienced, was the only guide line.

Of all the materials necessary for the construction and maintenance of golf courses, sand—common sand—is among the most important. Great quantities are needed for bunkers and in topsoil mixtures both for the construction of greens and for later topdressing.

Sand is among the most abundant materials on earth, and it can be found in differing textures and colors, from the coarse white sand of coral atolls of the Pacific to the fine pink sand of Bermuda's beaches. Not every sand can be used for every purpose on golf courses, however. They must be defined and graded. Sands for topsoil mixtures have been precisely defined, while, surprisingly, sands for bunkers have not. More surprisingly, both are so close in particle size designation that they could be used interchangeably. Research at Texas A&M University and at Mississippi State University resulted in the USGA Green Section recommendation for sand particles sizes ranging ideally between 0.25 millimeter and 1.0 millimeter in topsoil mixture for greens.

Sand in this particle size range also is suitable for bunkers. Sands in the range will not remain on top of the grass, but will seep into the soil. Everyone has seen a spray of sand

lying on the green after an explosion shot from a bunker. Particles larger than one millimeter tend to remain on the putting surface, while sand particles in the recommended range permeate the turf and, therefore, cause no problems in mowing operations. Secondly, players will not have to remove pebbles from their line, and therefore, putting should take less time.

Sand for bunkers preferably should be light in color, or perhaps even white, but color is not so important in soil mixtures. The specifications table below is universally accepted by commercial sand firms throughout the nation. At present, anyone can go to a sand dealer and order as much brick, mason or concrete sand as he wants. Isn't it reasonable to expect, therefore, that sand companies should also add a golf sand to their stockpile, one that meets the specifications described herein?

The recommended range of sand particle size for bunkers best suits both requirements: that is, all sand should go through a 16-mesh screen and be retained on a 60 mesh screen. Ideally, the major portion of the sand, 75% at minimum, should be in the 0.25 to 0.50 millimeter range (medium sand). Silica sands are preferred round rather than angular, if available.

The information presented here is the best judgement of the entire USGA Green Section Staff after study of research available and practical findings as a result of the Turfgrass Service Program. It is edited and

(Continued on page 19.)

Severe Spring Drought puts Playing Surfaces under Heavy Pressure

TAKE TURF ACTION NOW!

Just how could you combat the effects of the long, dry period that we had this Spring - the effects on turf in some cases have been pretty disastrous.

Ransomes would like everyone to benefit from their experience and to help you make the best out of what you have.

Not only now, but the year through, on a management basis.

Let's tackle each of the major problems that can affect your turf so seriously:

1. Soil Structure

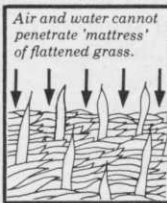
Good growth depends on the soil being in good physical condition, with plenty of space in the soil for air, water and fertilisers to get down to the grass roots. The big enemy of this ideal condition is compaction - pressure from any source, tractor or footfall, can effectively seal the surface to prevent the life-savers getting down to the roots.

The farmer ploughs to cure this problem but the Golf Greenkeeper needs a less drastic remedy. Aerifying tools provide that solution. The *unique* action of Ransomes-Hahn Aerifying with specially designed 'spoons' ensures that the soil will be opened up and the soil structure maintained at its peak.

2. Thatch

Not all the grass blades stand up to be cut when you're mowing. And all mowers cut on a horizontal plane, so what happens to the blades that are lying flat on the ground? They form 'grain', uncut

blades that will remain flat until they die after about a month and become part of the 'thatch'. This thatch forms a roof over the soil that stops water and air penetrating, and, as it usually lays in one direction, it can have a very adverse effect on golf greens. And subsequently, on your putting! So how do we cope with this mattress of grass? Simple really, we just use a mower that cuts vertically instead of horizontally, the Ransomes-Hahn 'Verti-Cut'.

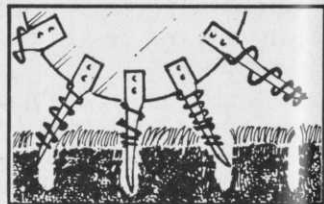


3. Top Dressing

It is the organic matter that we add - especially the organic material in the grass plant, that gives soils stability. The structure can, of course, be improved with materials like sand, humus and peat moss, depending on local conditions. This top dressing must be worked thoroughly into the surface. Surface thatch accumulation must be removed by Ransomes-Hahn

'Verticutting' before top dressing is attempted and then top dressing penetration to the soil below is effected by the Ransomes-Hahn 'Power Drag'.

Repeated Ransomes-Hahn Aerification with its unique cultivating



action is the best means of changing soil texture in the top 3 or 4 inches of the soil profile, allowing for the area to remain in use at all times. The action of the uniquely designed 'spoons' in removing cores of soil is the finest way of aerifying, and patented 'Flexi-spoon' springs fitted over each spoon prevent turf tearing.

RANSOMES SYSTEMS TO THE RESCUE

One of the prime defences against any sort of trouble is to know the enemy. Turf care is no exception. Weather can be very unpredictable. This year, a very dry Spring caused no end of problems, so we must make the best of the condition prevailing.

Ransomes knowledge of turf care goes a long way beyond mowing and their complete range of turf maintenance equipment is designed to ensure that your grass areas are as good as they possibly can be.

Cure compaction without stopping play

One of the major problems of fine turf care is how to keep it fine without holding up play—whether on golf greens, bowling greens.

The new Ransomes-Hahn 16" Vertifier is the ingenious solution. Here's how it's done. The top 1½" of soil is penetrated by ½" coring tines fitted with patented rubber flexi-pads which positively prevent turf tearing as the tines withdraw. The cores of compacted soil are then removed from the surface by using the collector.

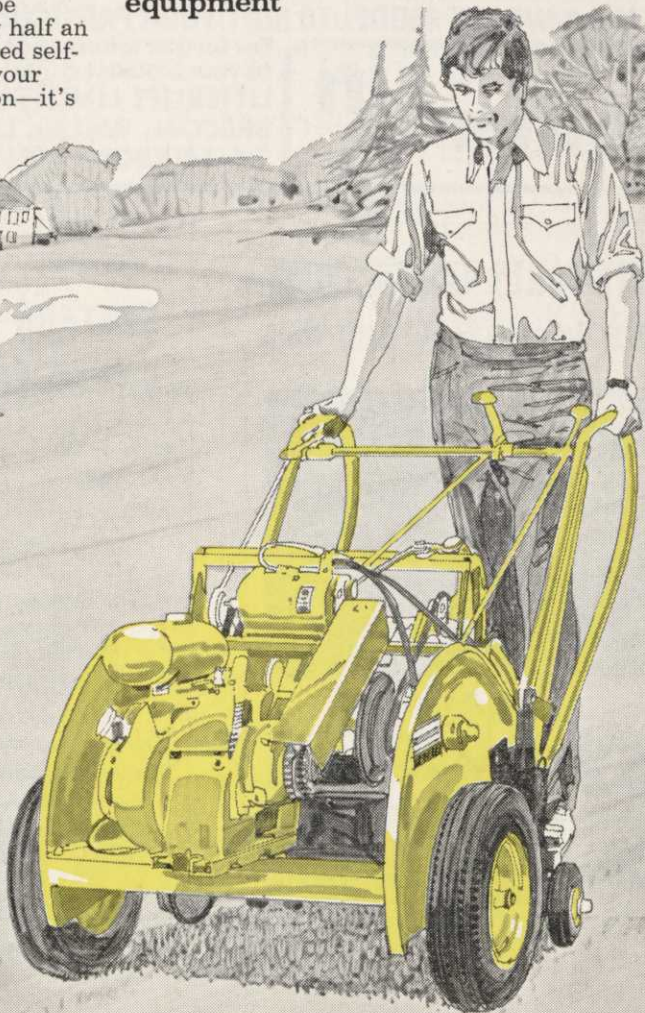
A 5000 sq. ft. green can be covered in approximately half an hour by this easily handled self-propelled machine. Ask your dealer for a demonstration—it's very convincing.

Hydraulic lifting device makes turning simple. Separate levers control engagement and dis-engagement of the drive to the tines and drive to transportation wheels. Depth adjustment down to 1½" without using tools. Simple design minimises maintenance. Core collector fitted as standard.

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Ransomes-Hahn 16" Vertifier
...and a complete range of turf improving equipment



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BLOWERS

THEY REPLACE RAKING AND SWISHING ON GREENS AND FAIRWAYS. — 5 to 65h.p. Vacuums & Truck Loaders also available.



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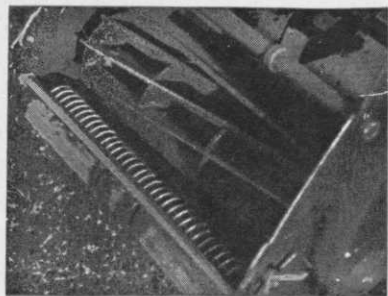
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reported by Alexander M. Radko, National Research Director. Staff members are William H. Bengueyfield, William G. Buchanan, Holman M. Griffin, James B. Moncrief, F. Lee Record, Carl Schwartzkopf, and Stanley J. Zontek.

SAND PARTICLES SIZE CLASSIFICATION TABLE

	Millimeter	Sieve Opening Inches	
	4.76	0.187	
	4.00	0.157	
	3.36	0.132	
	2.83	0.111	
	2.38	0.0937	
	2.00	0.0787	
	1.68	0.0661	
	1.41	0.0555	
	1.19	0.0469	
RANGE FOR SOIL MIXES	1.00	0.0394] COARSE
	.84	0.0331	
	.71	0.0278	
	.59	0.0234	
	.50	0.0197	
RANGE FOR SOIL MIXES	.42	0.0165] MEDIUM
	.35	0.0130	
	.30	0.0117	
RANGE FOR SOIL MIXES	.25	0.0098] FINE
	.21	0.0083	
	.18	0.0070	
	.15	0.0059	
	.13	0.0049	
RANGE FOR SOIL MIXES	.11	0.0041] FINE
	.09	0.0035	
	.07	0.0029	
	.06	0.0025	
RANGE FOR SOIL MIXES	0.5	0.0021] FINE
	.04	0.0017	

Food for thought

Dan Maples has passed along the following information for your review:

1. President of the largest steel company.
2. President of the largest gas company.
3. President of the New York Stock Exchange.
4. Greatest Wheat Speculator.
5. Great Bear of Wall Street.
6. Head of the world's largest monopoly.
7. President of the Bank of International Settlement.

These certainly should be considered the world's most successful men. At least, they found the secret of making money. Now, some 50 years later, where are these men ?

1. The president of the largest steel company, Charles Schwab, died a pauper.
2. The president of the largest gas company, Howard Hopson, is now insane.
3. The president of the New York Stock Exchange, Richard Whitney, was released to die at home.
4. The greatest wheat speculator, Arthur Gooton, died abroad insolvent.
5. The greatest bear on Wall Street, Gesace Rivermore, died a suicide.
6. The head of the world's largest monopoly, Ivan Krueger, the Match King, died a suicide.
7. The president of the Bank of International Settlement shot himself.

The same year, 1923, the winner of the most important golf championships, Gene Sarazen, won the U.S. Open and the P.G.A. Tournament. Today, he is still playing an excellent game of golf and is solvent.

Conclusion: **Stop worrying about business and go play golf.**

This article is reproduced from "The Golf Journal" a publication of the United States Golf Association.

Situations Vacant

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require an outstanding

HEAD GREENKEEPER

to take over full maintenance control of a new 18-hole course at La Baule, Brittany, France. Applicants should have experience or full knowledge of management of Pencross Greens, be familiar with modern golf course management techniques and machinery and have experience of automatic irrigation systems.

This is an exciting opportunity to groom and manage a new modern golf complex within a first class hotel leisure group.

Salary negotiable.

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Alliss, Thomas Leisure Management,

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Department of Recreation

Head Greenkeeper

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To be responsible to the Manager of Recreation for the maintenance of a 9 hole golf course, currently under construction at Fulwell Park, which will be ready for play in Spring 1975, when a golf professional will be appointed.

Applicants should be experienced, suitably qualified and able to supervise and control a small team of ground staff.

- ★ Up to £48 per week average, with overtime—
- ★ Permanent pensionable position—
- ★ 18 days annual leave—
- ★ Additional day's leave at Christmas and Spring Bank Holiday—
- ★ Sickness pay scheme.

Form from the Manager of Recreation, Langholm Lodge, 146, Petersham Road, Richmond, Surrey (01-940-8351) returnable by 18 October, 1974.

London Borough of

RICHMOND UPON THAMES