

By Appointment to Her Majesty the Queen



Motor Mower Manufacturers Charles H. Pugh Ltd.

ATCO

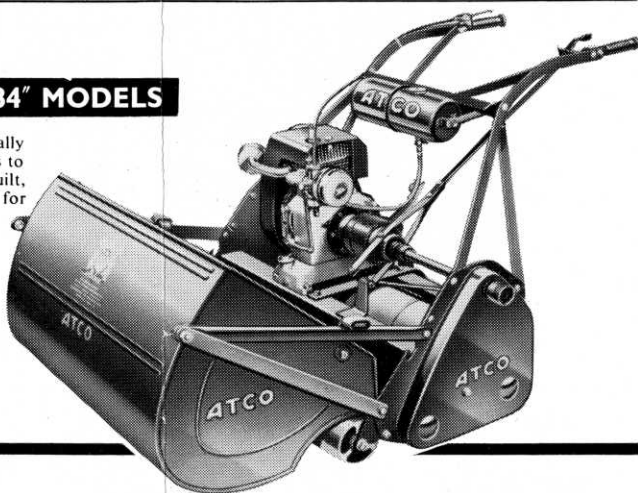
FOR THE GOLF COURSE – and for Life

PARTICULARLY

THE 20", 24", 28" & 34" MODELS

These machines are designed specially for those with large areas of grass to mow. They are ruggedly built, efficient and economical—ideal for the high hourage user. Every Golf Course needs at least one of these machines, for mowing the approaches to the Greens and all those areas of grass which need a finer cut than can be obtained with a gang mower

**20" models
from £53**



ATCO's range of equipment for Golf Courses covers every possible requirement from the 12" Roller type right up to the 34" Roller type, and Gang mowers as well. Then, of course, there is a full range of Rotaries and Sidewheels.

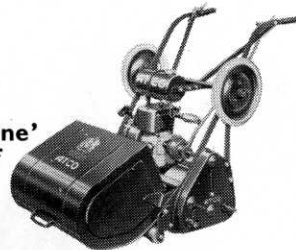
*and perhaps most important
of all* **IMPECCABLE SERVICE**

EVERYWHERE there is an ATCO Engineer attached to an ATCO owned Branch ready to advise on any problem in connection with grass cutting.

* **DEMONSTRATIONS OF ANY ATCO
CAN BE ARRANGED TO SUIT YOU
OR YOUR GREENS COMMITTEE**

**CHARLES H. PUGH LIMITED
P.O. BOX 256, ATCO WORKS, BIRMINGHAM, 9.**

**The 20"
SPECIAL
MODEL
for 'superfine'
mowing of
greens.
£90**



**ATCO GANG MOWERS
for the FAIRWAYS**

Unique—because individual units can be 'ganged' in multiples of one to seven units. Three models are available. The Triple Gang illustrated costs **£289**



THE BRITISH GOLF

GREENKEEPER

HON. EDITOR: F. W. HAWTREE.



FOUNDED 1912.

PUBLISHED MONTHLY FOR THE BENEFIT OF GREENKEEPERS, GREENKEEPING AND THE GAME OF GOLF BY THE BRITISH GOLF GREENKEEPERS ASSOCIATION

President:
CARL BRETHERTON

Vice-Presidents:
SIR WILLIAM CARR
R. B. DAWSON, O.B.E., M.S.C.,
F.L.S.
GORDON WRIGHT
F. W. HAWTREE
S. NORGATE
I. G. NICHOLLS
F. V. SOUTHGATE
P. HAZELL
W. KINSEY
R. C. AINSCOW

Chairman:
H. G. SHEPPARD
Weston-Super-Mare G.C.

Vice-Chairman:
J. SIMPSON
Ponteland G.C.

Hon. Secretary & Treasurer:
C. H. DIX,
Addington Court G.C.
Featherbed Lane,
Addington, Croydon, Surrey

Executive Committee:
Carl Bretherton (President),
G. Herrington, J. G. Bryan, E. H. Benbow, S. T. McNeice, J. Parker, J. Simpson, A. A. Cockfield, V. Crabtree, E. W. Folkes, D. G. Lord.

Hon. Auditors:
Messrs. SMALLFIELD RAWLINS AND Co.,
Candlewick House, 116/126
Cannon Street, London E.C.4.

Hon. Solicitor:
R. A. BECK,
21 Lime Street, London, E.C.3.

The Association is affiliated to the English and Welsh Golf Unions.

No. 239 New Series
FEBRUARY 1965

It took man millions of years to emerge from the trees, but just one golf stroke to put him back.

SIDNEY BRODY.

JANUARY CONTENTS

Page	3	TEE SHOTS
	4	JOHN STOBBS
	8	CONTINUING THE ECOLOGY OF NITROGEN ACTIVITY IN TURF SOILS
	11	B.O.I.L. INTRODUCE THEIR NEW SELF TRAVELLING SPRINKLER
	12	CORRESPONDENCE
	13	MAINTENANCE OF BUNKERS
	15	NEWS FROM THE SECTIONS
	16	SITUATIONS VACANT
	17	S.G.G.A. NEWS AND SPECIAL OCCASIONS
	18	HON. SECRETARY'S NOTES
	20	MRS. GREENKEEPER

EDITORIAL AND ADVERTISEMENT OFFICES: Addington Court Golf Club, Featherbed Lane, Addington, Croydon, Surrey. Telephone: SANDerstead 0281. SUBSCRIPTION RATE: 14/- for 12 issues post paid. Published during the first week of each month. LATEST COPY DATE: 8th of month prior to insertion. All rights reserved. Reproduction of original articles and photographs in whole or in part is prohibited. This Magazine shall not, without the written consent of the Publishers first given, be re-sold, lent, hired out, or otherwise disposed of. Contributions and photographs of interest are invited.

TO INSERT A CLASSIFIED ADVERTISEMENT, write to the Advertisement Manager at the above address. The rate is 6d. per word (minimum 15 words). Box Number, 1/6d. extra. Remittance must be sent with order. Please state number of insertions required and write advertisement in block letters. Advertisements will be inserted in the first available issue.

BY APPOINTMENT TO



HER MAJESTY THE QUEEN

SEEDSMEN
CARTERS TESTED SEEDS LTD.

IMPROVE YOUR TURF WITH CARTERS GRASS FERTILISERS

CARTERS SPECIAL GRASS FEEDER No. 1

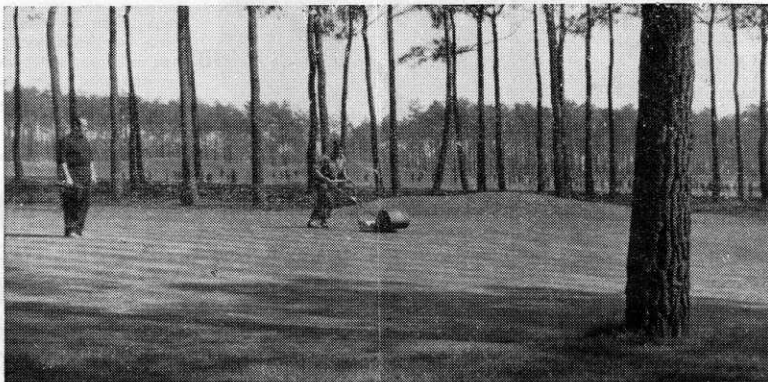
An excellent steady feed for Spring and Summer use on Golf and Bowling Greens, Tennis Courts, etc. Produces a healthy growth and good colour to the finest turf. Apply evenly at 2 oz. per sq. yd. during damp weather, or water in. For turf in poor condition, repeat after one month.

1 cwt. 58/6; 5 cwt. at 57/3 per cwt.; 10 cwt. at 56/- per cwt.; Per ton £53 10s. 0d.

CARTERS OUTFIELD AND FAIRWAYS FERTILISER (Spring/Summer)

Ideal for Spring renovation of Winter-Playing Pitches, Golf Fairways, and other large areas of grass. Apply at 5 cwt. per acre, preferably during damp weather.

1 cwt. 45/-; 5 cwt. at 43/9 per cwt.; 10 cwt. at 42/6 per cwt.; Per ton £40 0s. 0d.



Full details of Grass Seeds, Fertilisers and Maintenance Equipment are now available in our "Spring Price List", post free on request

The 1965 Edition of our illustrated booklet "Treatment of Golf Courses and Sports Grounds" Free on request

Carters
TESTED SEEDS LTD

GOLF COURSE ARCHITECTS
AND
GRASS SEED SPECIALISTS

RAYNES PARK, LONDON, S.W.20

TEE SHOTS



by the Editor

J. Drew Smith, who was with the Sports Turf Research Institute for eight years, called back again last month to help with the revision of "Fungal Diseases of Turf", an S.T.R.I. publication which has now established itself as a standard reference book in this field. Since leaving Bingley, Mr. Drew Smith has been in Aberdeen and in New Zealand working on mycology and is now off to Canada to do research into diseases of forage crops. The new edition of "Fungal Diseases of Turf" is now with the printers, so those who have had to wait after the sell-out of the first edition can expect their copy soon.

* * *

Over 453,000 rounds were played on ten of London's municipal courses last year compared with 380,000 in 1961. Bromley with 9 holes had 46,258.

* * *

From next month our magazine will be printed in Edinburgh by Messrs. Lindsay & Co. Ltd.

This is, therefore, an appropriate moment to thank the Herald Printing Press at York, who have produced it ever since Mr. George Philpot edited the first issue. The unflinching quality of their printing and their patience with Mr. Philpot's unprofessional successors have earned the gratitude of the whole Association and of the Editor in particular.



Grass Seeds

FOR HIGHEST PURITY
AND GERMINATION

SEND
NOW
FOR OUR FREE
'GREENKEEPING'
CATALOGUE

THE CANNOCK AGRICULTURAL CO. LTD., CANNOCK, STAFFS

A COURSE FOR THE LONG HANDICAP PLAYER

by

JOHN STOBBS

I hope the Editor will forgive me if I turn aside this month from American trends in greenkeeping to look at an unusually interesting topical point in course design over here. Unusually interesting, it seems, simply because that difficult-to-arouse lot, the golf writers, found it so, and because of the reaction their articles brought from golfers in general: on the subject of the new course opened for Harlow New Town at Canons Brook, and designed by Henry Cotton.

Thinking of Cotton's career, and the calibre of golf and courses upon which he has made his reputation as our greatest modern player, over the last three

decades of British golf, you might expect that he would have designed a very devil of a tough, tight, course, beset with troubles and challenges all the way along: the sort of course to suit his own game, in fact, with its long straight driving, impeccable iron play, and craftsmanlike pitching. But, No! Cotton has done just the opposite.

He has, of course, recognised the needs of the sort of golfer who'll do much of the playing upon a New Town course. But he's then carried that approach to design right to a logical conclusion.

The four major features which stick in the mind about Cotton's design are:

1. There's no rough at all, to speak of.

2. He's placed bunkers hazarding tee shots, in general, out of range of the beginner or longer handicap golfer, so that they don't affect him on his drive at all.

3. The greens are enormous.

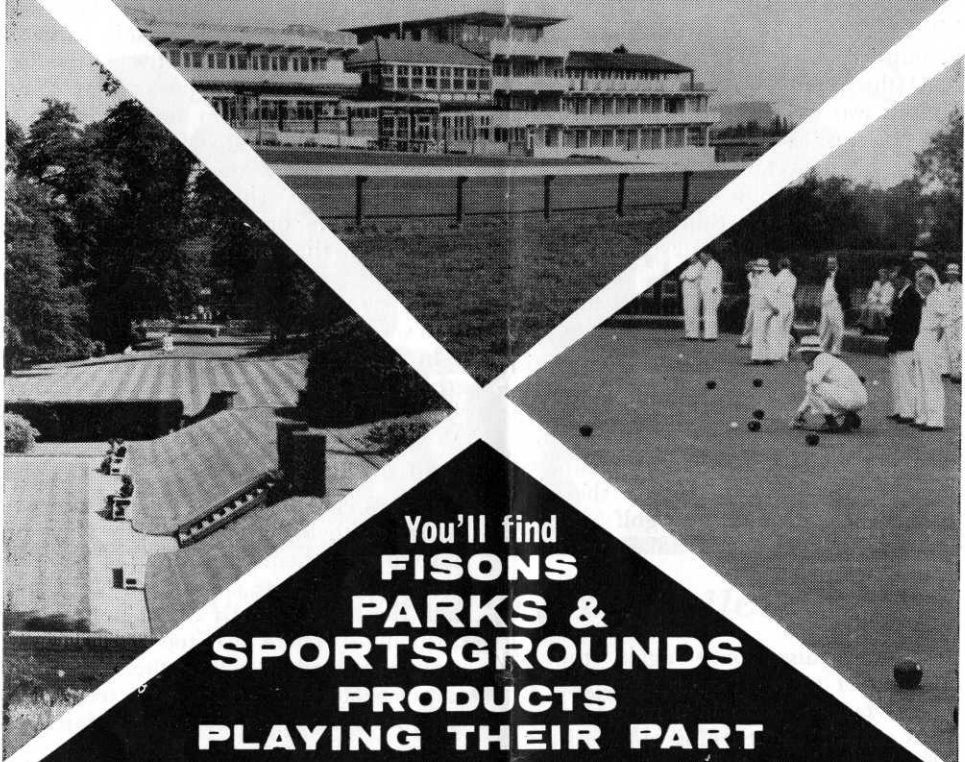
4. The challenge to the low handicap player consists essentially in the full and testing length of the holes, and in the more aggressive bunkering around the greens.

Theory

The theory is that the beginner, rabbit, or middle handicap man can thus play easy, relaxed golf around Canons Brook, can open his shoulders to try to hit his longest ball without worrying overmuch about keeping it straight, and, however long the slog may seem to him up the longer holes, once he gets in range he finds a large green to aim at. He should thus be able to develop his game in as pleasant a way as can be offered to him—and he may also be expected to get round the course in considerably less time than he would take on a more traditional layout, quite an important point for a course likely to be much used, and often crowded.

The low handicap man, pro. or amateur alike, is still going to have a tightish job to get round in a good score. This is because the hazarding to the tee shots is aimed directly at the longer hitter; and because in order to get near enough to the pin with his second shots to make sure of his "par" on hole after hole, he's going to have to strike them

In every field of grass growing



You'll find
**FISONS
PARKS &
SPORTSGROUNDS
PRODUCTS
PLAYING THEIR PART**

in Industrial Sportsgrounds, Municipal Playing Fields & Public Parks.

FERTILIZERS

Years of study and experimentation at our own Research Station have resulted in the production of a most comprehensive range of Turf Fertilizers - Fisons PS Range - each of which has its own specific application.

WEEDKILLERS

For selective and total weed-killing and for combined feeding and weedkilling, Fison's have evolved what is probably the most successful combination of weed control products available today.

PEAT PRODUCTS

The rich, humus forming properties of Humull Lawn Peat are essential for promoting good root development and maintaining the growth of fine grasses. Specially selected grades of Peat are also available for soil improvement, shrub planting, mulching and composts.

FISONS HORTICULTURE LIMITED

PARKS AND SPORTSGROUNDS DEPARTMENT, HARVEST HOUSE, FELIXSTOWE, SUFFOLK

**FREE
ADVISORY
SERVICE**

Fisons Turf Advisory Service will gladly give practical advice on any problems concerning Turf Maintenance. For a free visit by a local Turf Specialist, write to the above address.

truly and accurately. For him, too, the openness of the course and the lack of rough is going to offer a chance to relax and open his shoulders in a way he can't often do—especially if he is a very long hitter—on most of our traditionally finest layouts.

At this point I rather wish the Editor himself was writing this article instead of me; because only a professional golf course designer can see the whole picture, from course to course and from country to country, and put things properly into perspective. (Perhaps he could take up the topic next month?)

It seems to the layman that although obviously the Canons Brook type of course (even as tightened up by the vast numbers of decorative trees Cotton intends shall be planted there over the years to come) won't for one moment become a blueprint for future courses, it does suggest how some of the huge unsatisfied demand for golf amongst ordinary people may be taken up in the future.

More Difficult?

It also raises once again the old question of to what extent many of our older courses have become, with the years and the lengthening of the distance a ball will go, more difficult for the bad golfer than for the top class player. Whether they should be is, of course, a matter of opinion. But many longer-handicap men find the game quite difficult enough in itself, without any need of hazards arrayed against them. Much of the time the problem of hitting the ball straight enough, far enough, is quite capable of exercising their best efforts, without any extra help from penal-type hazards. Yet on most older courses the main hazards from the tee, and often through the green as well, are arrayed far more to trap the sort of not-too-bad shot he's likely to play, than they are to affect the tiger, who has to hit a real stinker (for him) before he lands anywhere near any of them.

The best compromise between extremes, and one towards which many courses move hazard by hazard and hole by hole, is one in which our best courses remain very tight for the low-handicap man who hits the ball a good distance,

but are made milder at about the length, and in the sort of areas, most used by the rabbit and beginner.

Take a single hole of some 450 yards (from the point of view of playing-value and ease of maintenance alike): suppose you have a clear area between the tee and the first artificial hazards at some 230 to 260 yards from the tee; then a tightly hazarded stretch for some twenty or thirty yards at the range where the long-hitter's tee shot will pitch; then a comfortable opening up again, both to reward the man who has hit an extra-long, accurate drive, and to offer plenty of room for the long-handicap man's second shot; and finally a fairly tight hazarding of the entrance to the green for both the tiger's long second shot and the rabbit's third shot.

Keep the Pattern

It is precisely because so few courses do space their hazards in this way, or have altered them with the years to keep the pattern despite changes in clubs and balls, that the point is worth noting and deducing. There are too many holes, perhaps nowadays, where the long hitter can clear all bunkers from the tee on the carry, so long as he hits the ball fair and square; but where the line is twice or three times as tight for the shorter hitter. There are too many, perhaps, too, where the worst rough lies in front of the tee or at the sides up to some 200 yards from the tee, precisely where it can torment the duffer all the time, but never affect the tiger at all.

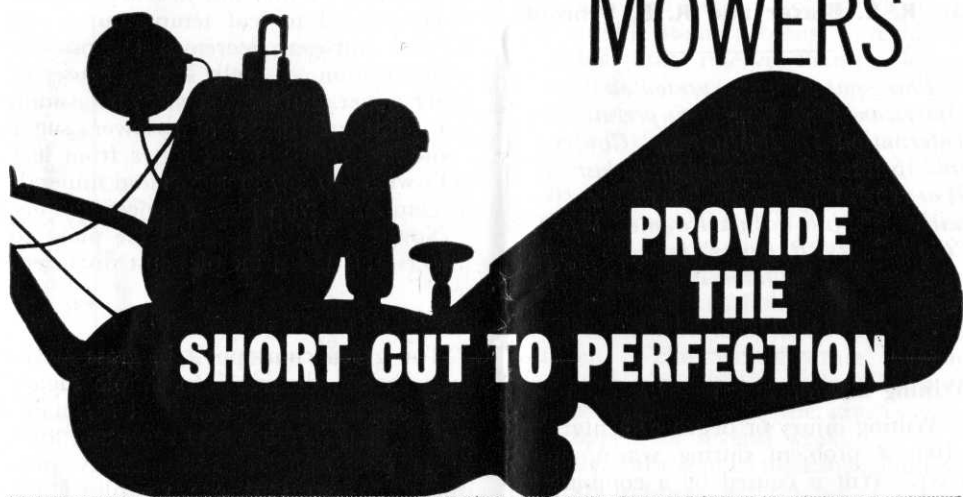
Often, too, old-fashioned cross-bunkers and such like lie at exactly the range of two of the rabbit's best shots; but 50 to 100 yards short of where the long hitter is going to pitch.

Henry Cotton's extreme example may carry a lot of precept for thought even if it makes no common model for imitation.

MISCELLANEOUS

PROFESSIONALS AND GREENKEEPERS having stocks of used golf balls contact Sparkbrook Golf Ball Co., 295 Highgate Road, Stoney Lane, Birmingham, with a view to filling export orders.

GREENS MOWERS



you have a growing need for—

Greens Hand Machines, Motor Mowers,
Rough Cuts, Verge Cutters, Gang Mowers.

GREENS 20 FOR MOTOR MOWERS

Immaculate grooming for big lawns. 4-stroke engine, kick starter, 20" cutting width. Dog clutch puts 6-Blade cylinder out of drive for crossing paths. Drop-out cutting unit.

GREENS RANGER GANG MOWERS Mk2 & Mk3

Up to 11½ acres an hour! — Hugging the ground, cropping closely and evenly. Can be ganged into 3, 5 or 7-unit mowers. Greens Ranger Mowers are the complete answer for quick and economic cutting of large areas.

THOMAS GREEN AND SON LIMITED

P.O. BOX 45, NORTH ST., LEEDS 2.

TEL: 20357 (4 lines) GRAMS: SMITHFIELD, LEEDS.

Also at Norfolk House, Norfolk St., London W.C.2. Telephone : Temple Bar 1330



A HAWKER SIDDELEY COMPANY

Continuing . . .

THE ECOLOGY OF NITROGEN ACTIVITY IN TURF SOILS

by

Dr. R. E. Blaser and R. E. Schmidt

This paper was presented at the American Golf Course Superintendents' International Turf-Grass Conference and Show at Philadelphia, last year. We reprint the second instalment here with grateful acknowledgments to the "Golf Course Reporter" because so much of it will be of interest to readers over here.

Wilting and Nitrogen

Wilting injury or death of bentgrass is often a problem during warm, sunny days. Wilt is caused by a combination of factors—soil, climatic, and morphological and physiological condition of plants. Nitrogen has direct and indirect effects on wilting. Thatch encourages wilting in three ways: (1) shallow roots; (2) poor moisture infiltration; and (3) the inhibited gaseous exchange (consequent carbon dioxide gas accumulation) causes protoplasm to resist water intake; hence, plants wilt more rapidly.

Liberal nitrogen fertilisation influences the physiology and morphology of plants to encourage wilting in four ways. (1) Root to top ratios and root depths are reduced. (2) Fast growing leaves with high nitrogen fertilisation are thin walled and high in water content. These com-

bined effects encourage water loss and make grasses vulnerable to wilting. (3) Temperatures of liberally nitrogen fertilised grasses may be increased because the darker green leaves absorb more heat and also because of higher rates of respiration. Water loss in leaves is positively related to leaf temperatures. (4) Liberal nitrogen decreases the osmotic concentration of cell sap because of lesser mineral uptake, such as potassium, per unit of tissue and lower sugar content. Water is lost faster from leaf cells with sap low in sugars and minerals as compared with higher concentrations.

Now we will look inside the plant to understand the principles just discussed.

Food Reserves and Respiration

The green chlorophyll in grass leaves fixes carbon dioxide into simple sugary substances that are then used for maintaining and forming new roots and tops. Thus plants manufacture energy products (sugars) that are re-utilised for making all other substances and tissues in growth processes. Plants must stay alive at night, during periods of dormancy, under snow, and any time when leaves are not making food. Thus, sugary substances not used for growth are condensed and stored as reserve carbohydrate energy foods. Such reserve carbohydrates are important in many ways: (a) When leaves and shoots are lost due to cold weather, wilting, diseases, insects, or due to heavy verticutting and leaf removal; new ones are made from reserve carbohydrates. (b) When leaves do not make enough food for root and top growth, the stored reserves supply the shortage. (c) New

R. C. CRAIG

AND CO. LTD.

SPECIALISTS IN THE REPAIR AND
MAINTENANCE OF ALL TYPES OF MOWERS

★ Agents for: RANSOMES, SIMS &
JEFFERIES Ltd.

★ LLOYDS & Co. Ltd.
WEBBS LAWN MOWERS

★ Distributors: DENNIS BROS Ltd.

★ GANG MOWERS FOR HIRE

We will gladly call on you to
advise on your grass cutting
equipment or arrange demonstra-
tions. Ring us now.

153 Arch Stamford Brook
Station, LONDON, W.6.

RIVERSIDE 5415

basal grass shoots form much faster with high as compared with low carbohydrate reserves. (d) With a shortage of reserve carbohydrates, the tops have first access to them; thus, a low root-top ratio and

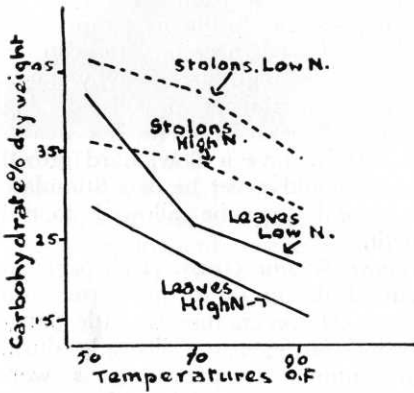


Figure 2. Reserve carbohydrates in leaves and stolons of Cohansey bentgrass as influenced by temperatures and nitrogen fertilisation.

shallow roots. A simplified list of materials in plants is given below :

- Organic Materials—19%
 - Soluble carbohydrates
 - Simple sugars
 - Stored (fructosan or starch)
 - Structural Materials
 - Protoplasm (N-substances)
- Water—80%
- Minerals—1%

Fructosan is the main starch-like storage reserve carbohydrate in northern turf-grasses like bluegrass, bentgrass, and others. Fructosan accumulates in grasses in the stubble, underground in roots and rhizomes and also in leaves. Alternately it breaks down into simple sugar for growth and is stored again. The amount of fructosan reserves in grass tissue is influenced drastically by closeness of clipping (leaf removal), available nitrogen in soils and by the temperature (season of application). The combined effects of very close clipping, and high soil nitrogen during the hot summer season would cause very low fructosan reserves.

*Fructosan reserves
in grass tissue*

	Low	High
--	-----	------

Influencing factors

- | | | |
|--------------------------|------------|-----|
| 1. Closeness of clipping | Very close | Lax |
| 2. Available nitrogen | High | Low |

3. Temperature (season of application)

Very warm Cool
Data are now available to point out these inter-relationships. In our laboratories, Cohansey bentgrass was grown at temperatures of 50°, 70°, and 90° F. with low and high nitrogen, Figure 2. The stubble stems (stolons) were higher in carbohydrate reserves than the leaves. Note that stolons and leaves grown with low nitrogen were much higher in carbohydrate than those with high nitrogen. There was a drastic drop in carbohydrate in all tissue as temperatures were increased from 50 to 90° F. The lowest carbohydrate occurred with high nitrogen and high temperature; on the other hand the highest carbohydrates occurred with the lowest temperatures and low nitrogen. The carbohydrate content was much higher than would occur on a putting green because the grasses were not clipped for several weeks.

Liberal nitrogen fertilisation stimulates respiration (increased release of carbon dioxide and "burning up" food reserves apparently associated with fast growth),

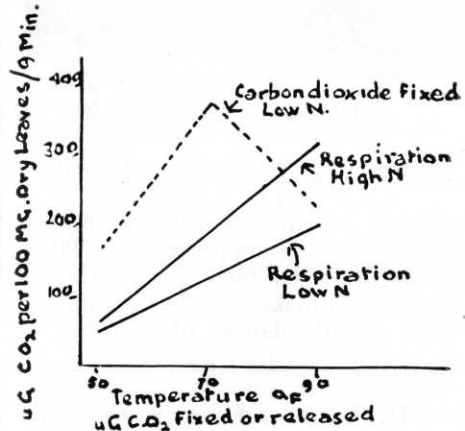


Figure 3. The respiration rate of Cohansey bentgrass leaves with low and high nitrogen fertiliser at three temperatures. The rate of photosynthesis, carbon dioxide fixed is also with low nitrogen fertilisation is also given.

Figure 3. The highest rate of respiration occurred with the highest temperature and high available nitrogen. Thus, during high temperatures, liberal nitrogen fertilisation reduces food reserves due to fast growth and high respiration. Here reserve foods are made into protein-like compounds and plant tissue, especially top growth. When temperatures are too low for grass to grow

rapidly, high nitrogen does not stimulate respiration and food reserves remain high.

Figure 3 also shows that carbon dioxide fixation (rate of making sugary substances) increased as temperatures were raised from 50° to 70° F.; there was a rapid drop in food fixation with temperatures. Because food is fixed at a low rate and respiration is high during high summer temperatures, nitrogen should be applied at low rates during the summer for cool season grasses.

A summary on some of the effects of nitrogen on grass growth is given in Figure 4.

Timing Nitrogen Applications

Cool season grasses (bent, blue, and others) should have liberal amounts of

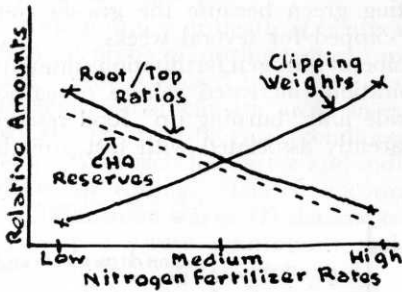


Figure 4. The influence of nitrogen fertilizer on yield of clippings, root/top ratios and carbohydrate reserves of grass.

available soil nitrogen during the cool spring and late summer season. This is the season when such grasses are best adapted and make most of their growth. There is little danger of applying too

much nitrogen in late summer as growth and respiration will be inhibited as temperatures keep getting cooler. Thus, carbohydrate reserves build up during autumn even with liberal nitrogen. Available soil nitrogen should be decreasing in late spring as temperatures get higher. It is necessary to keep cool season grasses slightly to heavily starved for nitrogen during periods of high summer temperature. With hot weather it is best to have a slow, hard growth. Grasses should never be over stimulated nor should they be allowed to stop growth.

Warm Season Grass: The principles discussed also apply to the warm season grasses. However, there is little danger in using nitrogen too liberally during high summer temperatures as warm season grasses have high optimum temperatures for growth. Warm season grasses do not usually have adverse respiration effects at high temperatures and photosynthesis is efficient at high temperatures. Thus, food reserves remain high at usual summer temperatures.

Nitrogen fertilisation should not be excessive during late summer when growth of warm season grasses is slowed up because of low temperatures. Over stimulated and actively growing non-hardy grasses are injured readily by rapid temperature declines. Likewise, excess nitrogen fertilisation and competition from overseeded winter grasses can seriously retard bermudagrass regrowth.

Nitrogen fertilizer is a most important mineral nutrient for growth control of turf.

Hitch on and away you go with a

P.J.M. SPRAYER

Simplicity of design ensures a highly efficient and trouble free performance whilst keeping maintenance costs down to an absolute minimum.

The pump is driven off one of the land wheels thereby obviating the use of a separate power unit. Tank capacities range from 5-50 gallons and spray booms are available for 7 ft. and 10 ft. spraying widths.

Always ready for use, they can be instantly attached to any type of tractor or large powered mower, and if weather conditions prevent the use of heavy equipment on the greens they may be operated by hand with ease and accuracy.

why not write for details to

Pressure Jet Markers Ltd., 152 The Arches, Stamford Brook, W.6

