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THE BRITISH GOLF

# GREENKEEPER

HON. EDITOR: F. W. HAWTREE.



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No. 231 New Series  
JUNE 1964

## OF ALL THE NERVE!

*The reason for this riot?  
Well, here's a tiny clue.  
Four women told the men ahead,  
"You're slow—may we play through?"*

DANNY SEIFER.

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# TEE SHOTS



by the Editor

## Berks. Golf course could be cut by new road

A North-South link road, which will provide the proposed £18 million Woodley airfield development with access on to the A4 and the main Wokingham Road, is being considered by Berks. planners. If the line of the road at present favoured is approved, it will cut right across Sonning Golf Club's course.

## Extensions at Southfield

Membership of Oxford City Golf Club has increased during the past year from 274 to 383, comprising 318 seniors, 47 juniors and 18 non-playing members.

Mr. H. F. Draper, the retiring captain, said during the year they had lost their president, Lord Nuffield, who had helped to finance the club in its early days.

The year had also seen the retirement of Mr. William Kimber at the age of 70, after 40 years as a greenkeeper.

The directors and committee felt that the time was overdue when something should be done to improve the amenities of the clubhouse and plans had been

drawn up to provide for extensive alteration.

Norfolk's new amateur champion is a greenkeeper—28 year old John Nudds, of Hunstanton.

He is probably the only greenkeeper holding a major county title. But it was easier for him than for some because the championship was played on his own course.

## Use Green Dye as Tracer when Spraying Greens

Here's a tip for superintendents from the Leslie-Agriform Corp., P.O. Box 275, Neward Calif., manufacturer and distributor of turfgrass supplies: When applying liquid fungicides and fertilisers, add  $\frac{1}{2}$  oz. of Malinckrodt's Auto Green Dye (per 100 sq. ft. covered) to the spray. The dye leaves a definite green tracer that outlines the covered area and prevents overlapping and missing. The green dye also disguises sick grasses until you can cure the disease.

*Golfdom.*



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# THE ROLE OF NON-NITROGEN FERTILISER ELEMENTS

by

**DR. MARVIN H. FERGUSON**, speaking to the International Turf Grass Conference organised by the Golf Course Superintendents Association at Philadelphia earlier this year. Dr. Ferguson, Mid Continent Director of the U.S.G.A. Green Section, discusses five major elements present in fertilisers to which response is less immediate than to nitrogen but which are all used by grass in considerable quantities.

Fertiliser recommendations for turf are often made in terms of pounds of nitrogen per unit of area. This is done because nitrogen is used in greater quantities than are the other materials, because of the relatively great response that occurs following its use and because it is the element most likely to be in short supply.

While such thinking may be valid from a practical viewpoint, it creates the danger of minimising in our consciousness the importance of the other elements, some of which are used in substantial amounts. These major elements are phosphorus, potassium, calcium, magnesium and sulphur.

Studies of plant tissues have indicated that nitrogen, phosphorus (expressed as  $P_2O_5$ ) and potassium (expressed as  $K_2O$ ) are present in the turf plant in the approximate ratio of 3-1-2. Thus the fertiliser grades commonly sold for turf use are 10-3-7, 12-4-8, 12-6-6, 10-5-5, and similar grades. Usually recommendations for the use of phosphorus and potassium are made only in terms of such ratios.

Calcium and magnesium are rarely recommended as plant nutrients. They normally are recommended as correctives

for soil acidity. The quantity necessary for such purposes is ordinarily more than is necessary for nutrient use.

Sulphur is rarely recommended as a plant nutrient. In areas where conditions of alkalinity or salinity occur, sulphur is sometimes recommended, particularly in the form of gypsum. Sulphur occurs widely enough in fertiliser materials that it is seldom in short supply. It seems likely, however, that the trend towards higher analyses and greater purity of fertiliser materials may result in more frequent shortages of sulphur in the soil.

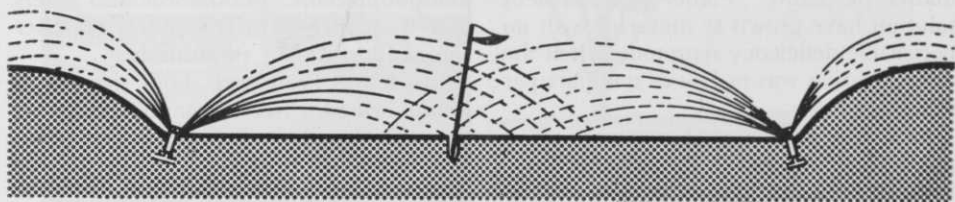
It may be profitable to examine each of these major nutrients in some detail and to refresh our thinking with respect to the role that each element plays.

## Phosphorus

Phosphorus is chiefly derived from phosphate rock. Phosphate rock is treated with sulphuric acid to produce superphosphate which is one of the most common of the phosphorus bearing fertiliser materials.

In recent years phosphoric acid has gained more prominence in fertiliser technology. The ammoniation of phosphoric acid provides ammonium phos-

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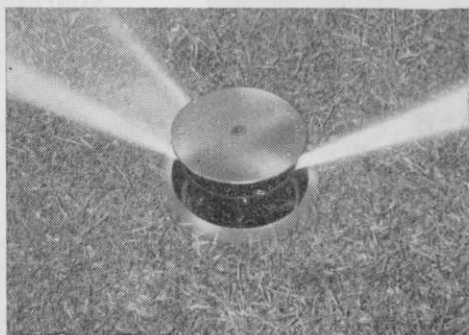
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phate. This is a high analysis material that sometimes is sold directly but which more often goes into mixed goods.

While phosphorus performs numerous important roles in plant growth, it is not used by the plant in large amounts. It has been reported that phosphorus comprises from 0.2% to 0.8% of the dry matter of plants. Plants in a nutrient solution have grown to maturity with no noticeable deficiency symptoms when the concentration was as low as one part per million.

One of the reasons we supply phosphorus in relatively large amounts as a fertiliser is because of the fact that it becomes tied up quickly in the soil. Phosphorus reacts with such cations as calcium, magnesium, and iron to form relatively insoluble compounds. Plants can obtain some phosphorus from such compounds but their ability to do so varies with species. Rapidly growing plants may therefore obtain too little for their needs. This fact assumes greater importance when we consider that phosphorus occurs in its greatest concentrations in the plant in those parts that are growing most rapidly. Therefore we

continue to supply fertiliser phosphorus in forms readily available to the plant even though the total phosphorus content of the soil may be quite high.

In its physiological role in the plant phosphorus is one of the components of numerous compounds. Among them are phytin, phospholipides, nucleic acid, and phosphoproteins. Phosphorus also enters into the processes of reduction of other compounds and of respiration.

Much has been said about the use of phosphorus for the promotion of root growth. In some of the early research, it was found that root crops such as beets, turnips and mangels responded to high amounts of phosphorus. Later it was found that heavy phosphorus applications resulted in a higher proportion of roots to tops in several species. However, under conditions where all the nutrient elements are in adequate supply, there is little evidence to support the belief that additional phosphorus will promote the growth of roots.

#### Potash

The element potassium usually is supplied in the form of potassium chloride (muriate of potash) or as

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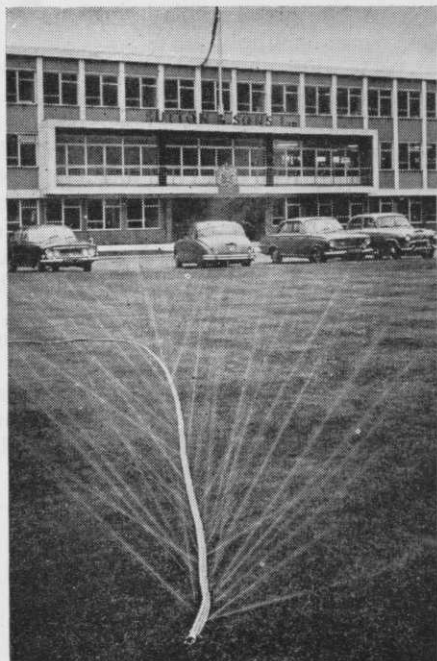
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### Mercurized Turf Sand

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	56lb. (224 sq.yds.) 47/6
	1 cwt (448 sq.yds.) 90/-

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Eliminates moss without leaving dead patches. The gentle, year-round moss control.

PRICES	28lb. (112 sq.yds.) 29/-
	56lb. (224 sq.yds.) 47/6
	1 cwt (448 sq.yds.) 90/-

NOTE: Get Berk's new handy pocket guide entitled 'Berk Turf Treatments for Groundsmen and Greenkeepers'.



potassium sulphate. Potash salts are mined in the southwest part of the United States. Only physical processing is required to prepare them for market. In recent years a relatively small amount of potassium nitrate and potassium phosphate has been marketed.

Most fertiliser potash for turf has been used as a part of a complete fertiliser grade. However, some users prefer to apply it separately. On putting greens it is sometimes used in spring and in fall and left out of the fertiliser programme during the summer months.

Potassium salts such as potassium chloride, potassium sulphate, potassium nitrate, and potassium phosphate are quite soluble. Thus potash in this form will leach quite rapidly in a sandy soil. However, with heavier soils which have a high exchange capacity, potassium ions

may become fixed on the clay micelles. The clay will then provide potassium ions to the growing plant in a more or less constant supply.

It is difficult to know how much potassium a plant requires. Students of mineral nutrition have been unable to find evidence that potassium enters into the plant structure or into any permanent organic compound in any way. It has often been described as a buffering agent in the plant's sap. Because potassium is taken up by the plant beyond its need, the plant content is not a reliable indicator of the amount required. Therefore an analysis of potassium in the plant may be misleading. Experiments with zoysia have shown that approximately 7 m.e. of K per 100 grams of dry matter will produce as

*Continued on page 20.*





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*1 gallon of SYDANE is sufficient to treat 1,300 sq. yards of turf, for one year and cost 48/- to 55/- per gallon.*

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### ESTERMONE

General selective weedkiller for all weeds in turf. ESTERMONE is based on the formulation of the famous 4-50, combining the weedkilling properties of FENOPROP and 2, 4-D. ESTERMONE will destroy a complete range of small and broad leaf weeds, and is ideal for the treatment of large areas of turf which are heavily infested with established weed growth.

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### M-C MOSS KILLER and turf fungicide

M-C is non-poisonous and is completely safe. M-C creates soil conditions which prevent moss germination and at the same time protects the turf from fungus diseases spreading or becoming established.

*A single application of M-C will remain effective for at least 12 months and costs less than £15 per acre.*

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General selective weedkiller for grass and cereal crops. 50% 2,4-D represents the cheapest form of selective weedkilling where large areas of turf have to be treated mainly for broad leaf weeds.

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Situated in the South-West—Britain's most popular holiday area—Weston is famous for its health-giving Atlantic air and mild climate. The town, which is built around a magnificent sand-fringed bay, has a level sea-front and is sheltered from the North-East winds by Worlebury Hill; there are many lovely parks where sub-tropical plants grow out of doors the year round.

Amongst the many outdoor attractions are three golf courses within easy reach, two swimming pools, bowls, tennis (with some floodlit courts), riding, sea, river and lake fishing, sailing, water ski-ing, boating on the Marine Lake, trips round the bay; donkeys and pony carriages on the sands, model yacht ponds, a play beach, an Aquarium and a Pets' Corner.

The entertainment programme includes concerts and dances at the Winter Gardens Pavilion, musical and variety shows at Knightstone Theatre. In Summer there are Band Shows at Rozel Bandstand and repertory at the Playhouse. Other attractions are a Model Railway at the Cove Pavilion and a Model Village which adjoins the Winter Gardens Pavilion.

Weston-super-Mare, from which it is said there are more excursions than from any other British resort, is an ideal centre from which to explore the beautiful and fascinating West Country.

In and around the town are many interesting walks, while sightseers, wishing to go farther afield can easily visit by train or coach, Cheddar Gorge (12 miles), Wells, Wookey Hole, Glastonbury, Bristol Zoo, Bath, Longleat House and Minehead. From Birnbeck Pier there are steamer excursions to such places as Cardiff, Lynmouth, Ilfracombe, Clovelly and Lundy Island.