Organic sources in focus

• from Page 19

requirements will vary for a number of reasons: weather, soil/substrata type, level of rainfall, frequency of mowing, wear and tear etc. Despite this, the greenkeeper should consider some general principles before devising a tailor-made feeding programme.

STRI specialists, Isaac and Canaway, believe that fine turf requires 200-250 kg N/ha per year, with experiments carried out at Fisons Levington Research Station over many years supporting this view. Certainly the Greenmaster fine turf fertiliser range was developed with this in mind. In his study of pure sand greens, Dawson believes nitrogen should be applied in excess of 250 kg per hectare per year. This is because of the greater leaching effect of such greens.

It should also be remembered that 'natural soil' greens, routinely top dressed with sand, will, over the years, become increasingly similar to greens originally constructed from sand. Nutrition must be adjusted accordingly.

Fine turf grasses can only take up nitrogen in the form of ammonium or nitrate. There are numerous compounds which provide these elements either directly, e.g.: ammonium sulphate and ammonium nitrate, or indirectly, e.g. hoof and horn, dried blood, urea and isobutylidene diurea (IBDU).

Not all sources are suitable for fine turf, but ammonium sulphate has proved to be the most successful form

of 'rapid' release nitrogen, as it encourages good growth, colour, superior texture and uniformity of Agrostis and Fescue species. It also reduces pH.

This can be desirable where a soil is not naturally acidic, but over use can lead to low vigour, poor drought resistant swards which are prone to thatch development, and the ingress of weeds. Ammonium sulphate can also

scorch grass. To overcome these problems; products like Greenmaster fertilisers have included some organic or ureic nitrogen in their formulations.

Concerns for the environmental well-being of golf courses have raised the profile of organic sources once again. Hoof and horn in particular can give very good results as a slow-release nitrogen source. However, it is expensive and – in its natural form – difficult to use. Other organic mixes like those based on cow slurry cannot match the N, P, K analysis that turf demands and which inorganics offer, which makes the recent launch of Sportsmaster Organic outfield turf fertilisers all the more interesting. In this case, the Company have formulated organic nutrient sources into an easy-to-use mini pellet that feeds the grass as well as good inorganic equivacontinued on Page 22

New Fisons
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Organic – the
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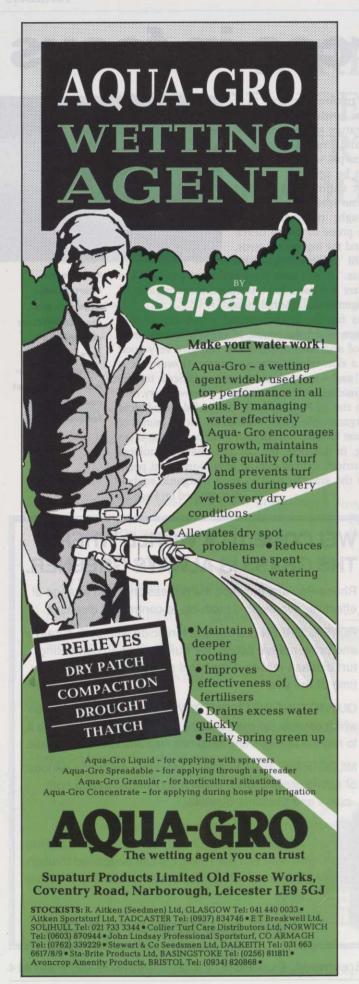
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Nitrogen versus other nutrients:

conflict goes on

ps 303

• from Page 21

lents. The presentation of organics in such a useful formulation is an important breakthrough for today's greenkeeper; though whether we will be able to provide similar fertilisers for fine turf remains to be seen.

Inorganic sources of slowrelease nitrogen are very popu-

lar in both the United States and Europe, though in the UK a conflict of opinions has stunted their use. If applied properly however, slow release fertilisers can be a valuable, labour saving tool.

Applied on its own, granular IBDU will show a good turf growth and colour response after about five or six weeks, which is then sustained for several weeks. The apparently slow start is no disadvantage because a 50% rapid release nitrogen/50% IBDU fertiliser mix will give a good initial response as well as a sustained response. For example, Greenmaster Super N (24: 0: 0) will show a relatively even response for about twelve weeks. It is important, however, that the mix is 50: 50 and the declared nitrogen levels are fairly high. Fifty per cent of not very much is a complete waste of money.

Whereas it is widely accepted that nitrogen fertilisation is vital for fine turf, the supply of other nutrients is much more contentious. There is no dispute over the fact that phosphorus is essential, as it assists in storing and transporting energy. Potassium, too, is important in activating enzymes that help increase resistance to fungal infections. All other essential nutrients have similarly well-defined roles. The contentious debate centres not on ingredients, but on the quantities that should be applied.

An application of 47-70 kg of phosphorus per hectare and 85-140 kg of potassium per hectare per year is a satisfactory guide. The vital key, however, lies in soil analysis. Stansfield's STRI report (1985) suggests that many golf and bowling greens contain adequate levels of phosphorus and potassium. In these cases it is wholly appropriate to use a nitrogen only fertiliser. Products with or without P and K are offered to suit individual circumstances but it must be borne in mind that these reserves will run out one day and playable sport turf does need P and K as part of its feeding programme.

Nutritional policy must be balanced. That balance can be achieved by reviewing the quantities of nutrients in the soil and by determining nutrient levels lost through clippings. The formulations that make up the Greenmaster and Sportmaster ranges are designed to make up for the natural imbalances the game of golf creates. They are also designed to complement the other key elements of turf management from pic. to aeration, irrigation to seeding. Getting the balance right will bring success to any greenkeeper.

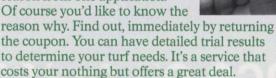
Keith McKee is European Technical Adviser, Fisons plc, Ipswich.



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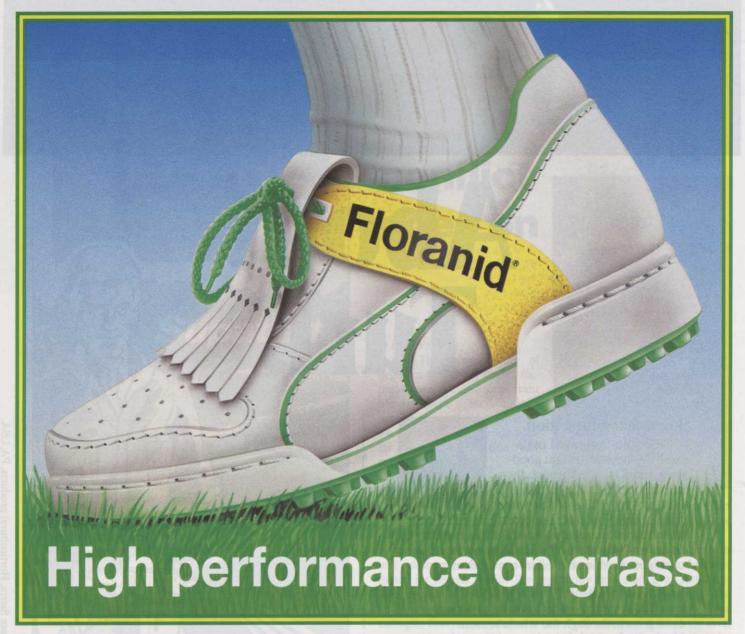
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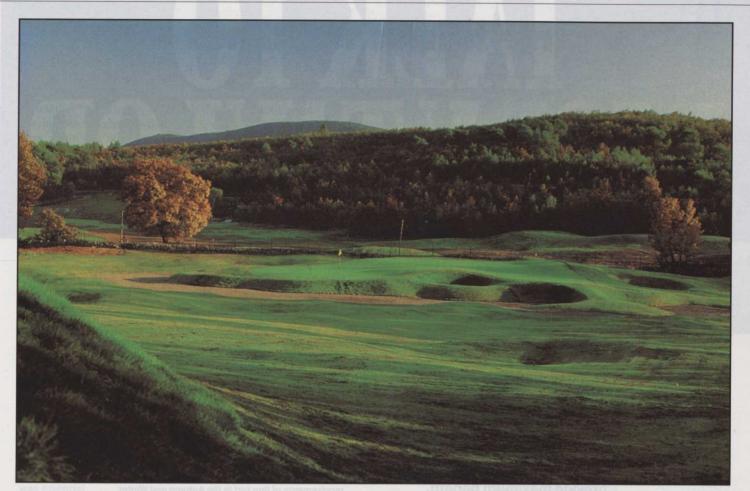
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REF



Fertile FRANCE

France is possibly the fastest growing golf market in Europe. Japanese, American, Middle Eastern and European money is being channeled into new golf course constructions, with greenkeepers being recruited from Great Britain and North America; as well as being trained in France itself. The training of greenkeepers has become a very important subject and one in which all sides of the

The Barbaroux Golf Course is described as 'the ultimate in European golfing'. It comprises 87 hectares for a course length of 6963 yards in

wooded landscape

interspersed with

six extensive lakes

French golf industry have had an influence. Unlike the UK, there is no 'tradition' of golf greenkeeping, so they are immediately addressing the problems posed by modern construction methods and the intensity of play that the rapid growth in golf interest has generated.

With limited practical experience they are tending to follow the scientific path, but this is well tempered by user experience drawn from industry sources, as well as 'imported' green-keepers. The changes in grasses as well as construction materials has tended to make 'traditional' greenkeeping methods of limited value and this has brought new opportunities in creating new methods to produce what all greenkeepers and golfers are looking for – first class playing surfaces.

continued on Page 27



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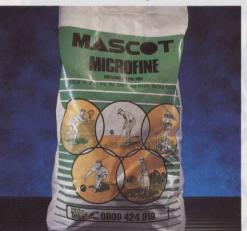
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A GROWING FORCE IN LEISURE

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Special fertiliser maintains quality

• from Page 25

A brand new modern construction in France will never be another St. Andrews, but that is the joy of visiting and playing other courses - the challenge of new surroundings. As a test of the golfer's skill French courses are equal to their counterparts in the UK and maintained to an equally high standard, but with a character of their very own, they are different. You will all have seen the postcard of the two young children entitled: "vive le difference"!

At the recent first International Salon of Golf Course Maintenance and Repair (SIERG) organised by the Association of French Greenkeepers (AGRF), this new thinking in respect of golf green fertilisation was introduced to a new product from BASF. The close affiliation between manufacturer and greenkeeper had identified a need and responded to it in an effort to make the 'manipulation of nature' called greenkeeping a little more effective.

Because most constructions in France are new they do not have the reserves of nutrients so often found in older UK greens. They have also been built with irrigation and drainage incorporated from the outset, rather than the 'add-on' situation here. This means a very free draining structure often covered with one of the new creeping bents which have a high nutrient demand, so applying nutrients in the correct balance and in the right quantities and form, enabling the plant to optimise their use, was essential

The Company drew on all these requirements and their own experience as major fertiliser producers to create for BASF France a special fertiliser - Floranid Master - to assist in maintaining the quality of French golf greens.

The formula 16:5:10:+5Mgo and Trace elements. It was first researched in response to the demands of the new turf grasses, (stoloniferous agrostis spp in particular), which demand a balance of nutrients at least of

3:1:2., this being determined by the losses incurred in clippings removal. Add to this the fast infiltration rates of USGA specification and pure sand constructions and you will appreciate that ingredients had to be carefully

Nitrogen: with very little nitric nitrogen (2.5%) to reduce leaching and subsequent pollution by nitrates, but with a lot of slow-action nitrogen (two thirds in IBDU form) for reliable, gentle feeding without sudden flushes. Phosphate was added 5% p2o5 in the correct

ocontinued on Page 28



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An open approach to greenkeeping

• from Page 27

proportion to maintain plant functions without creating an over-supply.

Potassium: this element is particularly important on free draining constructions, as these do not hold Potassium very well and it is essential in helping disease resistance. It is supplied in sulphate form to reduce the risk of polluting the subsoil with Chlorine, found in other sources of Potash, and the sulphate form reduces the risk

of scorch, (Sulphate has a salinity index of 46, as opposed to Chloride, which has 114). Furthermore, the use of Sulphate avoids the phenomena of phytotoxicity, which the chloride ion can induce, and encourages the formation of dry matter, reducing bruising and wear sensitivity.

Magnesium: this is at a high level to keep the ration with Potassium and to encourage the production of chlorophyll, for plant photosynthesis.

Trace Elements: Iron (0.5%) copper (0.01%) and zinc (0.01%) are the three most important metallic trace elements for turf, as they promote the formation of growth substances and help in chlorophyll synthesis.

The creation of this new product did not stop at the analysis, for the size and distribution of sizes of granules were specially researched for precise and regular spreading over small working areas. Even the colour was not left to chance and after several tests with different colours, carried out by the greenkeepers themselves, a brown colour was chosen. This allows easy checking of the spread pattern but quickly disappears into the sward.

Like the French golf courses it is used upon, Floranid Master is new, but it clearly shows the more open approach to greenkeeping that the lack of traditional conservatism is creating. We all hear a lot about the opportunities within Europe after 1992, but let's remember that on the continent they are all looking toward the UK and saying the same thing! Will the next greenkeeper at your course be French or German?



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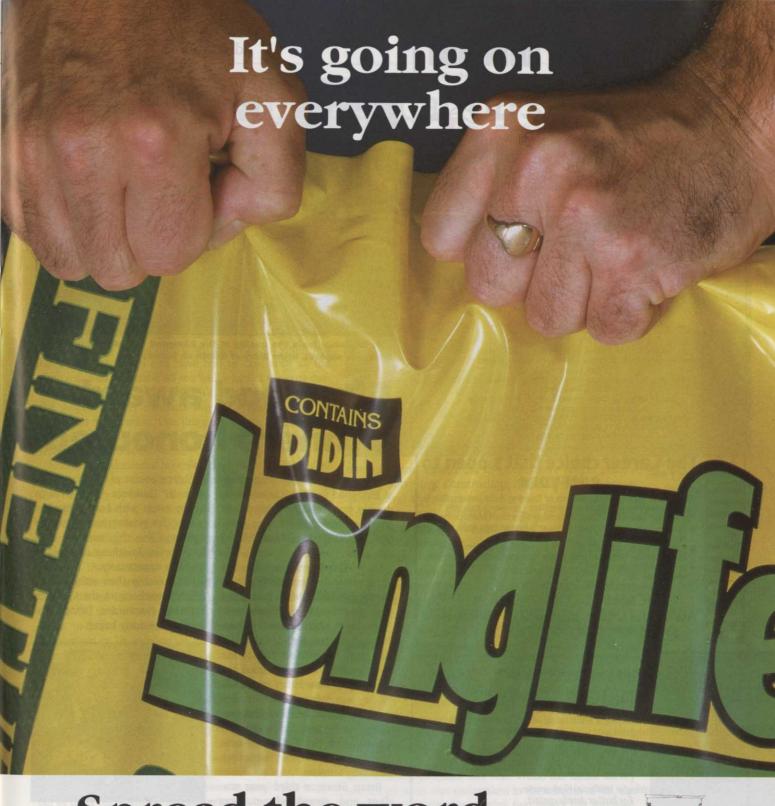


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Education



Lord Whitelaw feels the quality of the Elmwood turf offered to him by third year student, Brian Story of Silloth on Solway

Elmwood award winners honoured

The award winning greenkeepers at Elmwood College, Cupar, were doubly honoured recently when they received their awards from the BIGGA President, Lord Whitelaw.

Lord Whitelaw began the day at Elmwood by meeting and chatting with second and third year greenkeeping students on a National Certificate Release course. He met the second year students in one of the Engineering Division's workshops where they were being instructed in a machinery maintenance module, while the third year students met him, appropriately enough, on the College 5-hole golf course where they were constructing bunkers.

Brian Story, a third year student and award winner, was instantly recognised by Lord Whitelaw as a greenkeeper from

his home course at Silloth on Solway in Cumbria. This was a happy event with Lord Whitelaw posing for photographs with the students for the national and local press, laughing and joking at every opportunity.

His lordship then attended an official luncheon in the College's training restaurant before the award ceremony began.



Lord Whitelaw discusses the finer points of greenkeeper education with Neil Thomas



All greenkeeping award winners pose with Lord Whitelaw. Also pictured are Mrs Carol Borthwick, Senior Lecturer in Greenkeeping and Mike **Taylor, Head of Horticulture**