

The use of fertilisers, worm killers and seed mixtures was common before 1900, and many greenkeepers were already knowledgeable as to the uses and practices of greenkeeping.

es were opening, but never again on the scale of the pre First World War period. During the between war years, the development of greenkeeping went ahead rapidly, the hand mower had superseded the scythe on the greens and tees, the horse drawn mower was replaced by tractor drawn equipment and the rapid development of motor mowers for greens proceeded.

There were regular lectures in many areas of the country and some agricultural colleges ran evening classes in greenkeeping. In 1929 the Board of Greenkeeping Research was opened at Bingley.

I remember discussions around this time, that it would be a good thing to have a greenkeeping certificate available. It was proposed that, after a period of around three years, men who their Head Greenkeeper thought able, should proceed to spend a month or so at two or three other clubs whose Head Greenkeepers were held in high regard.

These greenkeepers were to write a report and if the applicant received three good reports, a certificate would be awarded. However, as far as I know, this scheme never got past the talking stage.

The main difficulty as always was the wide spread of greenkeepers in relatively small numbers, the difficulties of transport and no real facilities for education of greenkeepers existed.

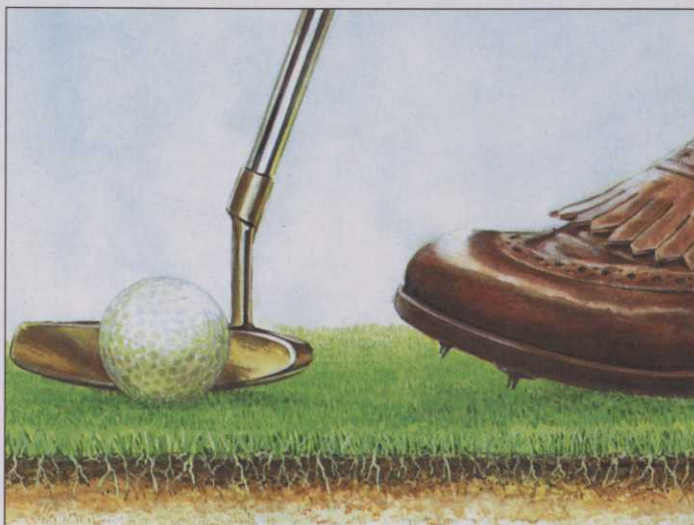
There were always a few wise heads crying for something to be done, but they got little support in many cases and golfers as a whole were not very interested. Occasionally a Head Greenkeeper would be given honorary membership of his club, where the professional was still not allowed

into the club house, but in general, by the 1930's the professionals were taking large steps up the status ladder, led by players such as the late Sir T H Cotton, and owing to this and the depression which reigned at the time, it was not easy for greenkeepers to improve their lot.

1939 saw the start of the Second World War and again golf and greenkeeping went very nearly out of existence. There was a call for food production and parts of some courses were ploughed up. I was abroad for most of the war and have no first hand experience, but understand that there were no fertilisers allowed for clubs unless they kept grazing animals and even then it was also severely rationed. Equipment and supplies of all sorts were difficult, and according to the Golfers Handbook, wooden balls were at one time not uncommon. Greenkeepers were mostly on military service or in other national service occupations. Unlike the recovery in 1920 after the First World War, which was fairly rapid, the years from the end of hostilities in 1945 were very restricted. Rationing of almost everything continued and golf courses got very few supplies including petrol, for some years. This was allied to a lack of transport, the supply of vehicles which was very small and almost every item of equipment difficult to come by.

Golf gradually revived, but the Americans were not supporting the Open Championship to any great extent and it was not until the arrival of Arnold Palmer and mass TV which brought about the second great boom in golfing history.

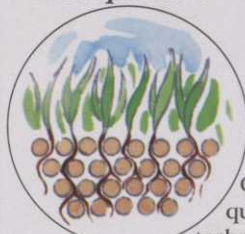
I well remember a Head Greenkeeper in Ayrshire telling me in



PUTTING SOIL TECHNOLOGY ON THE RIGHT COURSE

Consistency of the growing medium is the key to superior greens and tees, which is why Rufford place such importance on the uniform particle size and the quality of all our sand/soil products

Uniform size of particles is essential in resisting compaction.



from Rootzone mixes to Top-dressing mediums. With Rufford you know they must be the best, because

- Materials are constantly checked.
- All dressings are heat treated.
- Uniform particle size.
- Soil analysis service.
- Guaranteed quality.
- Professional advice.

Of course, achieving such consistently high quality products is only possible when the technical aspects of each sand/soil mix is under the tightest control. Again an area in which Rufford is uniquely qualified, not only operating our own quarries, but with in-house laboratories constantly monitoring their output.

Call us today and find out why greenkeepers throughout the country rely on Rufford for quality and service second to none.

ENGLAND & WALES
Tel: 01260 281801
SCOTLAND
Tel: 01324 714477

Top Dressings	Fine, medium and coarse
Sands	Wide range, for bunkers to greens
Rootzone Mix	Standard U.S.G.A. or made to order mixes
Screened Soil	Fully screened and shredded
Divot Mixes	Especially blended for golf tees & fairway divoting

SOIL TECHNOLOGY
RUFFORD

Back in time

Occasionally a Head Greenkeeper would be given honorary membership of his club, where the professional was still not allowed into the club house, but in general, by the 1930's the professionals were taking large steps up the status ladder, led by players such as the late Sir TH Cotton, and owing to this and the depression which reigned at the time, it was not easy for greenkeepers to improve their lot.

As far as I know the Head Greenkeeper was at that time ranked in most clubs above the professional as far as status is concerned.

the 50's that he thought the occupation had gone from the best paid artisan to the worst paid in a period of ten years, and I think it is fair to say that golf and golf greenkeepers went through a very trying period between 1945 and 1960.

Nonetheless, the Board of Greenkeeping Research, which became the Sports Turf Research Institute, was providing the authority on greenkeeping practices in addition to an advisory service and training courses. The companies specialising in Turf Culture Supplies had increased considerably in number and research on grass cultivars was increasing. New developments in fertilisers, fungicides and compost manufacture were being introduced.

Education in the form of lectures carried on during the winter months, and a wide range of subjects were covered. Among others, I gave talks usually illustrated, for many years to various sections of the Scottish Greenkeepers Association and the Northern section of the BIGGA, those were in the main well attended by 20 to 50 greenkeepers at a time.

In conclusion, I would like to say that there cannot be many professions which in a 100 years has had so many ups and downs, especially when one considers how difficult it has been to build up an organisation or provide opportunities for education.

The system of green committees has never seemed a good one to me.

These committees with honourable exceptions have often consisted of people who knew little or nothing about greenkeeping, and had no wish to learn. But then the general public would subscribe to the view, "everyone knows how easy it is to grow grass".

I hope this rather rambling letter is of some use to you, and if I can be of any further help, please do not hesitate to get in touch with me.

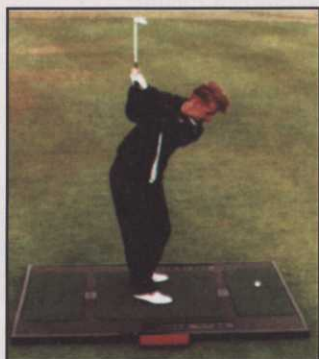
Meantime, all good wishes for Christmas and the New Year.

With kindest regards,

Yours sincerely,
Ian Forbes



Exhibiting at SALTEX'99 on Stand H35

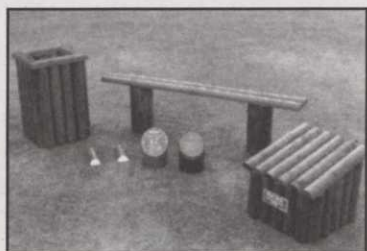


- ★ The Dunlop All Weather Mat System
- ★ The new Circular All Weather Mat
- ★ GM Flooring for all weather tees, pathways, patios, spike bars and changing rooms

ALSO PRESENTING

GM CLASSIC COURSE FURNITURE

Includes a range of log furniture, tee markers, benches, seed boxes and litter bins



GM UK Ltd

42 Hillside Road, Southport, Merseyside, PR8 3PN
Tel: 01704 571271 Fax: 01704 571272

Terralift 2000



Terralift 2000
has been designed
to meet more
exacting demands
in aeration.

BENEFITS

- Relieves compaction panning and water-logging problems to 1 metre depth
- Improves aeration & injects slow release nutrients to the root zone
- Uses the new mycorrhizal injection
- Eco-friendly
- Nationwide operation



SOILCARE

C & P SOILCARE LIMITED

Unit 3 Bush Farm . Nedging . Ipswich . Suffolk . IP7 7BL
Tel/Fax: 01449 741012 . Email: soilcare@agripro.co.uk



Mildothane Turf Liquid

Contains 500 g/l (41.7% w/v) thiophanate-methyl

A SYSTEMIC FUNGICIDE AND WORM CONTROL AGENT FOR THE CONTROL OF FUSARIUM DOLLAR SPOT AND RED THREAD AND FOR THE SUPPRESSION OF CASTING WORMS

PRECAUTIONS

WASH HANDS before meals and after work.
WEAR SUITABLE PROTECTIVE CLOTHING, COVERALLS, SUITABLE PROTECTIVE GLOVES, RUBBER BOOTS AND FACE PROTECTION (FACE SHIELDS) when handling concentrated surfaces and applying to hard turf equipment.

WEAR SUITABLE PROTECTIVE CLOTHING, COVERALLS, SUITABLE PROTECTIVE GLOVES AND FACE PROTECTION (FACE SHIELDS) when handling the concentrate.

WEAR SUITABLE PROTECTIVE CLOTHING, COVERALLS when applying to vehicle-mounted equipment. DO NOT CONTAMINATE SURFACE PARTS OF VEHICLES with chemical or used container.

KEEP IN ORIGINAL CONTAINER, tightly closed in a cool place.

WASH OUT CONTAINER THOROUGHLY and dispose of safely.

This product must only be used on crops or in situations listed in the data sheet or in relation to other DIRECTIONS FOR USE. Do not use otherwise unless the conditions of approval under the Control of Pesticides Regulations 1986 relating to any off-label uses can be complied with.

5 LITRES

RHÔNE-POULENC

Same Mildothane. New twist

Now Mildothane Turf Liquid has a brand new approval for use against casting worms.

- Selectively suppresses casting worms, leaving many non-casting species unharmed
- Incredibly economical with its application rate of 7.5L/ha

 **RHÔNE-POULENC**
AMENITY

Rhône-Poulenc Amenity, Fynfield Road, Ongar, Essex CM5 0HW. Telephone 01277 301115 Fax 01277 301119.
MILDOTHANE® TURF LIQUID CONTAINS THIOPHANATE-METHYL. ALWAYS READ THE LABEL USE PESTICIDES SAFELY. (MAFF 05331). MILDOTHANE IS A REGISTERED TRADEMARK OF RHÔNE-POULENC AGRICULTURE LTD. © 1998 RHÔNE-POULENC AGRICULTURE LTD

GENESIS

MYCORRHIZAL SEED COAT

In natural environments, grasses are colonised by a group of symbiotic fungi called mycorrhiza. These beneficial fungi penetrate the grass roots and their own 'roots' or hyphae extend out into the surrounding soil searching for nutrients and water. This effectively extends the grass roots network and allows a much greater surface area for nutrient and water uptake (up to 1000% increase). The fungi also physically coat the grass roots protecting them from root diseases such as Take-All Patch, Rhizoctonia and Pithium.

In sports turf, mycorrhiza fungi populations are very low or non-existent due to sterile rootzones, pesticide use and modern seed and sod production methods. The result is a weakened sward which suffers more from drought stress, nutrient leaching and disease and is quickly dominated by *Poa annua* which relies less on mycorrhiza for its survival in sportsturf environments than perennial grasses such as Bent, Fescue and Rye.

Symbio Mycorrhiza Seed Coat contains live spores of several species of beneficial VA endomycorrhizal fungi, growth promoting bacteria and organic soil nutrients. Mixed with seed, mycorrhizal colonisation of the new seedling occurs upon germination which improves establishment of fine grasses, root growth, and stress recovery of the turf.

BENEFITS

- Introduces specific beneficial Mycorrhiza fungi and bacteria.
- Improves establishment of fine grass seed in new and old greens.
- Reduces amount of *Poa annua* in the sward over time.
- Reduced fertiliser and fungicide input over time.
- Accelerates recovery from disease and protects against root diseases.
- Increases plant tolerance to drought, compaction and stress conditions.

GRASS ROOTS — TRADING COMPANY LTD —

HOGWOOD LANE INDUSTRIAL ESTATE,
FINCHAMPSTEAD, BERKSHIRE RG40 4RF

Tel: 0118 9736600

Fax: 0118 9736677

E-mail: sales@grassroots1.demon.co.uk

SEE US ON
STAND
P30
AT SALTEx

GENESIS

ATTACKER AND ATTACKER PVT

Help your grass to fight disease with a safe non-toxic liquid derived from plant extracts.

Attacker has a unique positive 4-way action to help grass plants fight off fusarium and other fungal pathogens.

NATURAL 4-WAY ACTION

- 1** When any disease appears which damages the plant the vitamins in Attacker help the plant produce Phytoalexins the plants natural defence mechanism to fight against infection and disease.
- 2** The yucca wetting agent helps remove dew reducing the damp conditions ideal for winter diseases.
- 3** The fruit acids temporarily lower the pH to a level inhospitable to fusarium.
- 4** As a systemic additive it helps promote growth in plants

BENEFITS

Helps the grass fight off diseases

- Attacker PVT can be used as a preventative measure by monthly application
- Attacker is applied at the first sign of disease
- 100% organic naturally derived from fruit extracts that can be applied by anyone
- Selective, it only helps the plant defend itself against fungi that damage the plant when used at recommended dosage levels

Stella Inglethorpe gives the low down on how modern micro-biology can aid golf course maintenance...



Microbes, biostimulants, antagonists, mycorrhiza – the greenkeeping world has definitely gone mad! On a recent course visit to a club which shall remain nameless, I was told in no uncertain terms that if I was going to talk about microbes I could leave now! And I sympathise totally! Just as wetting agents were all the rage a few years back, all of a sudden it's 'biologicals' that are BIG news. A confusing array of products has flooded the market, many claiming to be all singing, all dancing, would probably even make you a cup of tea!



“ Research has shown that there are only about 1% of the number of microbes in a typical golf green compared to what you would expect to find in unmanaged turf ”

Unsurprisingly, this has led to a lot of scepticism and wariness about these type of products which is a great shame as given the right advice, technical support and analysis, they can and will work very effectively!

The Hard Truth

The fact of the matter is - there is no miracle cure to all your problems (except perhaps a very thick skin and a huge budget!). Good cultural practices are even more vital in this day and age with expectations of 365 days of golf a year, averaging over 30,000 rounds. With golf clubs springing out of the woodwork left, right and centre the government are looking to bring us into line with the rest of Europe with a Pesticide Tax. Use of pesticides on amenity land is already being taxed in Denmark and Sweden with Spain, France, Italy, Belgium and the Netherlands looking to follow suit in the near future.

Production of carbendazim, the last remaining worm control (and a fungicide) is to cease at the end of the year and MAFF are looking carefully at other chemicals on the market. So greenkeepers are being forced to consider alternatives rather than relying solely on chemical control, which is where biological products play an important part. However there is a feeling of fear of change - the biological concept is relatively new to the sports turf industry and so there is still a lack of understanding as to what and how to use them...

Microbes Make the World Go Round

Biotechnology really doesn't have

to be rocket science - it's all about harnessing Mother Nature to work in your favour. And let's face it, if you are being asked to produce Augusta every day all year round with golfers coming out of your ears, you need to use all the weapons in your armoury! It has been common practice to use physical (mechanical eg aeration) and chemical (eg fertiliser, wetting agent and fungicide) methods but the biological approach is an often overlooked, but extremely important part of successful turf management - the final piece to the jigsaw puzzle.

Microbes (that includes bacteria and fungi) literally make the world go around... they are responsible for nutrient cycling and degrading waste and just as importantly making beer! We have used them for years in other industries, for example sewage plants rely on them for degrading organic waste. The Forestry Commission has used mycorrhiza fungi for many years to improve tree establishment on poor sites and in horticulture/agriculture, fungi have been used as agents to control aphids in greenhouses and maggots in fruit orchards.

Microbes in the Sports Turf Environment

It is a common misconception that microbes are solely for disease suppression in sportsturf. Their importance to healthy grass growth is several fold - eg assisting with nutrient and water uptake, producing plant growth hormones, increasing root growth besides producing antibiotics against common turf diseases such as *Fusarium* (*Microdochium*

nivale) and *Take-All Patch* (*Gaeumannomyces graminis*). Have you ever put a slow release fertiliser on a new sand green and been disappointed with the response? This is often due to the lack of microbes which are responsible for converting your fertiliser into a usable form that the grass plant can take up (mainly ammonia and nitrate).

The results of a trial conducted on a USGA spec turf nursery at a golf club in Hertfordshire show that the areas treated with a cocktail of 14 bacteria and six fungi had significantly longer root growth compared to the untreated controls.

Research has shown that there are only about 1% of the number of microbes in a typical golf green compared to what you would expect to find in unmanaged turf. This is due to several reasons - past and present use of chemicals, sterile root zone material, low organic matter, compaction, etc, etc.

Turf health and resilience to wear and tear can be improved by boosting the level of beneficial microbes in the root zone. There are two options available to you:- Feed your existing microbes and/or inoculate the soil with specific species that are known to be beneficial to plant health.

The problem with the first option alone is that you may not have a lot of microbes in the soil to work with. Secondly, microbial feeds (also known as biostimulants) are not specific to feeding the beneficial microbes and can provide a food source for whatever is sitting in the soil. Therefore timing is crucial to their success. Inoculating the soil

The Forestry Commission has used mycorrhiza fungi for many years to improve tree establishment on poor sites

with specific microbes can be very effective, particularly when combined with the right microbial nutrition but the success of any biological approach requires integrated management.

It is very easy to dismiss 'biologicals' as unsuccessful on your course, if the other management practices are not modified to get the best from them - they need to be given a fair trial. After all, you can hardly expect the poor buggers to thrive in a heavy soil green which spends most of its time waterlogged, little aeration and is suffering from chemical toxicity in the form of iron and sulphur based fertiliser, wetting agents and fungicides!

The KISS Principle

Personally, I firmly believe in the KISS (Keep it Simple, Silly) principle! I would advise the following guidelines to integrate microbial management successfully into your programme:-

1) Go Back to Basics

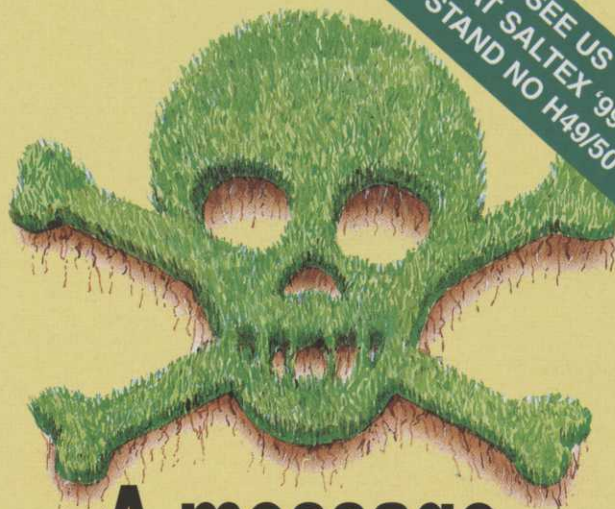
It is very difficult to monitor the success of any product if you are using a large number of different things. Generally staff and time are in short supply in the summer months to even keep on top of the grass growth, let alone do anything else. Therefore, simplify your programme to make time management easier (something that I'm pretty bad at, as those that know me can testify!) I would advocate that if you don't have time for anything else, keep up a good aeration programme, particularly on thatchy, heavy soil greens. Winter

aeration is fine for keeping the water moving through the profile and relieving compaction, however, it will do little to improve your thatch levels as there isn't sufficient temperatures for the microbes responsible for degrading this organic matter to work very rapidly.

In summer, the soil temperatures are right but the golfers moan like hell about having holes in their greens - they think you've got a personal vendetta against them! ('Why do we have to have it when Joe Bloggs down the road hasn't?') This is where integrating 'biologicals' into your programme can help - in the form of thatch-degrading microbes. You won't be able to reduce the amount of aeration you do - in fact the more the better as these microbes will degrade thatch 10x faster with air than without it. What you can do is perhaps swap a hollow-tining (which distresses the golfers no end and only removes 5% of the thatch, generally leaving an uneven surface!) in favour of regular pencil-tining/ sarrell rolling.

2. Know what you are working with

This applies to knowing your turf environment but also knowing what's in the products so you can choose the right combination for the job. Identify the problems to target e.g. excessive disease, thatch and drainage problems or conversely overly free-draining causing problems with leaching of nutrients and drying out. Treat the Causes not the Symptoms. Use technology to your advantage to help take some of the guesswork out of turf management.



SEE US
AT SALTEX '99
STAND NO H49/50

A message to those still using Pesticides to control Turf Diseases

The use of chemicals on intensively managed turf can lead to a biological imbalance, opening the sward to repeated attack by disease.

BIOTAL		PESTICIDES	
Natural inhabitants of soil	✓	Do not occur naturally	✗
Boosts natural antagonists in soil	✓	Long term use may affect non target microflora	✗
Safe & easy to use	✓	Difficult and hazardous to use	✗
No container or disposal problems	✓	Difficult to dispose of containers safely	✗
No need for protective clothing	✓	Protective clothing essential	✗
Forms part of the natural cycle	✓	Subject to increasingly stringent regulations	✗

Biotals "Restore the Balance" programme reintroduces the correct microbes to the soil profile, promoting quality turf through healthier rootzones and enhanced nutrient utilisation.

Reduce your dependence on expensive hazardous chemical treatments and rebalance your soil profile, naturally.

Tel: 02920 747 414

The most natural way to prevent disease build up is to balance cultural and physical methods with a biological approach.



Feed, Boost and Balance your turf with Biotals Environmental Solutions for the Amenity Market.

Biotals Limited, 5 Chiltern Close, Cardiff CF4 5DL.
Tel: 02920 747414 Fax: 02920 747140 e-mail: bip@biotals.co.uk

Ad Ref 614



“

Using a single species is like putting all your eggs in one basket - if it likes the conditions in your greens then great but if not then it's money down the drain.

”

For instance, regular soil and tissue analysis will help pinpoint which nutrients are being leached more quickly are too high and what is actually being taken up into the plant from the soil. This kind of information enables you to tailor your grasses nutrient requirements more precisely and can pre-empt diseases such as Anthracnose (encouraged by nitrogen/potassium deficiency) and Fusarium (encouraged by excess nutrient creating 'soft' growth.)

Choosing the right product for the task is probably the hardest part to

use up the available oxygen in the soil and make matters worse.

Similarly, it is important to choose the right biological product for the job and use it to its best advantage. With a microbial inoculant, you need to know what microbes are in it and what they do. Will they survive in your conditions e.g. pH, high sand content, etc. There is no one species of bacteria or fungi that can do everything! They work in conjunction with one another, for example it takes several different species to fully degrade organic matter into its component parts. Using a single species is like putting all your eggs in one basket - if it likes the conditions in your greens then great but if not then it's money down the drain.

Once applied, are the microbes surviving? Brand new sand greens are extremely hostile environments for a soil microbe. They are generally low in organic matter which is their food source, moisture levels can vary dramatically and sand grains don't make very good sites to attach to. Adding microbes to new greens can be a very effective way of avoiding the initial problems experienced such as high leaching and Take-All Patch. However, the above problems must be addressed to get success - using a liquid formulation of microbes alone will have a very short life-span in the root zone if other factors are not considered.

In old soil greens, introduced microbes have different problems to face - poor drainage and insufficient air are very common. Although they can survive these conditions, their activity is much reduced. Old soil greens also have their own resident

population of microbes (not necessarily very useful ones!) which will compete with the newcomers and again the success of the introduced species will depend on their suitability to your particular environment. Symbio biofixed have overcome these problems to a great extent as the microbes are freeze-dried into a zeolite (a porous mineral carrier) which acts as a survival suit, protecting them from chemicals and giving them a competitive edge. In fact, you can pass bleach solution across them without wiping them out!

With my pearls of wisdom, I've managed to make greenkeeping sound easy! (Well according to golfers, greenkeepers only cut the grass, right?) When I have all the answers, I'll be advising from the decks of my yacht sailing somewhere in the Caribbean!

Stella Inglethorpe BSc(Hons),
Grass Roots Trading Co.

“ Adding microbes to new greens can be a very effective way of avoiding the initial problems experienced such as high leaching and Take-All Patch. ”

do as it requires knowledge of what exactly is in a product and good advice. For instance to get the best fertiliser for any particular conditions you will need to know the form of the nutrients as well as the NPK analysis. If a soil is suffering from anaerobic conditions, avoid fertiliser containing sulphur and iron which are the main components of black layer. Similarly, complex slow-release fertilisers or organic products (derived from animal or plant e.g. hoof and horn, seaweed) will be of no benefit either as both require microbial activity and oxygen to breakdown and therefore they tend



ECO-charge

...charging the soil eco-system...

Maxicrop **ECO-charge**

Organic Soil Bio-activator;

- Proven independently to dramatically boost beneficial soil microbial activity
- Strengthens root development, turf health and durability
- Improves soil structure for better aeration and drainage
- Aids moisture retention

...for deep rooted success!

Maxicrop International Ltd., Weldon Road, Corby, Northants, NN17 5US, UK Tel: 01536 402182 Fax: 01536 204254

ECO-charge is available in the UK exclusively from Rigby Taylor Ltd.

Freephone: 0800 424919

EXPERTS RECOMMEND REGULAR LIGHT DRESSINGS
OF GREENS, TEES AND FAIRWAYS

ULTRA PLANT

HAVE THE MACHINES TO DO IT



UB30S
Spinner Top Dresser.
Spreads to 5 metres.
Ideal for regular light
dressings of Greens
and Tees.



HL40
Highlift Trailer.
For loading top dressers,
gravel/sand hoppers,
bunkers, etc.

UB50
Precision Spreader.
Truck mounted or tractor
towed for greens
and tees.



UB60S
Spinner/Loader
Fairway Dresser.
The ultimate dual
purpose machine.
Spreads to 11
metres. For loading
top dressers etc.



FOR FURTHER DETAILS CONTACT:
TEL: 01868 747582
FAX: 01868 746387

ULTRA PLANT

Ad Ref 473

Pitch it right with Prestige Sports Surfaces

A newly formed joint venture company specialising in the sales and marketing of **Pro-Sport** and **Topsport** leading names in the sports, leisure and horticultural industries.

Prestige Sports Surfaces bring you top quality products for use in the construction and maintenance of your sports surfaces, keeping them in tip-top condition; particularly golf courses, where optimal playing surface is required.

Benefit from

an extensive distribution system

technical support

specialist advice

central sales office

Tel: 01298 213 740
Fax: 01298 213 677

your one shot contact

Visit us at
SALTEX
7-9 September Windsor Racecourse
Stand A45

Topsport

Pro-Sport

SANDS

DRAINAGE
GRAVELS

PATHWAY
GRAVELS

PRE-BLENDED
ROOTZONES

TOP
DRESSINGS

Prestige Sports Surfaces Ltd
Moorcroft, Lismore Road
Buxton, Derbyshire
SK17 9AP
Tel: 01298 213 740
Fax: 01298 213 677

Prestige Sports Surfaces Ltd

Ad Ref 514