

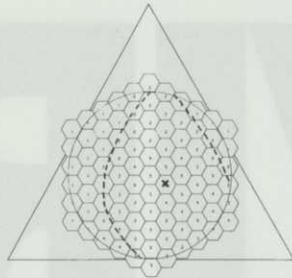
THE FINE TURFGRASSES

The golf green is the most important surface on the golf course - the place where the game is won and lost - and must be perfect! The modern golf green is an intensively maintained environment subjected to intensive play throughout the year. Still, the surface must remain consistently fine and true for putting yet receptive enough to receive and release approach and chip shots. The greens must also be able to tolerate the traffic of the golfer who insists on year-round play.

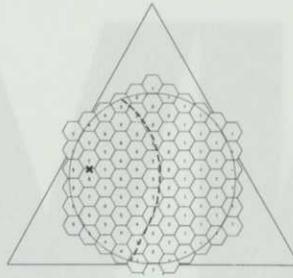
The sward species composition has a great bearing on both the playing quality and wear tolerance of any turf. With regard to golf greens: fescue (*Festuca*) produces hard and fast putting surfaces that bounce an approach shot forward - wear tolerance declines in the winter; bent (*Agrostis*) produces fairly fast and true putting surfaces that are also receptive to approach shots - the surface is fairly wear tolerant throughout the year; annual meadow-grass (*Poa annua*) tends to produce softer surfaces that can be made into "good summer greens" but suffer from thatch build up and disease susceptibility. As we will see, each turfgrass species is adapted to survive in markedly different conditions.

The growth strategies of the fine turfgrass species

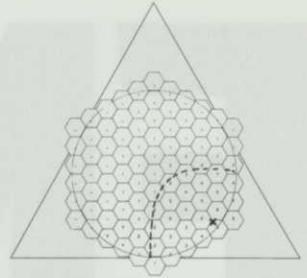
This section will illustrate the specific environmental conditions that the various turfgrass species have evolved to exploit. Remember that the greenkeeper is in charge of a number of the external pressure factors.



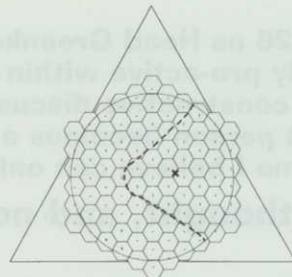
Browntop bent - *Agrostis tenuis*
C-S-R strategist adapted to compete in an environment characterised by moderate levels of stress and disturbance. Prefers acid soils.



Creeping bent - *Agrostis stolonifera*
CR strategist adapted to moderate or infrequent levels of disturbance and low levels of stress. Needs active growth to be able to recover from disturbance.

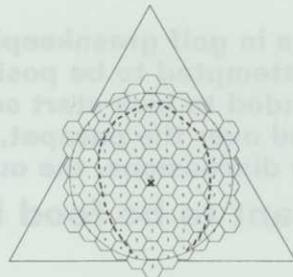


Sheep's fescue - *Festuca ovina*
Stress tolerator, exploits conditions of low disturbance and high stress. May be of use.

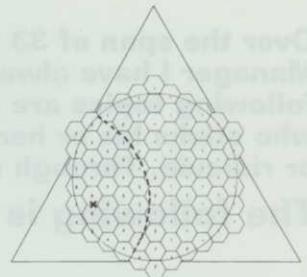


Velvet bent - *Agrostis canina*
C-S-R strategist competes with moderate levels of stress and low levels of disturbance. Does not take kindly to winter play.

(Note: The different bentgrass species are adapted to survive in quite different environments. They therefore require different maintenance strategies to enable them to survive and flourish.)



Red fescue - *Festuca rubra ssp. rubra*
C-S-R strategist adapted for moderate intensities of stress and disturbance. Red fescues flourish during the summer. Slow to recover from damage leaving gaps for invasion.



Annual meadow-grass - *Poa annua*
Poa annua is a ruderal favouring conditions of high disturbance and low stress. Disturbance is key but *Poa* does not welcome acid soil conditions

In conclusion, each turfgrass species is adapted to survive in markedly different environments. To flourish and survive they therefore require specific management.

CHANGING THE NATURE OF YOUR GREENS

The sward species composition reflects the type of environment being produced. The relative intensities of the various environmental pressures determine the vegetation types present. The golf green environment is intensively disturbed by play, pathogens and pests, as well as by the action of refinement and it is kept stress-free to allow for the intensive maintenance. This situation has led to the predominance of *Poa*. If you wish to change the composition of a green, you must create the conditions that the finer grasses would prefer.

As we have already seen, green-keeping is in charge of a number of significant sources of environmental pressure:-

- Mowing - intensity and frequency
- Verticutting, etc - timing and severity
- Integrated pest and disease management
- Irrigation
- Fertiliser input
- Acidification
- Course/green closure

These actions should be undertaken considerably to manipulate the environmental pressures to suit the desired grass species.

Changing the sward composition of existing greens

To increase the bentgrass component of predominantly *Poa* greens, for the sake of argument, the received method of attempting this would be to impose stress on the sward (by judicious feeding and watering) to pressurise the meadow-grass out. By this theory, such a method is misguided if you refer back to Table 1, which clearly states, "a highly stressed and disturbed environment is untenable".

To reduce the dominance of the meadow-grass and increase the bentgrass component we must firstly reduce the level of disturbance (limit the overall pressure). This may be achieved by reducing the intensity and frequency of mowing, toning down all forms of verticut-

ting (use a brush to groom), limiting play during the winter months, etc. Once the disturbance pressure has been softened, we can then lever some stress onto the sward by acidifying, or by limiting fertiliser applications and certainly regulating irrigation inputs. We must move the environment away from the area of *Poa* dominance, from total disturbance to settled stress. Thatch build up can be controlled with micro hollow tining and top dressing. Surface trueness can be retained using top dressings and low ground pressure rollers. Modern aeration equipment is quick, effective and non-disruptive.

When setting the environment, remember that the various bentgrass species prefer quite different conditions. Browntop bent requires only moderate levels of stress and disturbance, creeping bent can withstand greater disturbance without stress, while velvet bent can withstand moderate stress but little disturbance. Choose your species carefully.



Maintaining the establishment of a new green

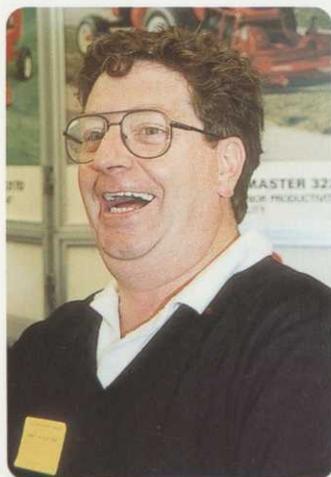
Here we are trying to minimise the ingress of *Poa annua* into a predominantly bent and fescue sward. Again, MINIMISE DISTURBANCE AND LEVER STRESS. Do not aggressively verticut or groom - the *Poa* will take advantage. Maintain sensible heights of cut. Use your irrigation system to your advantage. Prevent thatch accumulation with regular top dressing integration into the upper soil profile. Enforce pitch mark repair - the fescue component of new greens makes the surface hard and susceptible to pitch mark damage. Close new greens during their first winter. Annual meadow-grass will take advantage of any gaps in the sward. Acidify if necessary.

Henry Bechelet is an STRI Turfgrass Agronomist covering Eastern England. Henry and the rest of the team may be contacted on 01274 565131, email; info@stri.co.uk or visit our website <http://www.stri.co.uk>

Ronnie Bunting describes the work he has done at Kilmacolm Golf Club and gives some thoughts on environmental management

ENVIRO

Over the span of 33 years in golf greenkeeping, 26 as Head Greenkeeper and Course Manager I have always attempted to be positively pro-active within the industry. The following topics are intended to kick start some constructive discussions. Like anyone who sticks his or her head over the parapet, that person becomes a target for praise or ridicule. Through such discussions, the outcome I believe can only be constructive. The following is meant to be food for thought, and not, do as I do!



Above: Ronnie Bunting

Below: The picture taken below in early August 2001 shows the degree of Fusarium that recovered without any chemical being applied.

Like most Greenkeepers I have an active interest in environmental matters. To this end I have here at Kilmacolm been very successful in bringing attention to members and the general public that the term golf course does not always refer to an area of barren grassland, with wall-to-wall cutting and grass that looks like a Celtic football strip. It can be an area of outstanding beauty not only for quality turf on which to play golf and the scenery but the wildlife that dwells in the out-of-play areas. These we can also manage for the social union of nature and mankind not only by protecting the existing habitat but also by creating new areas of mutual interest with great benefit for all.

There are some golfers who do not appreciate the wonders of nature, as they are blind to all but their game. Only once this loveliness is pointed out to them do they appreciate the importance of their surroundings. I

have found this among many of my members.

In my Environmental portfolio I have addressed a number of topics intended to reduce the amount of toxic chemicals I apply and would like to share some of my thoughts with you. Are we being fair to assume that applications of cure-all's are the correct way to go about our business? What will be the effect in the decades and centuries to come? Remember the after effects of the chemicals used to de-foliate the jungles in Vietnam. An extreme example but it did happen and the results we see today are the evidence to justify that we consider alternatives!

I ask the question. Do we need to use the amount of fertiliser and chemicals we budget for annually? Should we apply preventative sprayings? Do we need to apply nitrogen in such amounts that by doing so creates a flush of growth that disposing of the cuttings creates environmental problems, or applying copulas amounts of nitrate at a rate the plant cannot expect to use and in doing so we contaminate our waterways.

Then comes the after effects, Thatch, Fusarium, Poa Annuua, and the biggest threat of all peoples accep-

tance of the poorer playing standards we ourselves have created. I believe that by using top dressing as a source of nutrition coupled with a little nitrogen and plenty of aeration should be sufficient to retain a healthy and robust sward and produce a much easier kept playing surface.

Fusarium

We have all experienced this turf disease at some time on our greens, and if you received the same training as I did - blanket treatment must be done as soon as humanly possible. Or spray every six to eight weeks as a preventative. Both veins of thought very much the norm at some golf courses and both very expensive not only in financial terms and man-hours but also in terms of lasting damage to the useful micro organisms and beneficial fungi in the soil. Is there an alternative? I believe there is. If the outbreak is only in certain areas of greens there may be good reasoning to spot treat. If the outbreak is serious during the end of the season going into autumn and justifies blanket treatment so be it. Or it may be that in leaving it alone it will recover without anything being done at all.

A strong healthy infertile bent dominated turf has great resolve. One other operation I feel helps when conditions are such that disease threatens is to scarify tees and greens aprons and verti-cutting greens, opening the base of the sward allowing air in and therefore keeping it drier I feel helps considerably. How often does it seem that attacks of Fusarium on the greens starts in the surrounds? I have never sprayed fungicide on tees or aprons.



POLICIES

Leather Jackets

My opinions on the damage done by these grubs may be probably singular but it is based on my observations over many years. Fact, I have never seen turf stress caused by this insect. The only damage I have seen is caused by birds in search of them. This I believe is a bit like the angler finding a beautiful loch



and knowing there should be fish in it but only after six or eight hours of fruitless fishing asks the question I wonder if there are any trout in here!

On the greens I don't see the bird damage as a major problem as greens are either cut or rolled or switched every day, dispersing any debris. A similar approach I adopt to tees and surrounds and fairways. The semi rough tends to show some lasting damage but it is caused again by the birds searching for the grubs and not by the larvae. Even this damage recovers very soon when the soil temperature allows some growth. To back up the above statements, during the spring of 1999 I noticed there was more bird activity than usual.

At the spring outing of the Scottish West Section I started a discussion based on the above scenario with some of my colleagues and was left in no doubt they felt I should have sprayed with insecticide on a preventative basis as they had done.

Please bare in mind at no time was the playing qualities of my course questioned. (Greenkeepers outings are one of the main sources of constructive education I know).

The following day I talked to my staff and told them of the conversa-

tions that took place. My assistant, John Hart, suggested we mark an area of one metre square on the 13th green surround (an area which usually gets some bird activity) and watch for turf stress during the season. Once the grubs were leaving the soil to metamorphose into Daddy Long Legs we would take a daily basis count of the vacated sheaths within this area. This

we did and over a two week period within the marked area 229 vacated sheaths were counted.

At no time during the spring or summer was there any sign of stress this included a very dry August. I feel this begs the question. Do we wage chemical warfare unjustly on, leather jackets, soil organisms, other innocent insects, birds and their young, golfers, the general public, course staff, etc?

Soaking this part of my 13th green and covering it overnight with hessian sacking has highlighted the infestation of leatherjackets during the last week in March 2000. The amount visible would generally demand an application of pesticide. Fact! No insecticide was used and at no time during the season were any of my greens to show any effects of turf stress.

Weeds and worms

If you have cast forming worms you will almost inevitably have weeds; the worm cast is the ideal seedbed. Following the banning of chlordane it is my opinion that only cultural controls are left, because in the very near future even the remaining less effective but just as toxic worm killers have to be applied on a more regular basis will be banned. Therefore I think we had better prepare for the inevitable. Lowering the pH to a level creating a more acidic soil making it more uncomfortable for the poor worm, gently inviting them to go elsewhere. Anywhere other than turf earthworms are of a great benefit.

I now only spray rosette type weeds on fairways tees and semi rough, Daisy, Dandelion, Cats Ear, Hawk

bit, White Clover patches and these only in certain circumstances by spot treatments where possible. In doing allows Viola, Spotted Moorland Orchids, Lousewort etc to flourish. Other weeds in my turf are Heath Bedstraw, Pearlwort, Field Woodrush etc these are kept in check by scarifying they co-exist quite well in the heathland turf.

The biggest weed problem at Kilmaccolm was Bracken; we undertook to control this plant in the areas out-of-play to allow a greater diversity of plant species. The results have been quite spectacular not only did we increase the type of plants but also the variety of bird life to feed on them. In total we controlled 27 acres these areas we map and treat any regeneration systematically keeping detailed records of its regeneration and treatments. It is still allowed to be part of the collage of colour that exists in the mixed flora and is still an important and valued part of the landscape, but it has to be monitored to ensure it never again dominates to the extent of creating a mono-culture.

Molinia caerulea or Purple Moorgrass is a problem because it is slowly replacing the native Heather that has been weakened by heather beetle and the ageing process. Due to the shallow rock mechanical solutions are all but impossible. Following the visit of the judges for the BIGGA Environmental Competition we discussed introducing grazing of out-of-play areas to our management in doing so we would redress the conditions favouring the heather at the expense of the Molinia. The implications of such a move have still to be discussed at committee level. It seems a clear case of "do we want to keep our heather and if we do this is the only way we can do it".

Nettles There are a few different types, Whitehead Nettle, Reddead Nettle, Stinging Nettle etc. All of which has differing environmental, values dependent on the classification of being, Common, Frequent, Rare, and Very Rare. We have only one small patch of Stinging Nettle on the entire course therefore it is classed as Very Rare and as one would assume it is of high environmental value particularly to the Beautiful Peacock and Red Admiral species of butterfly both of which is on serious decline. The site of this patch is only

two meters off our 1st tee. The requests, even demands, to have it trimmed down or sprayed out, come on an annual basis. This is also the case of Spear and Marsh Thistles sited in various out of play areas. To see Gold Finches in healthy numbers feeding on the downy seed, picking off every individual piece of down before eating the seed is one of nature's wondrous sights.

My feelings towards the people who make the above request are two fold. Explaining the environmental benefits and my reasoning are accepted and they are impressed by my knowledge and caring attitude, or on the other hand some say we don't care just get rid of them. Such are the highs and lows of being a concerned individual. I must point out the latter being very much the minority.

If I were to estimate the savings on Chemicals, Time, Storage, Container disposal, etc I'm sure it would run into tens of thousands of pounds over the last five years. If it were possible to measure the feel good factor for achieving something which in the long run will benefit golfers and the general public's opinion of the Golf Industry, and also the earth born companions that we share our golf courses with. The rating would certainly be very high.

To conclude may I take this opportunity to promote the good intentions of the Scottish Golf Course Wildlife Group, and the "Committed to Green" Organisation, from whom we haven't heard much of lately.

The most imaginative of all the reasons behind the creation of BIGGA, was the in-house education delivered by people who have training down to an art form.

BIGGA administers ongoing self-development programmes to enable golf Greenkeepers to become more professional and get more respect, with the end result being better conditioned golf courses.

I personally have used the regional training courses to the full and I have reaped the benefit in many ways. I am astonished that over the past few years we have had these courses reduced and many cancelled not because of the lack of creativeness on the part of BIGGA or due to golf clubs not willing to pay, but due to lack of interest from Greenkeepers.

In the first of a two-part article, Peter Jefford and Mick Higgins of Rufford, talk about the benefits of top dressings and the importance of testing in order to establish compatibility with the existing rootzone

TESTING TIMES



Above. Peter Jefford, a well known face in the industry

Below. Particle size is of key importance

A frustratingly unpredictable climate, economic pressures and increasing numbers of players all demanding perfect playing conditions seven days a week, 52 weeks of the year. It's all a far cry from the challenges faced by greenkeepers 30 years ago and leaves today's successors nursing some major headaches.

Establishing consistency and quality in such a fast changing industry is the key to creating successful greens - and that is all about testing.

Definition

Before we go any further, let's stop and consider exactly what we mean by the term topdressings and why they play an essential role for greenkeepers today.

A farmer would interpret topdressing to mean the surface application of fertiliser (usually nitrogen) to a grow-

ing crop. However in the turfgrass industry the term topdressing is used almost exclusively to describe the surface application of sand, soil, organic material or any combination of these.

So why are topdressings necessary? We all know that long-term maintenance of high quality fine turf on golf and bowling greens is extremely difficult, especially given the factors mentioned in the opening paragraph. Greens only account for a very small percentage of the total surface area of a golf course - but every single player ultimately ends up there, resulting in a frightening rate of concentrated foot traffic.

However, frequent application of an appropriate topdressing will assist a greenkeeper greatly by providing the following benefits:

1. It helps maintain a smooth, true running surface which in turn improves mowing efficiency
2. In conjunction with scarification, it will avoid thatch build-up
3. Enables you to control organic matter content, water infiltration and aeration
4. It's essential in maintaining or increasing rootzone depth
5. Improves germination on over-seeded areas
6. Improves or sustains appropriate soil texture

But you must remember that topdressings add to and become part of the rootzone. Over a period of years topdressings will either alter or sustain the physical (and to some extent biological) properties of rootzones. That's why it's essential to test and establish a green's existing profile before you can select and apply an appropriate topdressing.

Compatibility

You can't take a 'one-size-fits-all' approach when it comes to applying topdressings. Because they eventually become part of the rootzone they

logically need to have similar composition and properties. For the majority of golf greens this means a particle size composition dominant in medium sand. But this is only a general guide - it's still essential to use a topdressing that's compatible with your existing rootzone. If you don't then you could be in trouble.

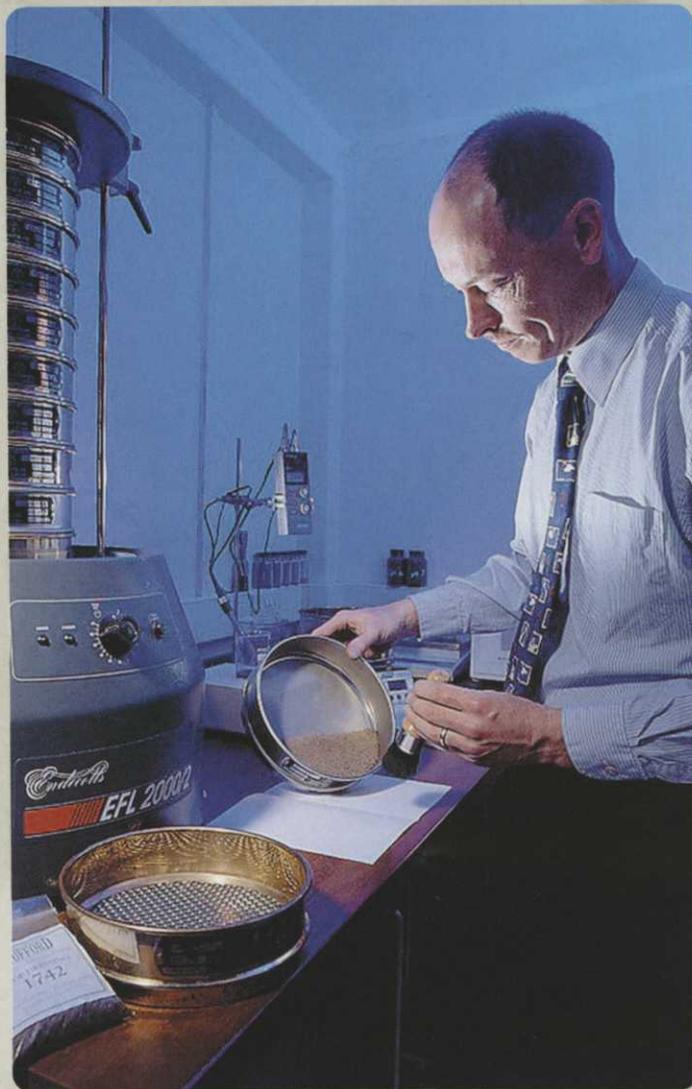
There's no way that a topdressing supplier can claim that they have a good product for you without first of all testing your greens. That's because there's no such thing as a universally 'good' topdressing - what might be right for one course could be completely wrong for another because applying a mismatched topdressing can cause major layering problems to the rootzone profile. A major risk is the creation of layers of different pore size systems within shallow depths of the rootzone. If this happens then water retention and air/water balance will be affected and also rooting depth. The frightening fact is that this problem won't become apparent for several years, by which time it may be impossible to rectify through cultivation techniques.

Guesswork

It's so frustrating when people cut corners through either cost constraints or lack of awareness, because they end up undoing the years of work that have gone before them to create a great green. It doesn't have to be guesswork when it comes to determining the compatibility of a topdressing and a rootzone - it's not a blind date! The only answer is to test. And that's what we've built the Rufford business on.

To illustrate this in practical terms we'll take a specific example of one of our customers. By testing we were able to establish that their greens contained a lot of fine material with around 40% or more in particles smaller than 250 µm.





At the time, the greenkeeper's topdressing was predominantly in the medium band but contained over 30% in the coarse band, three to six diameters greater than the dominant fine sand in the rootzone. Hence the fine sand in the soil was interpacking with the coarse sand in the top dressing, thereby reducing total porosity and thus the efficiency of its effect in improving the physical characteristics of the rootzone.

This information enabled us to recommend a topdressing through which to reinforce the dominant useful sand grades in the rootzone (ie fine and medium sand) thereby arriving at a solution with a medium particle diameter of around 280µm, of uniform particle size (D90/D10 less than 3) and with virtually all particles in the fine and medium sand ranges.

The Testing Process Explained

Our whole testing process starts with a visit to the club. We usually take samples from three greens (a good one, poor and average) using a

core sampler which takes a plug from the top 100mm of the profile. Other information is determined at the same time, for example the depth of the rootzone, any layering present and also the character of the soil or permeable material beneath the rootzone.

The samples are then sealed and sent over to our in-house Minerals Development Centre, at Oakamoor, in Staffordshire, for analysis. Tests are carried out here to determine particle size distribution, pH and organic matter content.

We then take these results and feed them into our computer software. This in turn produces a full analysis that includes, amongst other elements:

- Particle size distribution on full and half octave sieve sizes
- D values which can be used to calculate the gradation index (D90/D10) or used to ensure bridging characteristics with suitable gravels
- Effective particle size (D_{eff})

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TESTING TIMES



Above. A scene witnessed regularly on golf courses everywhere

Below. Testing begins with a 100mm core from three greens.

We can then use this information to identify a top-dressing from our range that either matches a good rootzone or improves a poor one.

The 70:30 myth

People who just ask for a 70:30 sand/soil mix in their topdressing (or

any other ratio for that matter) don't realise what lottery punters they are. This specification tells you nothing about the quality of the sand in terms of lime content, grading and conductivity, nor anything about the soil which could range from peat-based to a heavy clay content.

A purchaser should be able to request the precise analysis of the topdressing in terms of: particle size; amount of silt/clay; organic matter content and lime.

Feeling the Heat

Another important point to mention is that any topdressing you buy should be heat-treated. If it's too wet or damp then it tends to clog together or simply lies on the surface making an even application impossible. Not to mention the fact that if your topdressing is wet then you're effectively paying your supplier for water!

In terms of applying topdressing, frequent light applications are always advisable wherever practical. This enables fast integration, prevents

layering and avoids smothering grass in spring or autumn when growth is slow. It's become common practice to apply four to six topdressings of 0.5 - 1 kilogram/m² (1 - 2 lb/sq yd) during the growing season. Such amounts can be applied quickly and brushed in - you can therefore avoid significant disruption to play!

Confident

We can confidently say that our approach has produced positive results for golf and bowling clubs throughout the UK. In fact we're so confident in the benefits of testing that we frequently give talks and lectures about it at colleges, universities, golf clubs and branch meetings of professional bodies including BIGGA and the IOG.

After all, you don't get to establish long-term relationships with the likes of Wentworth, Sunningdale and Royal Birkdale on guesswork!

Peter Jefford is Rufford's General Manager, while Mick Higgins is QA and Technical Manager. Rufford has been supplying topdressings, rootzones and a full range of complementary products to the sports turf industry since 1987. You can find more information and technical advice at www.rufford.com telephoning 01477 572462.

We will be featuring another article from Mick and Peter about rootzones later in the year.



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BIGGA
ESSAY
COMPETITION

Richard Clarke, of Royal Eastbourne Golf Club won the Assistants' Over 25 Category in the 2001 BIGGA Essay Competition with this fine composition.

POA AN FRIEND OR FOE?

Recently, in a greenkeeping article on grasses for greens, a caption on poa annua started with 'poa annua is a serious problem for many greenkeepers; but is this really the case? There have, I'm sure, been many heated discussions throughout the greenkeeping profession surrounding the subject, from messrooms to green committees not only up and down the country but also across the world. What's more, the question has been asked for many years; are we any nearer to knowing the real answer, if indeed there is a definitive one? This article aims to put forward an answer even if it is only my own personal opinion!

It is essential firstly to explain a little about 'poa annua' or 'annual meadow grass' as it is more commonly known. A tufted grass, which thrives in all soil types, poa annua has the ability to set seed nearly all year round. It is the commonest unsown grass species found on British golf courses and is found in two forms; the more common annual plant subspecies 'erecta' which is upright growing and secondly the subspecies 'reptans' which is either an annual, biennial or short-lived perennial creeping plant. The leaves of the plant are soft, often crinkled when young with long, smooth leaf sheaths.

Generally, leaves tend to be of a light green appearance although the creeping perennials can be a much darker green. The leaves are short with visible tramlines and rather blunt at the boat shaped tips, soft and drooping. In mature plants the thin erect stem rises from six to ten inches with a triangular shaped panicle two or three inches long.

The spikelets are all stalked and loosely arranged on the spreading branches. The name is from the Greek 'poa', meaning fodder.

Let us consider now some of poa annua's advantages and disadvan-

tages, as far as today's greenkeeper is concerned.

I am constantly reminded when attending college classes that 'poa annua' is an undesirable weed grass, yet if we took away this grass overnight from our golf course, we would have significantly less coverage and I'm sure a lot more complaints from unimpressed golfers! In an ideal world we would, as professionals, like to work everyday with the very best; the finer bents and fescues. However, this is not always possible. I don't think that we should encourage the spread of poa but we as professional greenkeepers would not be competent at our jobs if we were not always striving for better playing conditions and surfaces.

So, when does "poa annua" become our 'friend'? As already mentioned, one of its main advantages is its ability to spread by seed nearly all year round thus thickening the sward density and aiding an all year round playing surface; this it does rapidly, another bonus to the greenkeeper. We can all relate to this year's late growth due to the heavy rainfall and cool ground conditions; poa annua gives a good early spring injection of growth and this was certainly required this year; the average golf club fixture list does not normally cater for climatic conditions!

Although textbooks show that poa annua is a shallow rooted grass, given the opportunity by using time honoured management practices it can generate a fairly deep root zone, unquestionably an essential requirement for a healthy sward. Wear and tear is an increasingly significant problem for today's greenkeeper and poa has this in its favour, with its ability to re-generate quickly throughout the year. It tolerates close mowing and again, if the correct management practices such as brushing and verticutting are carried out, can provide a

satisfactory putting surface. It may also be argued that the average golfer is only interested in a firm, true, consistent putting surface and not necessarily what type of grasses are present in the sward. Most would certainly not be concerned about the difference between poa annua and creeping bent grass. This required surface can be achieved with poa dominated greens if the correct practices are carried out, these being regular aeration to relieve compaction and aid drainage, brushing to improve sward density, switching to restrict disease and spongy surfaces, verticutting and scarifying to aid air flow and increase tillering.

I remember attending a college class in which the lecturer was astounded to hear that many of today's top golf courses have a heavy percentage of poa annua in their greens!! It has also been known for some courses to attempt to hand weed poa from their greens, but often it is a losing battle, so is this really a cost effective use of resources? The quality of playing surfaces expected at a pay as you play public course will of course differ from that of a championship golf course; this too must be taken into account.

Having looked at reasons why poa annua could be labelled a greenkeepers friend', let us look at the other side of the coin. The underlying factor is that poa hinders us as professional greenkeepers from developing and maintaining swards with the desired fescue and bent species, grasses which in an ideal environment do provide the golfer with the ultimate playing surface. These are the types of grasses which we must strive to encourage and develop.

Poa annua is highly susceptible to fusarium patch disease which is probably our most common and damaging disease, a problem which can be both time consuming, damaging and

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expensive; if untreated, the large areas of playing surfaces can be disrupted, weakened or even, at worst, lost. Annual meadow grass inevitably results in a weakened sward which will also be prone to thatch build-up and compaction; two major problem areas for greenkeepers. This results in spongy, soggy winter surfaces as both water and air fight to enter the sub-soil of the surface. These adverse conditions usually arise because of ongoing inattention to basics such as frequent appropriate aeration and soil amelioration. This can result in a disruption to play, a problem in today's environment as members expect to be able to play all year round.

Another disadvantage is that poa encourages a slower playing surface as well as an inconsistent one; poa peaks at certain times of the year. Because of its generally shallow-rooted structure drought resistance is low. This in turn results in more water having to be produced for the surface, which only encourages more poa; it can be a vicious cycle.

It is such an opportunist grass that even if approved management practices are regularly carried out poa still finds a way into the sward. Its ability to seed nearly all year round results in an on-going battle to eliminate its establishment; moreover, it has been suggested that poa seeds can remain in the sub-soil for up to ten years!

In my opinion much of the answer to the underlying question of "Poa annua - friend or foe?" lies in what type of golf club one works at. How a greenkeeper views poa annua will surely relate to the mechanical and manual resources available to him. Sadly, like many things in this life, money comes into the equation! A golf course with a limited budget will find it much harder to eliminate poa than a top class establishment which has more machinery and staff; for example, as mentioned previously, hand-weeding poa annua from greens is generally not a task most green-keeping teams would have time to carry out.

Perhaps it is a question of working with what nature gives us and making the best out of what we have available. I am certainly not encouraging the development of poa annua, it is I feel more realistic to take a long-term approach. All efforts to encourage the finer grasses should be carried out by approved management practices, resulting in an environment where they can compete against poa annua. This would involve regular aeration, grooming, verti-cutting, scarification, careful use of water and fertilisers (especially phosphates which tend to encourage poa). In the meantime, if swards are poa dominated then a good playing surface can be achieved through regular brushing and light top dressings, together with the above practices.

Resources can be used much more efficiently getting the most out of what surfaces one already has in place rather than constantly fighting against nature.

Many greenkeepers have experienced how plant breeding has seen the emergence of dwarf rye grasses and how their qualities differ to that of the rye grasses available 30 years ago; could it be that in the future the results of genetic engineering will see greenkeepers using poa strains resistant to disease and low drought tolerance?

To summarise, it looks as if poa annua is very much here to stay, for the meantime anyway; so why not work with it rather than against it? Surely a grass that has as many attributes as discussed cannot be dismissed so harshly? Golf courses throughout the country would certainly suffer aesthetically and from a playability point of view without poa annua. It can be in many ways our friend. However, it must always be treated as an undesirable grass and we as professionals should only be interested in encouraging the finer fescue and bent grasses, after all, we would not be very competent at our jobs if we didn't!

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TALKING

Six of the country's top men give their views on feeding regimes

Feeding Regimes

Compiled by Malcolm Huntington MBE



Name: John Crawford
Club: Stirling GC
Region: Scotland
Course Type: Parkland (18 holes)
Staff: Course Manager, plus four, one apprentice and two skill seekers



Name: Richard Gamble
Club: Aldwark Manor Hotel Golf and Country Club
Region: Northern
Course Type: Parkland (18 holes)
Staff: Course Manager, plus four, plus gardener



Name: Ian Needham
Club: Beedles Lakes, Leicester
Region: Midland
Course Type: Parkland (18 holes)
Staff: Course Manager, plus four



Name: Lee Strutt MG
Club: Richmond GC, Surrey
Region: South East
Course Type: Parkland (18 holes)
Staff: Course Manager, plus five, plus two part-time



Name: Jeff Mills
Club: Taunton and Pickeridge, Somerset
Region: South West and South Wales
Course Type: Hilltop (Limestone base)
Staff: Course Manager, plus four



Name: Patrick Devine
Club: Carrickfergus GC
Region: Northern Ireland
Course Type: Parkland (18 holes)
Staff: Head Greenkeeper plus four

1. Do you plan your feeding programme well in advance or wait to assess weather and ground conditions?

1. I always plan a couple of months in advance and then, of course, have to see what the weather and ground conditions bring along

1. I plan a feeding programme two or three months before the growing season after consultation with our agronomist and then, of course, keep an eye on the weather and ground conditions.

1. I wait to assess weather and ground conditions before deciding on a feeding programme. We have very dry conditions and never come off the greens.

1. I plan three or four months ahead, but then it depends on the weather and time of the year. Last year's regime and soil analysis, which we do each year, is also taken into consideration.

1. I have a rough idea and then I always work according to the weather. Nothing is set in concrete.

1. I plan ahead and then take into account weather and ground conditions.