



Andy Pullen can probably be described as a mix of ‘old and new school’ in terms of greenkeeping and golf course management. Having spent years under the tutelage of established Course Managers at Worplesdon, Hoebriidge, and North Hants Golf Clubs, he developed many traditional skills as well as keeping up to date with products and techniques in an ever changing industry.

A four-year spell in machinery sales followed - however, a strong desire to get back into turfgrass management led Andy to Ogbourne Downs Golf Club near Swindon as Deputy Course Manager. Two years later, his hunger to progress resulted in another move, this time to North Wilts as Deputy before he was appointed Course Manager in 2012.

From Deputy to Course Manager

Making this upward move can be a daunting challenge and it’s

encouraging to see that this subject is now widely covered at BTME each year, with seminars and workshops usually hosted by experienced Course Managers who can pass on their knowledge and management expertise to help others. I was interested to learn more about the thinking behind Andy’s appointment.

The 46-year-old explained: “Although I did not have the same academic qualifications as many younger and aspiring course deputies, I did have valuable experience, learning from past masters at established clubs in the south east as well as enrolling on short one day courses to focus on particular subjects.

This can be an effective way to learn more about a particular subject such as plant nutrition. My four years in sales also gave me the opportunity to hone my skills in budgeting, planning, organisation, ordering processes and VAT.

“When the opportunity arrived for the top position, it was essential that I understood the club’s objectives, their core customers and

about the author



Laurence Pithie MG
Laurence Pithie MG runs his own training and consultancy company, Turf Master One Ltd. Previously he spent 17 years managing multi-site golf operations in the UK. With 42 years in the golf industry, Laurence has used his experience and knowledge to produce a number of recent ‘case study’ articles.

Laurence is grateful to Andy Pullen and North Wilts GC for their help and input in producing this article.

what was expected of me by both the club and the greenkeeping team. If I was to step up to the mark, I needed to make an impression and above all be prepared to listen and understand the members’ needs.

“There was a strong desire within the club to improve turf quality and the overall definition of playing areas.

“There was a feeling the focus had been too heavily weighed in favour of environmental issues and not on playing surface quality.

“Now there are pine trees that don’t belong in a downland environment and areas of scrub that need to be controlled, but that should not be the priority.

“The majority of the 800 or so members are over 60, don’t hit the ball too far but enjoy their golf and prefer to play on good greens and firm, consistent surfaces throughout.

“They also wish to complete a round in less than four hours, preferably without losing any golf balls. I felt that if I could provide such conditions, then I would have a contented membership.”

Key Challenges on the Course Management Change

"The first 10 holes are on high ground rising to 755 feet. There is a thin covering of soil overlying chalk, which is free draining and provides excellent all year round playing conditions and tremendous vistas over open countryside. It also gets a bit 'blowy' so keeping the ball low is paramount!

"The lower eight holes are more challenging to manage, particularly three valley holes where drainage can be an issue. A greater depth of clay is present, particularly under some of the greens which were built using the standard 'cut and fill' technique. In general, I needed to improve turf density, particularly on those fairways which were thin and weak, thus being able to present the course with greater definition.

"A high sulphur based fertiliser was applied each spring to acidify the surface and encourage growth, particularly the more indigenous grasses. This has resulted in a better cover of grass which the members enjoy. Once this is established throughout, I will probably switch to a spring and autumn foliar feed.

"Drainage remains the key issue on those greens which were built-up. Aeration and top dressing have been increased, while keeping surface disruption to a minimum. Fortunately the upper profile is in fairly good shape with organic matter content at a satisfactory level. To help maintain this healthy profile, we opt for using the Dyno-Core attachment reels with 5mm coring tines at 30mm centres each month, along with periodic deep tining. To overcome the drainage problems, we have carried out vertical drilling on the worst affected greens on the lower holes.

"This process is started by making a hole cutting board to accommodate a six inch (150mm) wide drill hole. After removing a turf plug, a hole was drilled to a depth of between four and six feet (1.5m approx).

"Once the spoil was removed, the holes were back-filled with small gravel, a membrane placed on top and then rootzone added to the final 10 inches (250mm) before the turf plug was replaced. Initially, these holes have been inserted at random as we are still experimenting on the best solution, bearing in mind the diverse nature of the underlying soil.

"To date, we have had some success with drainage but we know more needs to be achieved. Watch this space!"

Managing turf and playing surfaces are one aspect of a Course Manager's role, but managing people and running a successful maintenance operation can be more challenging. Since much of this is gained through personal experience, I was keen to hear how Andy made the transition.

"Being Deputy is sometimes the more difficult position, since you are no longer 'one of the lads' but not the man in charge. You still have to support the CM even when you may feel that this may not be the best decision. Sometimes this means treading the line carefully! You are the CM's 'eyes and ears', often dealing with a situation before it becomes an issue.

"Once I gained promotion, responsibility was more clear cut - the buck stopped with me! I became responsible and accountable for the management of the course and my team. The club gave me the vote of confidence to lead, take control and manage the course in a professional manner, therefore I was in charge of my own destiny. Fortunately I inherited a good team.

"I did need to recruit a Deputy and hired Martin Goodwin from nearby Kingsdown Golf Club who is very experienced and qualified to Level 3. With a good supporting team in place, the next challenge was to bring all management files and processes up to date.

"Record keeping had been minimal and both budgetary control and risk assessments were handwritten. So we gradually updated each process on computer and ensured that all information was easy to access and relevant to the club's needs. It was also important that the lines of communication between myself and the staff were sound and that they were involved in as much planning as possible. Without their help and input, the task would be considerably more difficult.

"We are first and foremost a team and that means sharing the workload. I have a very good working relationship with both the General Manager and Chairman of Green; the latter position usually being a two year stint. The members also have a voice in the form of a constructive comment sheet which is 'managed' by the club. This allows me the opportunity to explain in more detail the methods and practices used and why it necessary to do so. Good communication via newsletters and even personal presentations are what clubs expect nowadays."



Transportable bridge made by greenkeeping team



Drilling 1.3 metre hole with powered auger



Removing 6 inch plug prior to hole drilling



Dug out hollow formerly used for cock fighting next to 6th green

Conclusion

I asked Andy for any guidance or tips he could pass onto greenkeepers looking to make the next upward move in their careers.

He replied: “Firstly, ensure that you have the necessary training and qualifications.

“I was fortunate that although my level of qualifications could have been better, it was necessary to play to my strengths of working on heathland and downland courses.

“Using this knowledge was invaluable. It is essential to be computer literate and have good budgeting, management and communication skills.

“Be confident, review your CV and when it comes to the interview, make sure you have walked the course beforehand, finding out as much as you require in order to make an impression. In other words be prepared...because you may only get one chance.”



Special sustainability

‘Golf and trees don’t mix’ is an old saying amongst architects, but when Norbert Lischka MG was faced with filtration problems on his woodland course in Germany he set out to disprove it...

Falkenstein is one of the older courses in Germany as it was founded in 1906, but the course itself is somewhat younger. It was constructed by Colt and Harrison between 1928 and 1929.

Head Greenkeeper, Master Greenkeeper and BIGGA member Norbert Lischka has a long relationship with Falkenstein – nearly 20 years. When he joined he found a club debating many issues. The members were not satisfied with the push-up greens that consisted mainly of annual meadowgrass, although this was not the main problem which was bad drainage of the greens.

The greens had been built using existing soil with a very poor filtration rate. Norbert said: “It was three to five litres of filtration an hour at most. Several years ago some meetings were held in which the members were presented with the choice of a complete renovation or a partial improvement. The advisors we had at that time were split – two were in favour of a total reconstruction and two advised a gradual improvement!”

The members opted for a more gradual approach, for a number of reasons. The greens at Falkenstein are so uniquely undulating that this would have been lost during a complete overhaul. Furthermore this would have meant a lot of inconvenience for the golfers for a number of years.

APPROACH

Approaching the problems meant a combination of ‘drill and fill’, improving the light and air conditions around the greens and a sophisticated feeding programme for the grasses on the greens. Norbert also intensively tested the best combination of grasses in the woodland area of Falkenstein.

The greens were 100% annual meadowgrass with all its disadvantages, made worse by the combination of poor infiltration and the absence of significant light and air.

He said: “Initially I tried to take control with the traditional bent plus fescue combination. After some years it became evident this had not been successful. The main cause was the lack of sufficient



light, height of cut (3.5mm in summer) and the size of the greens (450m square).

"The next grass we introduced on the greens was the Agrostis variant Penn links. But this was also not exactly an overwhelming success. Finally we sowed with Penn A4. This hit the bull's eye. Especially on sunnier greens Penn A4 held very well. However, on more shaded parts of the green, Penn G6 was more successful."

Norbert is realistic and professional enough to realise that getting the right grasses doesn't guarantee a perfect course. The growing conditions must also be perfect.

"This is a complex matter on a woodland course. Sure, you can remove trees, but those trees enhance the beauty of the course. So you have to find a balance between removing trees and creating light and air on the green. With some greens here it is even more complex because they are almost hidden between a number of hills."

As mentioned, bad filtration was a major problem. The poor drainage could not be improved with the usual methods, especially because the disturbing layer is out of reach of the longest Vertidrain pins. So they went for the German version of the 'drill and fill technique'. 50cm deep holes with a 27mm diameter were drilled in a green then immediately filled with pre-dried sand.

Norbert said: "We were lucky that we found the original sand below the 50cm depth, which finally gave us a chance to drain the greens."

According to Norbert this was a successful, but very labour

intensive method of improving the greens. Seven greenkeepers would work for a whole day on a 450m square green. Norbert discovered this problem cannot be solved by one treatment alone. Some greens were treated four or five times and still the infiltration was not perfect. The drill holes were filled with a very rough fraction of sand with a grain size of between 0.8mm and 1.6mm.

SUSTAINABLE?

Norbert is convinced his application of Penn A4/G6 creeping bentgrass for his greens was the most durable option. This has everything to do with the specific management of creeping bentgrass.

Creeping bentgrass carries the prejudice of a high demand of fertiliser and a substantial accumulation of thatch. Only very intensive scarifying and topdressing makes it possible to stay in control.

But Norbert doesn't give the 30gr per square metre of pure nitrogen that is often prescribed, but only around 10gr. All fertilisers have an organic composition and this, in combination with adding seaweed and mycorrhizas should result in an active soil life and a good decomposition of thatch. Of course this would also be stimulated by the improved ventilation on the greens.

As already indicated, all fertilisers are organic. Seaweed is always 'on the menu' at Falkenstein, but the club's method of fertilising is remarkable. Currently, the greens are a patchwork of Poa in large parts with creeping bentgrass. Norbert exploited the aggressive way of

growing the Penn A4 and Penn G6.

He explained: "I fertilise in two rounds. First I give the starving patches of Poa a little bit of fertiliser by hand. After that the whole green is fertilised by a cart. So the meadowgrass gets more nutrition than the creeping bentgrass."

Norbert sticks to the theory that the aggressive, hungry creeping bentgrass will try to colonise the meadowgrass spots because there is more nutrition available. The stolones of creeping bents, which grow sideways, are quicker at getting the nitrogen than the weak Poa annua.

But in a way this is more than a theory, as Norbert sees a clear increase in the percentage of bentgrass – and a delegation of visiting greenkeepers were impressed by the vitality of the agrostis stolonifera during a visit last October.

about the author



Norbert Lischka MG has been Course Manager at Hamburg-Falkenstein Golf Club in Germany since 1994. After studying agriculture he travelled the world before landing his first greenkeeping job at Unna Frondenberg Golf Club. He has been a member of BIGGA since 1995 and is a member of the German Group of Sustainable Greenkeepers.



The Turf Fox

Norbert is also a self employed consultant at his company "The Turf Fox". He concentrates on sustainability and ecology in modern golf course management.

Many golf club committees and greenkeeping teams throughout Germany have used his on-site, face-to-face consulting.

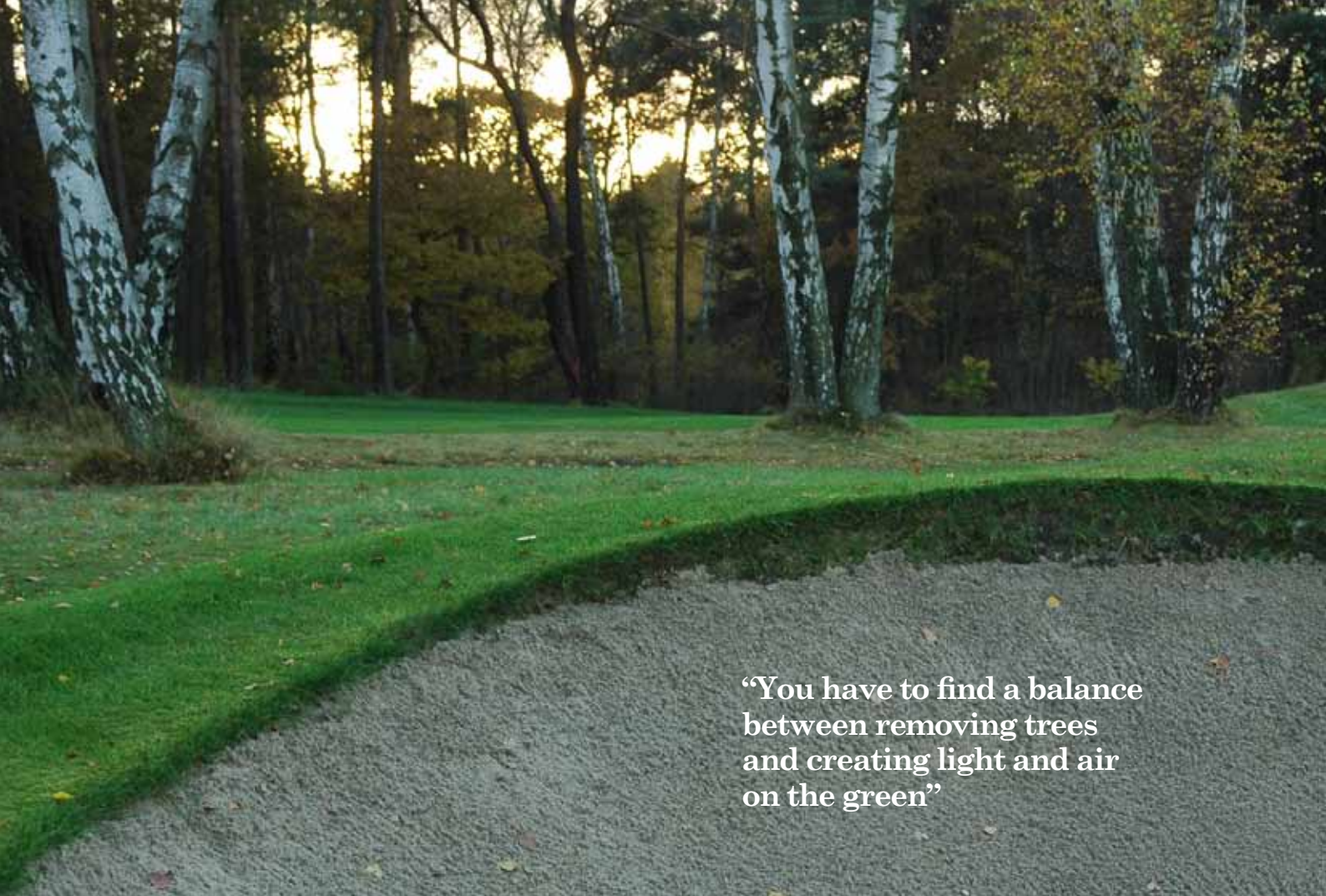
Another area his varied and comprehensive background provides is organising maintenance teams and instructing staff. Together, Norbert's comprehensive background can assist in all areas of golf course management.

As an educated mechanic and farmer he combines technical, manual, and decades of hands-on experience based in sound knowledge of biology, ecology, soil chemistry and sustainability.

If your club would like assistance with cost savings and turf improvement in the face of the heavy regulation and restrictions modern golf courses face, please do not hesitate to phone or email Norbert at:

Tel: 0049 177 333 0356
lischka@der-rasenfuchs.de
www.der-rasenfuchs.de

Please note Norbert's company and website will be live from 1 April 2014.



“You have to find a balance between removing trees and creating light and air on the green”

WATER

One successful factor has not yet been mentioned – water. Norbert has been working with Greensafer for over 15 years. This machine makes use of electrolysis of water in which very little regular salt has been dissolved. During electrolysis of this salt minimal quantities of chemicals are being released. This happens when the water comes into contact with plates charged with a DC voltage. The ozone, peroxide, chloride and other chemicals released has been given the name 'Biodyozon'.

Very small quantities of this sub-

stance are injected into the irrigation water, so as a greenkeeper you don't have to fear your greens turning white because of the sodium or chloride burn.

Of course, the consequences for the greens are more important than the technique. Norbert said: “We all know the conditions whereby irrigation water is not optimal because of pollution (eg by bacteria).”

So, the irrigation water is disinfected by the released chlorine. According to Norbert, the actual effect is that, with the help of the Greensafer, a far more active conversion of the thatch takes place.

Also, chlorine kills most algae

Photos courtesy of Hein van Lersel.

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on lakes and ponds. Ozone in conjunction with water gives active oxygen, which through your irrigation system helps to stimulate soil life in the rootzone. On top of everything else, Biodyozon also significantly reduces your casting worm problem.

SUM OF ITS PARTS

The right grasses, the right light and air conditions, a penetrable top layer, seaweed application, good irrigation water and paying attention to the soil biology all results in great looking greens – even in October when many grasses are past their best. The top layer contains a very small amount of thatch. Smearing can be seen a little around the 'drill and fill holes' although Norbert said it's only a matter of time before this disappears. You can see how rich the old top layer of the greens was. By constantly bringing in new dressing material this old top layer disappears automatically.

Norbert concluded: “I'm very thankful and proud that I have had the chance to work for nearly 20 years for such a prestigious golf club. I would like to say a big thank you to the members and the green-keeping team for their patience, at what I consider to be one of the most beautiful golf courses in Europe.”



LEFT: 'Drill and fill' hole pattern on a green



Thatch and Fusarium Patch

...all about balance

Fusarium patch caused by the fungus *Microdochium nivale* is the most navel-gazed disease in golf course management, hardly surprising since *M. nivale* is the most important pathogen of temperate turf and Fusarium patch the number one disease in UK sports turf.

Fusarium patch attracts more cultural practices and fungicide applications than all other turf diseases put together with the prime aims of avoiding the disease or removing its presence from golf greens.

Greenkeepers can avoid and eradicate Fusarium patch but they

cannot remove the fungal pathogen. *M. nivale* is always present in turf usually as a saprophytic or weakly parasitic microbe living in the thatch, the dead and dying organic matter at the base of the turf grass sward.

Thatch is central to sports turf and Fusarium is inherent to thatch.

Everything else including the aggravating effects of environmental conditions, inappropriately timed management practices and the success or failure of fungicide application all comes back to a fungus with pathogenic potential residing in the thatch component of turf.

about the author



Dr Terry Mabbett

Dr Terry Mabbett is a disease, pest and weed control specialist with forty years international experience covering research, advisory and journalism. His current fields of focus are professional turf and alien insect pests and pathogens of Britain's native and naturalised trees.

Presence of the pathogen and solution to the disease lie in the thatch and how it is managed.

The intrinsic value of thatch set against harbourage of pathogens and promotion of disease is all about balance. You can't exclude thatch and why would you want to? Naturally occurring thatch at an appropriate depth and uniformity provides a natural resilience which contributes to the speed and consistency of play. It also acts as a singularly significant 'recycling bin' for natural nutrients (including nitrogen), released from decomposing organic matter and returned to the living grass plant tissue through the fibrous root system.

The *M. nivale* fungus resident in thatch and stirred by cooler and wetter conditions is presented with a new flush of foliar growth. The pathogen moves up through the gears into full parasitic mode with Fusarium patch disease as the invariable result. Most fungi are great lovers of surface moisture and high humidity and *M. nivale* is no exception. High thatch levels hold more moisture and generate more humid microclimates within the turf profile.

Feed turf by all means - but with fertiliser formulations rich in potassium to make the most of the 'gate-keeper' nutrient with its intrinsic abilities in good water relations and strengthening of grass plant tissues. The acid reaction generated by ferrous sulphate (iron sulphate) on the turf surface boosts resilience to Fusarium patch while deterring surface casting earthworms.

Hollow core tining and deep scarification are well worn methods for reducing thatch and conditions which exacerbate Fusarium patch.

However, collateral physical damage increases turf stress as well as providing entry points and infection sites for the pathogen. Advice given is generally against carrying out these invasive man-

agement practices when environmental indicators flag up periods of high pathogen activity and high sward susceptibility to Fusarium patch disease. Verti-cutting and top dressing offer less invasive thatch management options. Applying a systemic fungicide prior to hollow core tining or deep scarification is advisable.

The type of fungicide used and when to apply continues to be the most hotly debated topic in Fusarium patch control for sports turf.

Mowing is the reason why turf exists but it is easy to forget the impact of continual low cutting on turf and its susceptibility to disease.

Mowing will clearly stress out turf but also leaves behind grass leaves with open cut ends as prime points for entry of fungal pathogens including *M. nivale*. Another disease implication of mowing is removal of fungicide in the clippings, whether contact protectant fungicide on the surface of the severed leaf ends or systemic curative fungicide inside the leaf tissue.

On the plus side systemic fungicide inside the leaf tissue will exude in sap from the cut to provide a chemical barrier against infection by *M. nivale*. Evidence suggests

Fusarium and thatch 7 Soil profile from a golf green showing evidence of thatch accumulation on the right (Picture courtesy Syngenta)



escaping fungicide is washed down the sides of the leaves and re-enters the plant.

Chemical control of Fusarium patch is not a 'one fungicide fits all' scenario. It is clearly not advisable to rely on a contact protectant fungicide when grass is growing quickly because there will always be a high proportion on new unprotected leaf surface and because short interval mowing will be in place.

By the same token there is not much point in using a systemic curative fungicide when the grass is not actively growing because uptake of fungicide whether by the root system or through the leaves will be limited.

All things being equal a systemic fungicide taken up by either the leaves or the roots will provide a more effective option in relation to fungicide interception and absorption by the grass plant.

Recognition of thatch as central to the occurrence, development and severity of Fusarium patch is behind the latest development in turf fungicide technology and strategy.

Fludioxinal the active ingredient in Syngenta's Medallion targets and destroys *M. nivale* in organic matter (thatch) before it has chance to become Fusarium patch disease on the living green leaves.

Fludioxinal appears to alter the integrity and status of the selectively permeable membrane which bounds the spore. This results in rapid movement of water (by osmosis) into the spore causing it to rupture and burst.

Osmosis is the movement of small molecules such as water across a selectively permeable membrane from a higher concentration [of water molecules] to a lower concentration [of water molecules].

Fusarium patch has always been the number one target for new turf fungicides. It is not that long ago when Fusarium patch would most



likely be the only turf disease on the product label.

Control of anthracnose was essentially incidental and collateral to the primary effect of a broad spectrum acting fungicide on Fusarium patch disease.

Poa annua (annual meadow grass) continues to be the 'black sheep' of sports turf grasses with its intrinsic susceptibility to Fusarium patch and high thatch forming credentials. Greenkeepers worried about high percentages of *Poa annua* in their greens, and resulting implications for Fusarium, are advised to reduce annual meadowgrass in favour of bent and fescue.

Poa annua is even more suscep-

ABOVE: Widespread Fusarium patch beginning to dry out but the damage has already been done (Picture Courtesy Bayer Environmental Sciences)

ABOVE RIGHT: Fusarium and thatch 6 Grass leaves with Fusarium patch disease simply add to the thatch burden on golf greens (Picture courtesy Syngenta)

tible - and terminally so - to basal rot anthracnose. Some greenkeepers have traditionally turned a blind eye to anthracnose, reasoning that it will kill and clear out annual meadowgrass in what must have been one of the earliest examples of man-managed biocontrol in turf.

Most modern fungicides are equally effective against Fusarium patch and anthracnose so applications targeted at Fusarium will invariably control basal rot anthracnose at the same time, and therefore help to maintain the high thatch producing *Poa annua* component in a turf grass sward. It's all about balance.

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