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Grasses for greens

Never before has there been such a range of different grass species and cultivars available to the Greenkeeper. This article seeks to clarify the usage of different grasses on greens and evaluates a number of new developments.

Traditionally speaking (bents and fescues)

Traditionally, greens have been sown with 80% fescue: 20% bentgrasses (by weight) with the aim of eventually producing comparable amounts of these species in the sward. The seeding mixture ratio is due to the differences in seed weight between the tiny bentgrass and the much larger fescue. An even mix of the sown grasses is, however, unlikely for a variety of reasons - not the least of which are climatic influences. It is also worth noting that the fescue component initially dominates the sward although the slower establishing bentgrass soon catches up. Throughout the whole establishment process, the risk of invading rogue grasses will prevail, particularly if early excessive wear or inappropriate management prevails.

Poa annua

Poa annua is a serious problem for many Greenkeepers. The reasons for the domination of Poa annua are complex, but are usually related to open swards during the main flowering season of May-July (although flowering occurs throughout the year). Undoubtedly excess inputs of water and fertiliser also encourage Poa annua. It would be a brave person to suggest that good maintenance practices alone will reduce Poa annua as it is one of nature's colonisers in the annual form and a survivor in the perennial form "reptans". It is important to note that the desirable bent and fescue grasses predominate in the wild where one finds dryish soils, conditions of low nutrient availability and sometimes extremes of pH. So why don't bents and fescues survive as well as Poa annua in a golf green? Probably because Poa thrives in the conditions we provide and the wear the turf is subject to - it is an opportunist grass. Certainly the conditions which ideally suit our quality grasses can be difficult to manage and do not always respond well to wear. Links courses like St Andrews Old Course are testament to those desired, sandy, less fertile conditions and provide stunning greens of quality grasses as a consequence of appropriate management.

To combat Poa annua the answer is to carefully control fertiliser and water inputs to greens and reduce to a minimum where cover is maintained for the wear experienced. The water-logged areas where Poa proliferates in contrast to bents found in the drier regions indicate to a Greenkeeper the preferred conditions for bentgrass. Actions should always be taken to reduce winter water-logging by reconstruction, drainage etc. if you are ever...
Replanted after the bentgrass seeding if poor soil temperatures prevail. This often means that the best time to ensure success from bentgrass seeding is between June and August. Certainly the key is to establish a very dense cover of bentgrass in the shortest possible time. If a little Poa invades, this can be hand weeded. If take-all is avoided and sufficient water is available during germination, an excellent sward can soon be developed.

Creeping bentgrass can provide a superb putting surface with some of the new modern cultivars which are also better able to deal with lower mowing heights. However, it will require significantly different management practices than native greens. This includes a higher fertiliser input, strict control of thatch, disease control and management. The use of this species should be considered only with sand rich greens.

Velvet bentgrass (Agrostis canina)
Velvet bent provides an extremely dense and fine sward with outstanding year-round colour. A possible disadvantage is that it can produce excessive thatch and thus regular verticuting is required. It is expensive to purchase and often Greenkeepers will dilute it with a more traditional bent or bent/fescue mix.

Ryegrass (Lolium perenne)
An interesting trial at the Berkshire College of Agriculture Greenkeeping Academy has produced a very good, golf green surface of ryegrass and red fescue. The new cultivars of ryegrass can tend to look a little like fescue at certain times of the year and seem to be able to tolerate mowing heights of 4.5-5 mm. They are less susceptible to disease, recover well from wear and have good year-round colour. Some Greenkeepers would not be able to tell the difference between some very fine ryegrass cultivars and the fescue in a closely mown sward. While not a current recommendation for greens, we may have to eventually reconsider the use of ryegrass in certain situations, particularly if there are further significant improvements in future cultivars.

Sand dominated greens
Heathland, links and modern sand dominated greens invariably have the advantage of good drainage and less excesses of nutrients allowing swards rich in the favourable grasses to be grown. Nevertheless the sward must be kept dense and any operations which will open up the sward, such as hollow tine aeration, should be timed with overseeding and top dressing definitely outside of the main Poa flowering season.

The risks with sand dominated greens invariably come from constructing one or two such greens amongst the remaining soil based greens - in such scenarios the contrast in management requirement will test even the best Greenkeepers. Furthermore such "new" isolated sandy greens often prove a disappointment, certainly from the grass composition viewpoint.

Creeping bentgrass (Agrostis stolonifera)
Invariably creeping bent greens succumb to Poa annua ingress. The Poa problem sometimes starts immediately after the bentgrass seeding if poor soil temperatures prevail. This often means that the best time to ensure success from bentgrass seeding is between June and August. Certainly the key is to establish a very dense cover of bentgrass in the shortest possible time. If a little Poa invades, this can be hand weeded. If take-all is avoided and sufficient water is available during germination, an excellent sward can soon be developed.

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Seed mixes
In a given seed mixture, each species and cultivar will provide a set of features to produce a sward that meets the intended usage. For example, a dense sward with all-year-round greenness or a wide-ranging resistance to many turf grass diseases. The use of the STRI Turfgrass Seed Booklet to check the variety of characteristics in a seeds mixture is an invaluable tool in trying to develop anticipated turf performance.

Single species swards can be risky. If, for example, the species is particularly susceptible to certain turfgrass diseases, then extensive damage could be caused or the need for excessive application of fungicides. The inclusion of a mixture of cultivars or even a small amount of another species may create a more robust green.

Overseeding
There is a current popular approach of overseeding Poa rich greens with bent only mixtures. The effect of this strategy can be slow and in some instances a waste of time and money. Many factors come into play in
A long established Poa-rich green showing bent overseeding success

determining success, not the least of which is the subsequent management after overseeding. To stand any chance of success, the seed must be sown when the soil temperatures are high, i.e. late spring to summer, with good water availability and a reasonable time period before inclement weather sets in. Appropriate maintenance favouring the over-sown grasses cannot be over-emphasised – it is simply a waste of money to oversow Poa annua with fine grasses and subsequently manage it to sustain the Poa annua.

Sometimes the inclusion of fescue, which is relatively quick to germinate, fine-leaved and more resistant to many diseases common to both bents and annual meadow-grass, may, in certain cases, help the green adapt to a wider range of influences.

There has been much debate on the success of overseeding. Numerous factors can contrive to hinder the establishment of the desired species. Obviously the correct seed choice, correct application and suitable conditions for germination will go a long way towards success. The use of broadcast seeding must be the least effective – is much seed is removed from the surface by foot traffic and by mowers. Better to use a slit-seeder or broadcast following hollow-coring and top dressing, when the seed will end up off the immediate surface of the green.

Grass identification
It is important to be able to identify the grasses in your greens. This should be to at least genus level, e.g. Agrostis, but preferably being able to separate Agrostis tenuis from stolonifera and canina (browntop from creeping and velvet). The most straightforward identification (once it is established) is via the ligule. A. tenuis is collar shaped, A. stolonifera is broad peaked and A. canina very pointed.

Fescues can be more difficult to identify but there is less need to know the differences between the various red fescues such as Chewings and slender creeping red fescue which form part of some golf greens. Poa needs to be distinguished between annua and pratensis (annual and smooth-stalked) as the latter sometimes colonises greens and is a key ingredient of some seed mixtures for tees. Poa pratensis has a broad, blunt leaf with a distinctive “blue” bloom giving its occasionally used American name, Kentucky bluegrass.

Ryegrasses and Yorkshire fog (Holcus lanatus, which is often a weed grass in greens) are relatively straightforward to identify. However, the new cultivars of ryegrass can be confused with some fescues at the juvenile stage as both species can have a red base. Certainly Yorkshire fog can look like bentgrass but check the leaf sheath which will have fine purple or red stripes. It is also more hairy than bentgrass.

There are many good grass identification books available, but your Agronomist should be able to help you identify the above grasses.

Weed grasses
Apart from Poa annua there are a number of grasses able to withstand close cutting. The two worst weed grasses are perennial ryegrass (particularly coarse forms) and Yorkshire fog. Ryegrass may spread from the fairways and surrounds and quickly form coarse clumps of flattened grass. These invariably seem to grow faster than the surrounding green and can cause some unevenness on the surface. Control is often difficult ranging from some hand weeding where there are small patches to extensive verticutting on larger areas.

Yorkshire fog is a particular problem if it successfully miniaturises and forms large spreading patches seemingly smothering all in its wake. Again, verticutting is the best way to reduce this problem.

In conclusion
The management of successful greens means the cultivation of the correct grasses. Undoubtedly it is easier to work with nature rather than against it. This means choosing a select number of species appropriate to the green construction profile, subsequent management and environmental effects. The complete management of a green needs to question all operations and modify those which fail to encourage the desirable grasses.

Steve Gingell is the STRI Regional Agronomist for the Thames Valley Region. His knowledge of turf grasses comes from experience in the field and through managing the construction of the Greenkeeping Academy at Berkshire College. He can be contacted on 01344 884167. The rest of the STRI Agronomy team can be contacted on 01274 565131. E-mail: info@stri.co.uk or visit the website www.stri.co.uk
As a member of the Greenkeepers Training Committee, BIGGA is actively involved in raising the Standard of Greenkeeper Training. The range and quality of training now available means that there is a training course for every greenkeeper which should improve the quality of greenkeeping and help to produce quality golf courses.

Golf Course Managers should ensure that their staff are trained to the highest standards, beginning by selecting a training provider that meets the criteria laid down by the GTC. There is a clear link between education, training and economic success and if you think that training is expensive then try ignorance.

Ken Richardson
Education and Training Manager,
British and International Golf Greenkeepers Association
Tel: 01347 833800
Email: education@bigga.co.uk
Website: www.bigga.org.uk

The Greenkeepers Training Committee (GTC) is continually striving to raise the standards of Golf Course Maintenance and Management and they are totally committed to ensuring that the range of qualifications are relevant to the Sportsturf sector and used by Employers for recruitment and by trainees for their own personal development.

The Government endorsed awards range from National/Scottish Vocational Qualifications (N/SVQ’s) to the more academic Higher National Certificate (HNC)/National Diploma (ND)/Higher National Diploma (HND) in Golf Course Management and the Degree in Sportsturf Science.

The qualifications are continually under review by the National Training Organisation (NTO) in association with the GTC. The quality of the delivery of these awards by the network of GTC Approved Training Providers is also constantly monitored by the GTC.

For up to date independent advice on qualifications, education and training courses contact the GTC on:-
Tel: 01347 838640
Email: golf@the-gtc.co.uk
Website: www.the-gtc.co.uk
GREENKEEPER TRAINING

ABINGDON AND WITNEY COLLEGE, Warren Farm Campus, Horton-cam-Studley, Oxford, Oxfordshire OX3 1BY. Contact: Alan Brown or John Revis Tel: 01865 351794 Fax: 01865 359931 Email: alan.brown@abingdon-witney.ac.uk Website: www.abingdon-witney.ac.uk Information: Warren Farm Campus is the base for Abingdon and Witney College's education and training in Greenkeeping, Sports turf, Amenity Horticulture and allied land based courses for the whole of Oxfordshire. Courses include: NVQ Level 2 in Sports Turf Management; NVQ Level 3 in Greenkeeping and Sportsturf Maintenance; NVQ Level 4 in Amenity Horticulture; Horticulture; Sports turf Management in Sports Turf (day and block release). Short courses: Greenkeeping for golfers. NPTF Champioinship Competence Certificates, Spout Operators Training Courses.

ASHKHAM BRYAN COLLEGE, Ashham Bryan, York, North Yorkshire YO23 3PR Contact: Central Admissions Tel: 01904 772221 Fax: 01904 772220 Email: info@ashhambryan.ac.uk Website: www.ashhambryan.ac.uk Information: National Certificate in Horticulture, National Diploma in Horticulture (Turf Option); Higher National Diploma in Horticulture (Golf Management Option); all available full or part time. Block release courses: NVQ Level 2 in Greenkeeping, NVQ Level 3 in Greenkeeping and Sportsturf Maintenance; NVQ Level 4 in Amenity Horticulture; Short courses: FEPA spraying, Cutting and brushcutter courses.

BERKSHIRE COLLEGE OF AGRICULTURE, Hall Place, Burchett's Green, Maidenhead, Berkshire SL6 6LN Tel: 01628 824444 Fax: 01628 824905 Email: enquiries@bcu.ac.uk Website: www.bcu.ac.uk Information: Full-time programmes: BTEC First & National Diploma. Part-time programmes: NVQ 2 & 3 in Amenity Horticulture, Sports turf (day and block release). Short courses: Greenkeeping for golfers, NPTF Champion Competence Certificates, Spout Operators Training Courses.


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A guide to the colleges and courses available

This guide is not exhaustive and a full list of GTC approved training providers can be obtained from the GTC. The Greenkeepers Training Committee (GTC) are continually reviewing the approved status of colleges offering greenkeeper training courses. This guide shows colleges offering courses to craft, supervisory and management levels. Anyone with a query regarding greenkeeper training should contact the Greenkeepers Training Committee at Aldwark Manor, Aldwark, Aine, York Y061 1UF, Tel: 01347 838640 or visit their website at http://www.th_gtc.co.uk

SPARSHOLT COLLEGE, Sparsholt, Winchester, Hampshire SO21 2NF Contact: Ray Broughton Tel: 01962 776441 Fax: 01962 776077 Email: r.broughton@sparsholt.ac.uk Website: www.sparsholt.ac.uk Information: NVQ Level 2 Greenkeeping Practice, NVQ Level 3 Greenkeeping Supervision, Craft Guild Phase IV Management Studies, National Diplomas in Golf Course Management and Golf Studies, National Certificate in Greenkeeping and Sports Turf Management. ETC: Greenkeeping Certificate, ETC: Certificate in Golf Course Supervision, FEPA. Short courses. Kickstart Phase IV and NVQ level 2 are offered on block release and day release. Full residential facilities available. Sparsholt college provides education and training in the land-based industries.

THE COLLEGE OF WEST ANGlia, Milton Campus. Contact: Bob Young or Student Support at King’s Lynn on 01553 761144 Ext 271 Tel: 01223 866701 Information: The College of West Anglia offers a full range of courses for greenkeepers including: NVQ Level 2 Sports Turf Greenkeeping and Groundsmanship, NVQ Level 3 Sports Turf Maintenance, GTC Craft Certificate, GTC Certificate in Golf Course Supervision, TDLB Assessment awards, FEPA, Chain Saws, NVQ. Other courses: National and First Diploma in Horticulture and Garden Design.

WARWICKSHIRE COLLEGE, Royal Leamington Spa & Moreton Morrell, Moreton Morrell, Warwick, Warwickshire CV3 9BH Contact: Brian Cook Tel: 01926 318268 Email: horticulture@newcol.ac.uk Information: Greenkeeping Courses: NVQ Sports Turf & Golf Course Management (Day Release 2 year Programme); NVQ Level 2 & 3 Day Release and Roadside Option (we come to you); two year NVQ in Horticulture with Turf Options: ETC Intermediate Diploma (evening class); Certificate in Turf Irrigation. Short Courses: Introduce your Committee to Turf Care; Computing for the Greenkeeper. Various throughout the year - ring for details. FEPA, Chairmanship Certification, TDLB, First Aid. Also BPA General and Diploma, PTT, PA4 and PA6.


GREENMOUNT COLLEGE, Antrim, County Antrim BT41 4BQ. Contact: Declan Gallagher Tel: 028 94 426794 Email: declan.gallagher@dardni.gov.uk Website: www.greenmount.ac.uk Information: Day release courses to NVQ GTC Certificate/NVQ Level II Greenkeeping and Sports Turf Supervision National Diploma in Horticulture with Turf options FEPA, Health & Safety and a range of short courses. Also RHS General and Diploma, PAT, PA2A and PA6.

TEAGASC COLLEGE, Teagasc College of Amenity Horticulture, National Botanic Gardens, Glasnevin, Dublin 9. Contact: Pat Suttle Tel: 00353 1672633 Telephone: 00353 16726333 Fax: 00353 1800412 Electronic Mail: college@botanic.teagasc.ie Website: www.teagasc.ie Information: Block release courses in greenkeeping providing Level III Certificate by the National Council of Vocational Awards. NVQ Level III Certificate in Golf Course Management. 3 year full-time course. National Council for educational awards a National Diploma in Horticulture (Greenkeeping specialisation).

Elmwood College, Cupar, Fife KY15 4BJ Contact: How Ferry Tel: 01314 658842 Fax: 01314 658843 Email: abin@elmwood.ac.uk Information: Full time National Certificate, Black Release following SVQ Level II and GTC training manual. SVQ level III Black Release and Outreach available with SVQ level IV coming soon. HNC/HND Golf Course Management available as full time, block release and distance learning. Professional development awards for football and cricket available by both block release and Outreach. FEPA and COSHH, chainsaws, tree climbing and rescue techniques and Health and safety short courses also available.

GOSTA TRAINING LTD, Level 3E Clydeway Centre, 45 Kinnoull Street, Glasgow G3 8JJ Contact: Chris Bothwell Tel: 0141 248 2772 Fax: 0141 248 2453 Email: training@gosta.tap.com Information: SVQ 3.4 and Modern Apprenticeship in all options. Attendance by day/block/ evening or distance learning. From November/March Short courses include Pestcide, Chainsaw, First Aid, Aerator Wheels, Manual Handling, Fertiliser Extension and Rescue training. Consultancy covering: Noise Assessment, Site Risk Audits, Machinery Permit to Use, G3000 Health and Safety Policy.

LANGSIDE COLLEGE, Rutherglen Campus, Buchanan Drive, Rutherglen, Glasgow G73 3RF Contact: Colin S Urquhart Tel: 0141 647 6300 Email: colin@langside.ac.uk Information: National Certificate, GTC, SQA, HNC, HND. Full time and part-time courses in Greenkeeping, Groundsmanship, Golf Course Management, Horticulture, Land and Environment and Applied Ecology. Short courses for land-based industries including: Risk Assessment and Pesticides.

GATRIDGE AGRICULTURE COLLEGE, Ecclesmachan, Nr Bridgend, West Lothian EH52 3NH Contact: Steve Miller Tel: 01506 854387 Fax: 01506 853733 Email: gatridge@msn.com Information: HNC in Golf Course Management (Part-time), Full-time National Certificate in Greenkeeping and Sports Turf Management. SVQ Level II and HNC. Sports Turf (Day and Block Release); SVQ Level III in Ground Care Machinery, Full range of Amenity Horticulture, Landscaping and other land-based subjects at HNC, National Certificate and SVQ Levels. Short Course - FEPA, Chainman, Forklift, First Aid.

PENCOED COLLEGE, Pencoed, Bridgend, Cardiff CF5 1SJ Contact: Paul Discombe/John Sullivan Tel: 01605 368272 Fax: 01605 368191 Email: pdisccombe@bridgend.ac.uk Website: www.bridgend.ac.uk Information: Courses: - NQG Greenkeeping and Sports Turf Levels 1 and 2 HNC in Turf Management in conjunction with the University of Glamorgan. Short Courses - include Pestcide Application, Chainsaw Operation, Machinery Maintenance plus many others. Outreach NVQ 1 & 2 in the workplace. Pencoed college is conveniently situated between Cardiff and Swansea J35 on the M4.

For further details, contact Tracey Maddison, BIGGA Membership Services Officer

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Mark Hunt gives some useful advice when it comes to planning your greens fertiliser regime.

Seldom a year goes past without the introduction of new products or new concepts in fertilisation for the sports-turf market. For greenkeepers and Course Managers, the choice is bewildering. Can these products really provide the improvements they seek or are they just fads, here today, gone tomorrow?

To begin to answer this question, we must first look at the basic principles that underpin the usage of fertilisers on golf courses and the factors that need to be taken into account.

If I was starting at a new course and was looking to put together a greens fertiliser regime for the coming season, these are some (but not all) of the details I would consider in order to 'shape' my thinking:

- Size and design of greens and associated wear patterns
- Construction and rootzone characteristics. Are all greens the same? (Unlikely), are there a mixture of types/ages of greens?
- Thatch levels, any signs of anaerobic conditions, drainage and percolation characteristics.
- Grass species present, sward density, root development.
- Soil nutrient levels, pH, nutrient retention, etc.
- Planned events, aeration, tournaments, etc.
- Machinery, labour and budget availability

These points all have a bearing on the amount of nutrient required in any one year. For example, smaller greens with less pin positions tend to concentrate wear and place more stress on the sward. If fertility is lacking, the sward density may suffer, allowing encroachment of undesirable grasses and weeds, so it follows that these types of green will require more nutrient than larger ones.

Similarly, rootzone characteristics dictate nutrient demands. Take for example a modern USGA specification green with a high percentage sand-based rootzone - This has low nutrient retention and over the growing season, will need a higher fertiliser input, compared to a soil fused green.

In addition, such greens will also require a higher nutrient input from September to March. During mild spells of winter weather, the sand warms up, initiating growth, which
There are many different types of fertiliser available for many different uses and application methods.

requires nutrition, but because there is little holding capacity in the rootzone - nutrients have to be supplied. To ignore this simple fact on this type of construction is a quick route to a weak sward, consistently thinning out over the winter, prone to disease (because it is under stress) and one which takes longer to regain strength and density the following spring.

On soil-based greens, nutrient retention is better, due to their higher organic matter content and during mild spells of weather, retained nutrients are made available to the plant. That is not to say that soil-based greens do not require autumn/winter fertiliser, but just a lower level.

Fertiliser applications may vary in the type of product used (liquid, soluble or granular), it's nutrient make-up (Quick release, slow-release or a combination) and the application rate.

Types of product
Fertilisers come in three main forms - solid, soluble or liquid. Solid fertilisers include granular, prilled and powdered products and are usually applied through a pedestrian spreader.

Soluble fertilisers normally consist of water-soluble powder or prilled products, which are dissolved in a spray tank and then applied to the turf.

Liquid fertilisers, as the name suggests are just that, liquid forms of nutrients, mixed into a spray tank and then applied to the turf.

Nutrient sources
Fertilisers are normally made up of different combinations and ratios of major nutrients, usually nitrogen, phosphorus and potassium (but not necessarily all three). However, it is not unusual to see magnesium and iron as part of an analysis and sometimes, minor nutrients (trace elements). The major nutrients can be derived from different sources, for instance nitrogen in a conventional (quick-release) fertiliser may be derived from sulphate of ammonia, ammonium nitrate or urea, or a combination of some or all of these.

The source of the nutrient will influence how the fertiliser 'works', that is to say, how quickly it is available to the plant, how long it will last, it's effect on pH, it's potential to scorch and so on.

Analysis isn't everything
Just looking at the analysis of a fertiliser tells us little about what to expect when we apply it. Take the following example. I have two bags of fertiliser, they both have the same analysis on the label - 8+0+0. This tells me that 8% of the bag contents is nitrogen, but what does it tell me about how the products will work? The answer is nothing. If I look further, I see product A states that the nitrogen is derived from sulphate of ammonia, whereas the product B is derived from urea.

Sulphate of ammonia provides nitrogen that is immediately available to the plant and so works even if soil tem-