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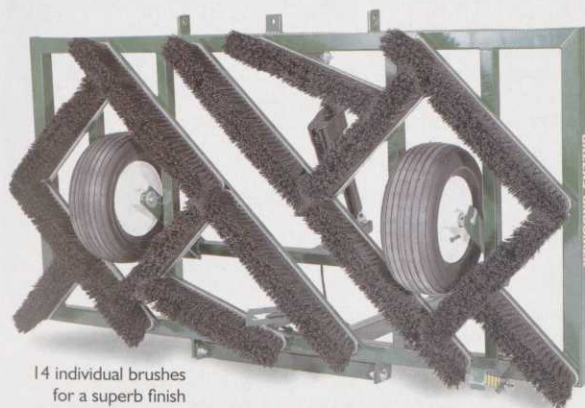
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Steve Gingell undertakes a review of the range of grasses commonly found on golf greens

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.



50% Dwarf ryegrass with Bent and Fescue cut at 6mm. Can you see the ryegrass?

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, sandier, 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



Traditional Bent Fescue turf

to develop and sustain the desirable bents and maybe fescue grasses. Just as important will be aeration and thatch control practices at appropriate times.

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 immedi-

ately 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 verticutting 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.

STRI cultivar trials

The STRI undertakes extensive turf grass cultivar trials with the findings published in the annual Turfgrass Seed Booklet. This publication allows comparison between cultivars and species commonly used on golf surfaces. It is therefore possible to check the main attributes of a seeds mixture and cultivars, ensuring it matches its intended usage.

A visit to the trials ground on one

of the Open Days or training events provides an opportunity to visually see the performance of the various species and their cultivars.

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 turf grass 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 over-sow *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 as 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 common

American name, Kentucky blue-grass.

Ryegrasses and Yorkshire fog (*Holcus lanatus*, which is often a weed grass in greens) are relatively straight-forward 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

Learning

Education & Training for Professional Greenkeepers



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

www.bigga.org.uk

GREENKEEPER TRAINING

abingdon:witney college

ABINGDON AND WITNEY COLLEGE, Warren Farm Campus, Horton-cum-Studley, Oxford, Oxfordshire OX33 1BY **Contact:** Alan Brown or John Revis **Tel:** 01865 351794 **Fax:** 01865 358931 **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, Sportsturf, Amenity horticulture and allied land based courses for the whole of Oxfordshire. Courses include:- NVQ Levels 2 & 3 in Sportsturf, Decorative Horticulture and Hard Landscape. We also offer a range of short courses for the Industry including Health & Safety, pesticide training and chainsaw operation.



ASKHAM BRYAN COLLEGE, Askham Bryan, York, North Yorkshire YO23 3FR **Contact:** Central Admissions **Tel:** 01904 772211 **Fax:** 01904 772288 **Email:** sf@askham-bryan.ac.uk **Website:** www.askham-bryan.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 Greenkeeping, NVQ Level 3 Greenkeeping and Sportsturf Maintenance, NVQ Level 4 Amenity Horticulture. Short courses: FEPA Spraying, chainsaw and brushcutter courses.

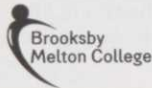


Berkshire College of Agriculture

BERKSHIRE COLLEGE OF AGRICULTURE, Hall Place, Burchetts Green, Maidenhead, Berkshire SL6 6QR **Tel:** 01628 824444 **Fax:** 01628 824695 **Email:** enquiries@bca.ac.uk **Website:** www.bca.ac.uk **Information:** Full-time programmes - BTEC First & National Diploma. Part-time programmes - NVQ 2 & 3 Amenity Horticulture, Sports Turf (day and block release). Short courses - Greenkeeping for golfers, NPIC Chainsaw Competence Certificates, Spray Operators Training Courses.



BRINSBURY COLLEGE, Pulborough, West Sussex, Sussex RH20 1DL **Tel:** 01798 877400 **Fax:** 01798 875222 **Email:** Student-services@brinsbury.ac.uk **Website:** www.brinsbury.ac.uk **Information:** FULL-TIME: BTEC National Diploma Horticulture (Greenkeeping option), BTEC First Diploma New Entrant Horticulture (Greenkeeping option), City & Guilds National Certificate Horticulture (Greenkeeping & Sportsground option), PART-TIME: NVQ3 Sports Turf Maintenance (Day release or work based), NVQ2 Amenity Horticulture (Greenkeeping & Sports Turf options), plus varied short courses including Chainsaw, Brushcutter/Strimmer, PAT/PA2A/PA6A/PA9 etc.



BROOKSBY MELTON COLLEGE, Brooksby, Melton Mowbray, Leicestershire LE14 2LJ **Contact:** Ann Hurt/Jo Lees **Tel:** 01664 850850 **Fax:** 01664 855355 **Email:** course.enquiries@brooksbymelton.ac.uk **Website:** www.brooksbymelton.ac.uk **Information:** Situated on the A607 between Leicester and Melton Mowbray. Programmes available include NVQ Level I, II, III & IV in Greenkeeping. Work based emphasis for all of these programmes. Short courses available in Arboriculture/Chainsaw work, TDLB training and Pesticide application training.



CANNINGTON COLLEGE, Cannington Bridgwater, Somerset, TA5 2LS **Contact:** Terry Horne **Tel:** 01278 655083 **Email:** hormet@cannington.ac.uk **Website:** www.cannington.ac.uk **Information:** BTEC Higher National Diploma in Sports Science (Golf Option), BTEC National Diploma in Sports Science (Golf Studies), Higher National Certificate Golf Course Management, BTEC First Diploma, BTEC National Diploma in Golf Course Management, BTEC Higher National Diploma Golf Course Management NVQ Level 1 and II Golf Greenkeeping, NVQ Level III Greenkeeping and Supervisory Management, NVQ Level IV Greenkeeping Management, FEPA Training, Chainsaw Certification, Off-road Vehicle Certification, Greenkeeper Mechanics, Certificate in Irrigation (BTUJA) 1 week course; National Certificate in Golf Greenkeeping (1yr FT). Note: HND = 2 yr course HNC now 2 yr day release course.



EAST DURHAM and HOUGHALL COMMUNITY COLLEGE, Houghall, Durham, County Durham DH1 3SG **Contact:** Tony Milan **Tel:** 0191 386 1351 **Fax:** 0191 386 0419 **Email:** enquiry@edhcc.ac.uk **Website:** www.edhcc.ac.uk **Information:** Full-time courses: National Certificate in Horticulture/Greenkeeping and Groundsmanship - 1 year; National Diploma in Horticulture Turf Option - 2/3 years. Part time courses: Greenkeeping and Sportsturf maintenance NVQ Level 2 - Day Release. NVQ Level 3/4 Greenkeeping and Sportsturf Maintenance Day Release. Short courses: FEPA Modules, Chainsaw certification, Tree inspection, Horticultural Machinery, Safe Lifting and First Aid.



HADLOW COLLEGE, Hadlow, Tonbridge, Kent TN11 0AL **Contact:** Nick Egan **Tel:** 01732 850551 **Fax:** 01732 853207 **Email:** nick.egan@hadlow.ac.uk **Website:** www.hadlow.ac.uk **Information:** NVQ Level II and Level III Part-time Day Release with two periods of Block Release or evenings. Level II in Groundsmanship evenings. NVQ Level III Golf Greenkeeping, BTEC First Diploma Sports Turf Management, BTEC National Diploma Sports Studies and BTEC First Diploma Sports Studies, National Diploma in Horticulture (Sports Turf option), National Certificate: Sports Turf Management, National Diploma: Sports Turf Management, National Diploma Sports Studies, National Intermediate Diploma in Turf, Institute of Groundsmanship National Practical Certificate. Centres at Hadlow, Canterbury, Maidstone and Mottingham.



HARTPURY COLLEGE, Hartpury House, Gloucester, Gloucestershire GL19 3BE **Contact:** Sara-Jane Watkins **Tel:** 01452 702132 **Fax:** 01452 700629 **Email:** enquire@hartpury.ac.uk **Website:** www.hartpury.ac.uk **Information:** Courses available: First Diploma Horticulture, National Certificate Horticulture, National Diploma Landscaping, First Diploma Greenkeeping, Certificate in Greenkeeping, National Diploma Greenkeeping, National Diploma Golf Studies, Modern Apprenticeships, Route 2 Work, NVQs available in Amenity Horticulture, Commercial Horticulture, Amenity / Turf, Amenity / Sportsturf, Decorative Horticulture, plus RHS General Examination, City & Guilds Certificate in Gardening, TDLB Assessor Awards and a full programme of amateur, leisure and day release courses.



MERRISTWOOD COLLEGE, Worplesdon, Guildford, Surrey GU3 3PE **Contact:** D I Rhodes **Tel:** 01483 884003 **Fax:** 01483 884001 **Email:** info@merrist-wood.ac.uk **Website:** www.merristwood.ac.uk **Information:** Full time courses: National Certificate in Greenkeeping and Sports Turf Management, National Diploma in Greenkeeping & Sports Turf Management. Part time courses: NVQ Amenity Horticulture Level 2 and 3 in the work place - we come to you. NVQ Amenity Horticulture Sports Turf Maintenance Level 2, NVQ Amenity Horticulture Sports Turf Maintenance Level 3 (afternoon/evening release). HNC Turf Science (afternoon/evening release). Various short courses throughout the year. Please contact us for up-to-date listings and information.



MYERSCOUGH COLLEGE, Bilsborrow, Preston, Lancashire PR3 0RY **Tel:** 01995 642211/642222 **Fax:** 01995 642333 **Email:** mailbox@myerscough.ac.uk **Website:** www.myerscough.ac.uk **Information:** Full time courses: BSc (Hon's) Turfgrass Science, HND Turf Science and Golf Course Management; ND Turf Science; NC Groundsmanship and Greenkeeping; First Diploma; Turf Science; NVQ Level 2. Now offer NVQ Level 4 Greenkeeping Management delivered both in the work place and over the internet using the colleges new 'Mallnet System'. Also offer D32/D33 in the work place. Part-time courses NVQ Level 2 & 3 Greenkeeping and Sports Turf Maintenance (Day/block release or Fast track work-based training qualification). HND Turf Science and Golf Course Management; HNC Turf Science; FEPA Short courses: Industry Training Support Course; Myerscough Turfgrass Foundation holds an annual conference and regular education seminars.



NESCOT - North East Surrey College of Technology, Reigate Road, Ewell, Epsom, Surrey KT17 3DS **Contact:** Dr S Shaw **Tel:** 020 8394 3038 **Email:** info@nescot.ac.uk **Website:** www.nescot.ac.uk **Information:** NVQ Levels I, II and III in Amenity Horticulture (Greenkeeping options) Training and assessment for the Greenkeepers Training Manual. Pesticides Application - Certificate of Competence. Part time, Day Release. Duration: Two years to Level II. FEPA Spraying Courses.



OAKLANDS COLLEGE, Oaklands Campus, Hatfield Road, St Albans, Hertfordshire AL4 0JA **Contact:** Ian Merrick **Tel:** 01727 737000 **Fax:** 01727 737752 **Email:** ian.merrick@oaklands.ac.uk **Website:** www.oaklands.ac.uk **Information:** Full time courses: National Certificate in Greenkeeping and Sports Turf Management. Part-time courses: leading to NVQ Level 3 Greenkeeping, Modern Apprenticeships. Evening courses: leading to NVQ Levels 3 and 4. Short courses: Pesticide, Chainsaw.



PLUMPTON COLLEGE, Lewes, East Sussex BN7 3AE **Contact:** David Blackmur **Tel:** 01273 890454 **Fax:** 01273 890071 **Email:** enquiries@plumpton.ac.uk **Website:** www.plumpton.ac.uk **Information:** National Diploma in Amenity Horticulture (options in Landscaping and Sportsturf); National Certificate in Amenity Horticulture; First Diploma in Horticulture. Part-time courses: NVQ Level 1, Level 2 Amenity Horticulture in Decorative, Nursery, Hard Landscape and Sportsturf, Level 3 Amenity in Decorative and Sportsturf, Level 4 Amenity. Also available are RHS General and Diploma and IOG National Technical and National Diploma (Int). Short courses are also available for FEPA spraying and chainsaw courses.



REASEHEATH COLLEGE, Nantwich, Cheshire CW5 6DF **Tel:** 01270 625131 **Fax:** 01270 625665 **Email:** brianj@reaseheath.ac.uk **Website:** www.reaseheath.ac.uk **Information:** Full time First Diploma Horticulture (Sportsturf Option) - 1 year. National Diploma Horticulture (Sportsturf Option) - 2 years. BTEC Higher National Diploma Golf Course Management - 3 years. Part time: HNC Golf Course Management with Open Learning option, NVQ Levels 1-4 Greenkeeping with Fast Track options. IOG courses available. Short courses: FEPA Chemical Safety; Safe Lifting; Chainsaws, Off-Road Vehicle Driving; First Aid.

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 Greenkeeper Training Committee at Aldwark Manor, Aldwark, Aline, York YO61 1UF, Tel: 01347 838640 or visit their website at http://www.the_gtc.co.uk

ENGLAND



SPARSHOLT COLLEGE, Sparsholt, Winchester, Hampshire SO21 2NF **Contact:** Ray Broughton **Tel:** 01962 776441 **Fax:** 01962 776587 **Email:** rbroughton.sparsholt@ac.uk **Website:** www.sparsholt.ac.uk **Information:** NVQ Level 2 Greenkeeping Practice, NVQ Level 3 Greenkeeping Supervision, City & Guilds Phase IV Management Studies, National Diplomas in Golf Course Management and Golf Studies, National Certificate in Greenkeeping and Sportsturf Management, GTC: Greenkeeping Certificate, GTC: Certificate in Golf Course Supervision, FEPA: Short courses, Chainsaws. 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 860701 **Information:** The College of West Anglia offers a full range of courses for Greenkeepers including: NVQ Level 2 Sportsturf (Greenkeeping and Groundsmanship), NVQ Level 3 Sports Turf Maintenance, GTC Craft Certificate, GTC Certificate in Golf Course Supervision, TDLB Assessors awards, FEPA, Chain Saws, MO1. Other Courses: National and First Diploma in Horticulture and Garden Design.



WARWICKSHIRE COLLEGE, Royal Leamington Spa & Moreton Morrell, Moreton Morrell, Warwick, Warwickshire CV35 9BL **Contact:** Brian Cook **Tel:** 01926 318268 **Email:** enquiries@warkscol.ac.uk **Information:** Greenkeeping Courses: HNC Sports Turf & Golf Course Management (Day Release 2 year Programme); NVQ Level 2 & 3 Day Release and Workbased Option (we come to you); two year ND in Horticulture with Turf Option; IOG Intermediate Diploma (evening class); Certificate in Turf Irrigation. Short Courses: Introduce your Committee to Turf Culture; Computing for the Greenkeeper; Various throughout the year - ring for details. FEPA; Chainsaw Certification; TDLB; First Aid. Also RHS General and Diploma, PA1, PA2A and PA6.



WRITTLE COLLEGE, Chelmsford, Essex CM1 3RR **Contact:** David Campbell **Tel:** 01245 424200 **Fax:** 01245 420456 **Website:** www.writtle.ac.uk **Information:** SPORTSTURF PROGRAMMES NVQ Level 2 - Sportsturf; NVQ Level 3 - Sportsturf Maintenance, NVQ Level 4 - Amenity Horticulture, HNC - Sportsturf Science, HND - Sportsturf and Golf Course Management. Other Programmes; First Diploma, National Certificate, National Diploma (with Sportsturf Option), BSc (Hons) Sportsturf Science and Management, BSc (Hons) Horticulture, BSc (Hons) Landscape and Amenity Management, MSc Landscape and Amenity Management, NVQ 2 and 3 Service Engineering, FEPA, Chainsaw, Tractor Driving

IRELAND



GREENMOUNT COLLEGE, Antrim, County Antrim BT41 4PU **Contact:** Declan Gallagher **Tel:** 028 94 426794 **Email:** declan.gallagher@dardni.gov.uk **Website:** www.greenmount.ac.uk **Information:** Day release courses to (a) GTC Certificate/NVQ Level II Greenkeeping and Sportsturf (b) GTC Certificate/NVQ Level III Golf Course Supervision National Diploma in Horticulture with Turf options FEPA, Health & Safety and a range of short courses.



TEAGASC COLLEGE, Teagasc College of Amenity Horticulture, National Botanic Gardens, Glasnevin, Dublin DUBLIN 9 **Contact:** Pat Suttle **Tel:** 00353 16376133 **Fax:** 00353 18040212 **Email:** college@botanic.teagasc.ie **Website:** www.teagasc.ie **Information:** Block release courses in greenkeeping providing Level III Certificates by the National Council of Vocational Awards. Level III Certificate in Golf Course Management. 3 year full-time course. National Council for educational awards a National Diploma in Horticulture (Greenkeeping specialism)

SCOTLAND



Elmwood College, Cupar, Fife KY15 4JB **Contact:** Huw Parry **Tel:** 01334 658842 **Fax:** 01334 658888 **Email:** abain@elmwood.ac.uk **Information:** Full time National Certificate, Block Release following SVQ Level II and GTC training manual. SVQ level III Block 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, Unit 5E Clydeway Centre, 45 Finnieston Street, Glasgow G3 8JU **Contact:** Chris Bothwell **Tel:** 0141 248 2772 **Fax:** 0141 248 2453 **Email:** training@gostatraining.freeserve.co.uk **Information:** SVQ 1-4 and Modern Apprenticeship in all options. Attendance by day/block/evening or distance learning. From November/March Short Courses include Pesticide, Chainsaw, First Aid, Abrasive Wheels, Manual Handling, Fire Extinguisher and Assessor training. Consultancy covering Noise Assessment, Site Risk Audits, Machinery Permit to Use, COSHH, Health and Safety Policy.



LANGSIDE COLLEGE, Rutherglen Campus, Buchanan Drive, Rutherglen, Glasgow G73 3PF **Contact:** Colin S Urquhart **Tel:** 0141 647 6300 **Email:** colinurq@perseus.langside.ac.uk **Information:** SVQ, SGA, 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.



OATRIDGE AGRICULTURE COLLEGE, Ecclesmachan, By Broxburn, West Lothian, Edinburgh EH52 6NH **Contact:** Steve Miller **Tel:** 01506 854387 **Fax:** 01506 853373 **Email:** OATRIDGE_AGRICULTURAL_COLLEGE_EDU@msn.com **Information:** HNC In Golf Course Management (Part-time); Full-time National Certificate in Greenkeeping and Sportsturf Management; SVQ Level II and GTC Manual (Day and Block Release); SVQ Level III Sportsturf (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, Chainsaw, Forklift, First Aid.

WALES



PENCOED COLLEGE, Pencoed, Bridgend, Cardiff CF35 5LG **Contact:** Paul Discombe/John Sullivan **Tel:** 01656 302672 **Fax:** 01656 302601 **Email:** pdiscombe@bridgend.ac.uk **Website:** www.bridgend.ac.uk **Information:** Courses: NVQ Greenkeeping and Sportsturf Levels 1-3, HND in Turf Management in conjunction with the University of Glamorgan. Short Courses - include Pesticides Application, Chainsaw Operation, Machinery Maintenance plus many others. Outreach NVQ II & III in the workplace. Pencoed College is conveniently situated between Cardiff and Swansea J35 on the M4.



WELSH COLLEGE OF HORTICULTURE, Northop Mold, Flintshire CH7 6AA **Contact:** Graham Wright **Tel:** 01352 841034 **Fax:** 01352 841031 **Email:** graham.wright@wcoh.ac.uk **Website:** www.wcoh.ac.uk **Information:** Full-time - Higher National Diploma in Turf Management. Part-time - Day release Higher National Certificate in Turf Management. Block Week - NVQ Amenity Sportsturf Levels 2-3. Briefing Days - NVQ Level 4, TDLB Assessor Courses D32, 33, 34. Day Courses - FEPA, Chainsaw Certification, First Aid, C.I.E.H.



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

Fertility

RIGHTS (NOT WRONGS)

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?

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



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 based 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 made may vary in the type of product used (liquid, soluble or granular), its 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-