



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.

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