

# GRASS



In this, the first of a two-part feature, straight-talking agronomist JIM ARTHUR gets back to basics

There will of course be many who read this article who are expert at grass identification – an essential facet of advanced greenkeeping education. Nevertheless, I never cease to be amazed at the very poor level of skill in the identification of grasses in mown turf, and not just by new entrants to the profession.

Yet accuracy in this aspect of greenkeeping training and practice is equally vital to both sound advice and sound management. This inability to pick out even half a dozen of the commonest grasses in mown turf is by no means confined to practical greenkeepers. Advisers, who should know better, not only mis-identify species but confirm their errors in writing! I have in my possession a report from an agronomist purporting to show that on the course he was advising, 'the greens are some of the best annual meadow grass greens I have ever seen' – and those were greens which had been managed on sensible lines for a score of years and which were dominantly *Agrostis*! In another case, the virtues of *Pennecross* were being extolled by one designer whose enthusiasm was matched only by his ignorance, saying it was an excellent, rapidly establishing grass entirely suitable for our climatic and soil conditions, as demonstrated by the greens on his fairly recently built course in the south east – when their grass cover was in fact 100% *Poa annua*, all the *Pennecross* having been killed by a combination of bad management and our cold wet winters.

I well remember on one north-

ern California course, their superintendent defending his statement that his 100% *Poa annua* greens were *Pennecross*, on the grounds that they spent so much money every autumn on overseeding the greens that 'they had to be *Pennecross*'. But then he added that he was a chemist not a botanist!

Mis-identification is not confined to confusing bad species with desirable ones. I remember one unconvinced greenkeeper swearing that the 'invading' *Agrostis* and fescue in greens, responding to better management, was in his view annual meadow grass and 'his' annual meadow grass greens were, he swore, *Agrostis*!

I fully accept that identification is not always easy and I confess that I have been picked up more

than once by on-the-ball greenkeepers, when confusing fine-leaved native links bents with equally fine-leaved fescue, relying on the colour change – in winter – of *Agrostis*, often bronze or purple tinged due to frost. So was the fescue. We all make mistakes! It is, in fact, the general appearance and colour, different of course at different times of the year, which give the first clues, but closer examination is always wise, as I know full well, despite the problems of getting down to eye level, with my arthritic knees.

One thing is certain. There is very limited value in teaching grass identification from the examination of mature grasses growing in 'museums' or as 'pot plants'. Any reasonably observant person can be trained to identify common grasses in the flowering head stage. Thrusting bouquets of seeding grasses into students' hands is no way to teach them what is undoubtedly the most important aspect of their craft – the identification of grass species in mown turf.

Luckily, there only a relatively few grasses which are of economic importance in turf, either as beneficial species or as undesirable weeds. I am fully aware that there are well over a hundred grass species (excluding cereals) in the family *Gramineae*, as well as an enormous number of strains. Many, however, are so rare and so localised that even in a lifetime of botanising there are

still a few that I have not seen. My 'life-list' was immeasurably helped by being trained in the field over 45 years ago by a botanist with an international reputation, Bingley's senior adviser, the late Richard Libbey, and on our joint visits to links courses we wagered the first round of drinks that evening on the number of grass species identified in the fairways.

However, if any young (or indeed older) greenkeepers can reasonably accurately identify a very small number of useful species and half a dozen harmful or undesirable 'weeds', then he will have the edge on many 'experts', ranging from university professors to so called turf doctors. Any educational course on grass identification in turf must be based on turf samples (hole cuts from mown grass). You do not see many grasses flowering in close mown turf and even that ubiquitous pest annual meadow grass hardly throws up flowering stems, but flowers and seeds under the blades of the mower.

Of course, practice makes perfect and in time species which can be easily confused, especially at first glance, can be picked out. Initially it is enough to be able to identify the relatively few useful species – when all the rest can be dismissed as irrelevant to greenkeeping, if not actual weeds – in the sure knowledge that few will be able to contradict you!

What then are these species on whose identification correct management must be based? In today's greenkeeping there are really only three species which it is essential to correctly identify, if

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# IDENTIFICATION

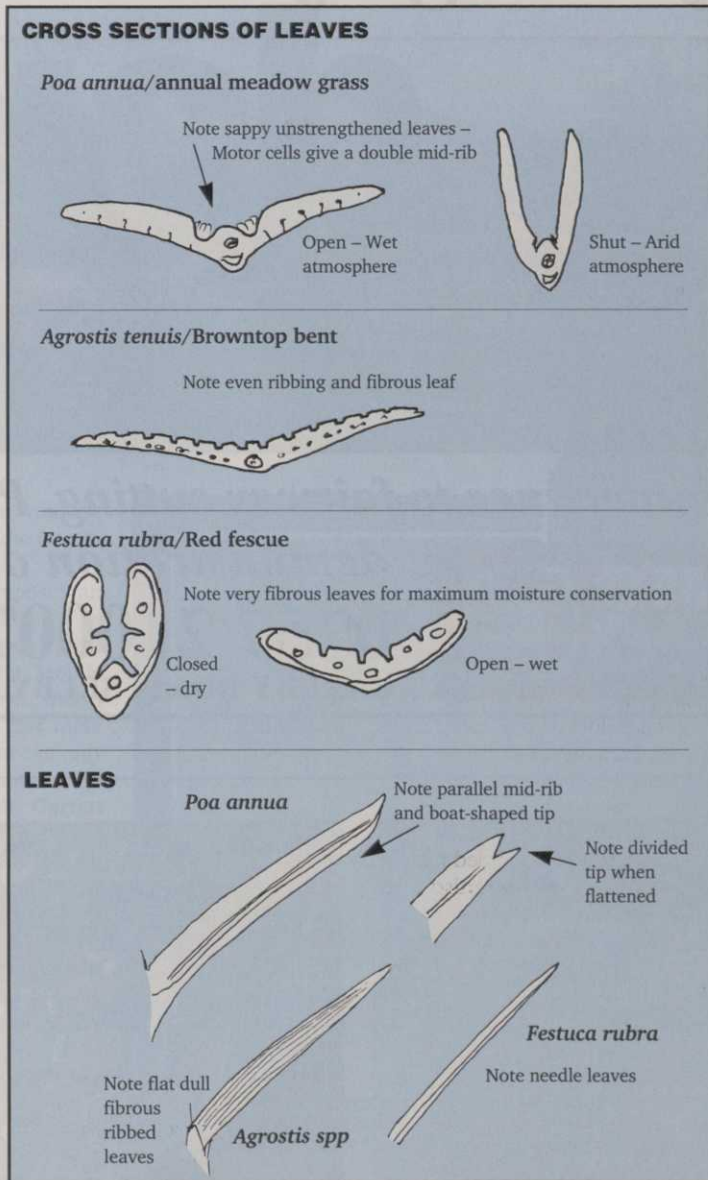
only to be able to assess the progress or otherwise of a line of management or to identify and treat problems (or otherwise), which the dominance of a particular species indicates. These three are the bents (*Agrostis spp*), fine fescues (*Festuca rubra*) and the meadow grasses (*Poa spp*). It is a quirk of botanical fate that the last two, the first so much our ideal grass and the last containing that enemy of greenkeeping, *Poa annua*, are botanically closely related.

There is of course no substitute for field training by a really knowledgeable grass man. It is, I suppose, the same with bird watching. For someone like myself who has been bird watching for 65 years – (and what a suspect hobby it was pre-war and how sophisticated it has all become, with all the twitchers 'artillery' and communication systems) – a glimpse of a bird will tell me at once either what it is – or more important still, suggest that it is something out of the ordinary. There is much in common with bird and grass watching. The first glimpse is equivalent to the first impression – the 'jizz' of the bird. Colour (so variable with the season), texture, reflected light, turf density, upright or spreading growth – all help to group the turf under dominant species.

Some grasses never blend easily with others in a multi-species sward. Fine fescues especially tend to grow in distinct zones, whereas *Agrostis* generally but not invariably mixes well with annual meadow grass (*Poa annua*). In passing, look carefully at the margins of such zones. If they are clearly defined, this indicates active growth outwards and so management is favouring that grass. If the margins are indeterminate, with other species 'probing' into the zone, then that grass is suffering and present treatment is not favouring it.

Experience is the best teacher in such matters – you will quickly get to recognise the distinctive greyish or yellow green colour of fine fescue in winter. (Of course, when greens are growing fast, whether fertilised or not, and a uniform green, this masks any colour variations.)

Bents, especially creeping bent



(*Agrostis stolonifera*), turn almost purple after frost and because they have ribbed leaves which do not reflect the light, always look dull. Closer examination will confirm the species within reasonable limits of accuracy. Cross sections of leaves (illustrated) show what to look for. The bents (*Agrostis*) with very close parallel ribs on upper leaf surfaces are quite distinctively different, even to the naked eye, from the fibrous needle leaves of fine fescues and especially the soft, stubby, sappy leaves of our old enemy annual meadow grass. Indeed all the *Poa* species show the same twin parallel mid-rib, (created by two lines of motor cells which open and close the leaf blade in response to wet or dry weather, to produce

the effect of a double, parallel mid-rib as illustrated. Note that all the *Poa* family have leaf-tips shaped like the bow of a boat, and if flattened out, the point splits to give two tips (as illustrated).

One of the problems of grass identification is that the same species can have very varied forms, none more so than *Poa annua*. These forms range from the coarse open growth of the short lived (10 week life cycle) invasive type, colonising any bare ground, to the biennial fine leaved form which characterises old established, over-fed and over-watered greens – in extreme cases forming 'pads', to the detriment of putting surfaces but in its best form responding to frequent mowing and verticutting to pro-

duce tolerable, indeed sometimes excellent, putting surfaces in the growing season.

Two other *Poa*'s are found but are not important in golf greenkeeping. Rough stalked meadow grass, (*Poa trivialis*), is a surface growing (stoloniferous) perennial which is useless in turf. Smooth stalked meadow grass (*Poa pratensis*) has masses of rhizomes and is sometimes advised for tees and fairways. Its main disadvantage is that it dies out under close mowing. Its characteristic blue green leaves (with marked boat-shaped tips and double mid rib) are unmistakable – giving it its US name of Kentucky blue-grass. It is not in my view as important as some would have us believe.

Equally, the *Agrostis* species can be very variable. The characteristic surface running stems of creeping bent (*Agrostis stolonifera*) are not often seen on greens, but more commonly on less frequently or closely mown surrounds. They contrast, not just with browntop (*Agrostis tenuis*) but with the Penncross family (*A. palustris*) (which is not to be confused with our creeping bent, though often so described on the other side of the Atlantic). This grass is totally unsatisfactory for any area where there is a long, drawn-out, cold, wet winter, as it becomes dormant, sickly, pale and weak under these conditions. For those areas where there is no winter (and no dormancy therefore) or where there is no winter golf, as courses are under feet of snow, it is ideal, being a rapid establisher and with proper management, money and man power it can produce superb surfaces, whether this be in Mediterranean zones, Asia, NZ North Island, or of course certain areas of the United States, but by no means all of them. Under more temperate climates it produces thatch second to none and after dormancy it is so weakened that it soon becomes invaded and eventually replaced by annual meadow grass, even with the skilled management and high budgets which enable it to survive longer.

■ Next month we will deal with the useless or weed grasses, always remembering that what is a rubbishy weed to a greenkeeper can be a productive crop plant to a farmer.