

# Improving your turf

**THERE** are four main grasses for most greenkeepers. Three that have to be paid for—perennial ryegrass, red fescue (creeping red and Chewings) and brown top bent; and one that is free—annual meadow-grass. This article reviews the ones that are paid for. The annual meadow-grass is either there or not; if one starts to write about it, it will fill the article as it fills a sward, so having been noted it can be put temporarily out of mind!

What should a green be? A firm, smooth, uniform surface for putting, all the year round. Consistent in texture, without nap or grain and without minor irregularities or deformities to make the run of the ball unpredictable. It must not be so hard that balls will not stop, nor so soft that every dropping ball or footprint leaves its mark. It must be grown and managed primarily for play and, although it should look attractive, appearance must not become an end in itself. The grass will help to give this quality, though of course much depends on the soil, the availability of labour and the ease of watering.

The seeds mixture most generally used for greens in the U.K. is the 80:20 mixture of Chewings fescue and Highland browntop bent. The proportions may vary slightly, e.g. 75:25 or 70:30, and Highland is universally used because of price and availability as much as merit. Nevertheless this is a well-proven reliable mixture, giving what every mixture does—some insurance against the accidents of disease or abnormal weather which may severely damage or even wipe out a single species grown as a monoculture. In drought or if ophiobolus patch disease develops, the fescue is there: in more favourable conditions, the bent.

What are the possible ways of improving on this standard mixture?

1. A complete change of species, for example to a monoculture of creeping bent? The availability of cultivars that can be established from seed, e.g. Penncross and Emerald, makes the use of creeping bent more

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reasonable than when material had to be propagated by stolons. Creeping bent does not tolerate drought and in drier parts of the country can only be considered where water is laid on. Penncross gives a dense uniform turf but looks rather dull and drab in winter. Although it is generally considered—particularly in the U.S.A.—that Penncross needs more nitrogen than Highland bent, experience at Bingley has so far been that a reasonably generous rate for fine turf (e.g. 150 lb./acre pure nitrogen per year on sandy loam soil = approx. 7 cwt./acre sulphate of ammonia) gives a satisfactory sward of Penncross. Higher rates would be needed on sandy soils. Fusarium patch disease has sometimes damaged Penncross badly, although recent trials at Bingley have not been affected. High nitrogen levels might sometimes encourage fusarium, particularly if nitrogen were being used to counter poor winter appearance. Penncross may need more vertical mowing against nap-forming stoloniferous growth and scarification against fibre development than Highland bent, though again limited experience at Bingley has not shown rapid development of these faults under a regime of adequate, but not abundant, nitrogen and water.

2. Another browntop bent in place of

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Highland? The bred cultivars of brown top bent from Holland (e.g. Bardot, Enate or Tracentia) are smaller-leaved than Highland and form a tighter, more compact sward. They are indeed as different from Highland as Chewings fescue is from creeping red. They only share the species name "browntop bent" because no one can find a better one for the "odd man out", Highland. The available Dutch browntops look best in summer, whereas in winter they tend to be dormant and look dull and brown. By contrast, Highland grows in autumn and in a mild winter, and gives some colour at that time though growth may look ragged between cuts. Blends of equal parts of Highland and Dutch cultivars in the 80:20 mixture (i.e. 10% of each bent) have been disappointing in a recent Bingley trial, the denser Dutch bents being dominant at these proportions, so that Highland only shows sparse untidy leaves in winter, not a satisfactory uniform winter colour. Nevertheless such blends have been used on some recently constructed courses, and further experimenting may produce a worth-while compromise between the present two alternatives—(a) winter growth and a slightly coarser sward from Highland or (b) summer colour, a denser sward and better resistance to fusarium and corticium from Bardot, Enate, Tracentia, etc.

3. Velvet bent? The cultivar Kingstown gives a remarkably fine dense sward with excellent summer colour, but has rather poor winter colour, tends to form a nap, and is so dense that problems of sponginess and disease are likely.
4. A change of fescue? Chewings fescue is the red fescue most tolerant of close mowing and low fertility and least susceptible to disease. Highlight is a good cultivar, with its

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best appearance in winter, early spring and autumn. Barfalla and Koket are also good, particularly in summer. Waldorf is a very fine-leaved dense cultivar, very attractive in summer but with poor winter colour. There are several other good or satisfactory bred cultivars, but the commercial type once known as "Oregon" and now called Cascade is not suitable for use on greens.

There are some fine-leaved cultivars of creeping red fescue that are nearly as persistent under close mowing as Chewings fescue, but they are more liable to disease (corticium and dollar spot). Dawson is a good one, with vigorous establishment, good summer appearance and perhaps slightly better wear tolerance than Highlight. Such a cultivar might be partly substituted for the Chewings fescue. The majority of red fescues, however, are not to be considered for greens.

A height of cut of  $\frac{1}{4}$  in. virtually precludes anything except fescue, bent and annual meadow-grass, but the wear—treading, pivoting on the feet when driving, and cutting of divots—is very punishing.

The 80:20 fescue/bent mixture used for the greens is the simplest and in some ways the best for tees also, whether for original sowing or for renovation. For rapid establishment, however, perennial ryegrass may sometimes have to be used, although it is generally not suitable for tees. Under close mowing it neither persists as a complete sward nor disappears completely in a short time. If a ryegrass is wanted which might persist and be as neat and hard-wearing as possible on the tee, the available cultivars that give least growth and probably persist best under relatively close mowing ( $\frac{1}{2}$  in.) include Romney (woolly leaf ends when mown), Pelo, and the newer "turf types" such as Manhattan and Sprinter.

Whether or not ryegrass is used, the 80:20 fescue/bent mixture can be

strengthened in various ways:—

1. Creeping red fescue. Fine-leaved dense cultivars of creeping red such as Dawson would probably be slightly more wear-tolerant than Chewings fescues, particularly with reasonably generous fertiliser application. Aberystwyth S.59 is also moderately fine-leaved, and often green in winter. The coarser-leaved creeping red fescues have stronger leaves than Chewings, and underground rhizomes, but form a more open turf. Whereas a fine-leaved creeping red could be substituted for Chewings to the extent of 75%, a coarser creeping red should be no more than 25% of the total fescue content.
2. For bent, the rhizomes of Highland help repair divot holes, but the extra density of Dutch browntops would help to avoid the grass being worn down to bare ground. A blend of the two types, in equal parts or with Highland predominating, could be useful.
3. About 20% of a good smooth-stalked meadow-grass would toughen the tee if (a) allowed to establish well (sown in summer, rather than early autumn); (b) fed well with nitrogen (but not excessively); and (c) not mown too close ( $\frac{1}{2}$  in. is fairly punishing for any cultivar of this grass). The underground rhizomes repair divot holes well, provided the plants have grown enough to form them; but one cannot expect underground miracles from seedlings! Choose a cultivar resistant to leaf spot. Birka and Fylking are two good fine-leaved cultivars; Baron, Monopoly, Parade and Sydsport are some other hard-wearing cultivars, rather broader-leaved. The last-named has rather poor winter colour. If practicable, the best way to use smooth-stalked meadow-grass to repair tees is to grow it in separate

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turf nurseries, and lift and lay it in strips when a good strong turf has developed.

The main considerations for the fairway are relatively little cutting, a good lie for the ball and some ability to recover from divoting.

1. For rapid establishment on new areas perennial ryegrass is generally used and probably intended to disappear quickly under mowing. Cultivars like Pelo or S.23 seem to be

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satisfactory. The harder-wearing but more expensive cultivars such as Manhattan need only be used in areas of specially hard wear. 25-30% ryegrass in the mixture would suffice.

2. Fescue and bent are important to give a good lie. Fescue will tolerate low fertility, particularly Chewings fescue; creeping red will grow longer, and may show corticium but its rhizomes will do something to fill divot holes. Choice of red fescue cultivar is less important than in more intensively managed areas. A basic fairway mixture might therefore be 30% perennial ryegrass, 60% red fescue (Chewings and creeping red) and 10% browntop bent.
3. Smooth-stalked meadow-grass may also have value for heavily worn areas, but if fertility is low, it will not be very vigorous.
4. Small-leaved timothy such as S.50, at 10%, could improve establishment and wear tolerance where there is no ryegrass, and tolerates relatively wet or heavy soils, but is rather pale green. Larger-leaved timothy, like S.48, is stronger-growing and coarser, less likely to blend with fescue/bent.
5. Rough-stalked meadow-grass is not hard-wearing in itself, but establishes quickly and because of impurities may be a way of introducing seed of annual meadow-grass if it is needed!

The fairway mixture is generally used on the rough, possibly at a reduced rate, though special problems and requirements sometimes call for special mixtures.

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