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Grassland in the British economy

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Appendix III
Present botanical composition of swards with evidence of recent change

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During the past 40 years there has been a marked change in the species composition of grassland, as a result of reseeding and more intensive management. This has been accompanied by a steady increase in grassland output and in the national average stocking rate, which is now 50% higher than in the 1950s and almost double that of the 1930s.

In the 1930s, first-grade ryegrass pastures (containing at least 30% perennial ryegrass) constituted less than 2% of the permanent grassland area. Together with the relatively small area of temporary grass, less than 10% of the grassland area was ryegrass dominated compared with the 40% of grassland which qualified as first-grade ryegrass in the recent Permanent Pasture Group study (Forbes *et al.* 1980).

Perennial ryegrass has become more abundant at the expense of *Agrostis* species (bent grasses) which, though the most common of the unsown species are now dominant on less than 40% of the grassland area where they seldom contribute more than 50% of the ground cover.

Swards are seldom dominated by any other indigenous grasses. For instance, Yorkshire fog (*Holcus lanatus*), though recorded in about 90% of old swards and 50% of sown swards, is seldom found in appreciable quantities. Fine-leaved fescues (*Festuca rubra* and *F. ovina*) are important constituents of upland pastures but, in the lowlands, are now mainly confined to the oldest and least productive swards. Little now remains of the fescue-type grassland which once covered much of the Downs and Cotswolds.

Poa species usually cover less than 10% of the ground area though their occurrence is often associated with the more intensive use of grassland

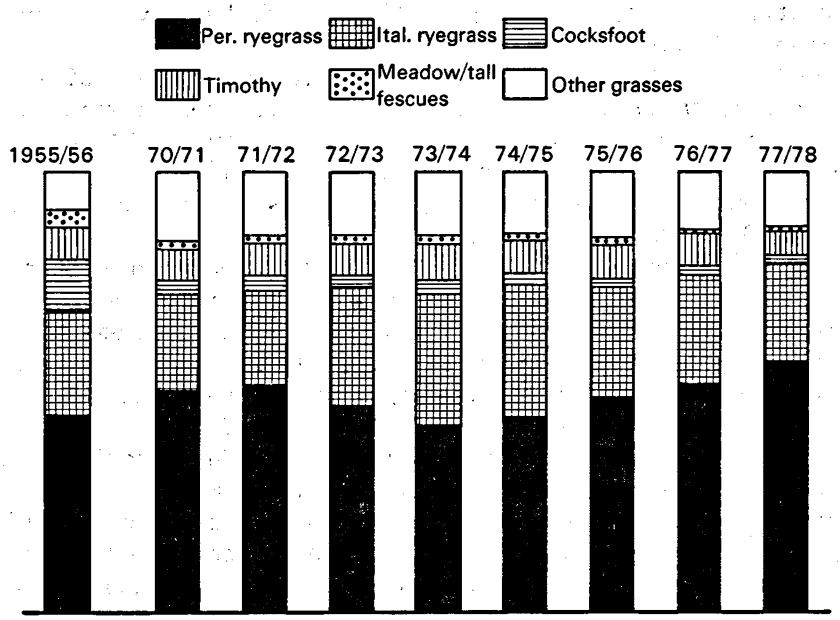
when they can invade damaged or poorly established swards. Species such as meadow foxtail (*Alopecurus pratensis*), sweet vernal (*Anthoxanthum odoratum*) and crested dog's-tail (*Cynosurus cristatus*), though once constituents of seeds mixtures now, despite their conspicuous flowering heads, rarely contribute a great deal to ground cover.

Seed use: present trends

Some 400 000 ha, about 6% of the grassland and enclosed rough grazing area of England and Wales, are reseeded annually. Accurate assessments of the areas sown to particular species or mixtures are not available, but a guide to the relative importance of the various species can be obtained from MAFF statistics (MAFF, various years). Annual returns on the quantities of seed delivered for use in the United Kingdom have been used to compile Figures 1 and 2.

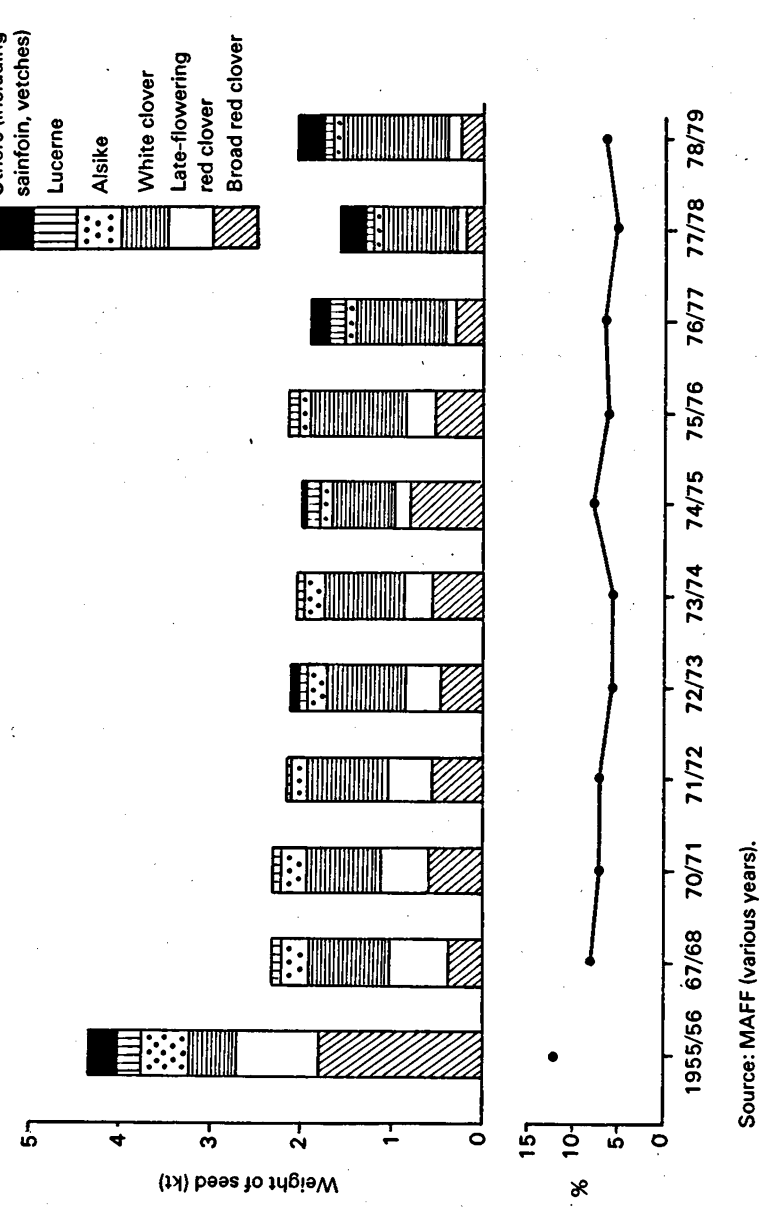
Figure 1

Relative quantities, by weight, of seed of the main grass species delivered for use in the United Kingdom: 1955/56 and 1971–1978 (from MAFF statistics)



Source: MAFF (various years).

Figure 2
Weight of forage legume seed and percentage of legumes in total grass and legume seed delivered for use in UK, 1955/56–1978/79



Source: MAFF (various years).

In using Figure 1 to assess the relative contribution of the different grass species to agricultural reseeding, some allowance must be made for seed used for amenity purposes, including most described here as 'other grasses'.

Seed rates per ha also vary between species, partly because of differences in size of seed. The indications are that over 80% of the grass and seed currently used for agricultural purposes consists of ryegrasses. Approximately two-thirds of this amount is perennial ryegrass and one-third comprises Italian and hybrid ryegrasses. The trend indicated is that the proportion of perennial ryegrass is increasing, whilst that of Italian ryegrass (including Westerwolds) is decreasing. The contribution of the hybrid ryegrasses, although small, is increasing.

Of the other grass species, timothy has now surpassed cocksfoot in relative importance and its use at about 5–7% by weight of the total grass seed used has remained fairly constant. The popularity of cocksfoot has diminished markedly. In the 1950s about 3 500 t of cocksfoot seed were supplied for use each year, which was about 12% by weight of the total grass seed, whereas the 500 t supplied in 1978 represented only about 2% of the total. The use of meadow fescue seed has also decreased over this period and it now contributes only about 1% by weight, whilst that of tall fescue has never been very great.

Proprietary seeds mixtures for medium and long duration usually contain about 7% by weight of white clover. The amount of white clover seed supplied for use over the past ten years has remained fairly constant at 800–1 000 t per annum. There has been a very marked decline in the use of red clover seed: only 300 t were supplied in 1978, compared with ten times that quantity in the late 1950s, when it featured in the more complex seeds mixtures then in use.

Changes in the relative use of different species are partly the result of fluctuations in supplies, but longer-term trends also reflect changes in consumer demands. The increased use of perennial ryegrass, relative to Italian ryegrass, may reflect a move towards leys of a longer intended duration and a departure from the practice of including Italian ryegrass in long-term leys. The steady decline in the use of seed of cocksfoot and meadow fescue is probably the result of a preference for simpler and more manageable mixtures. The decline in popularity of red clover is also a reflection of management problems, conservation difficulties, pests and diseases and the cost of seed.

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