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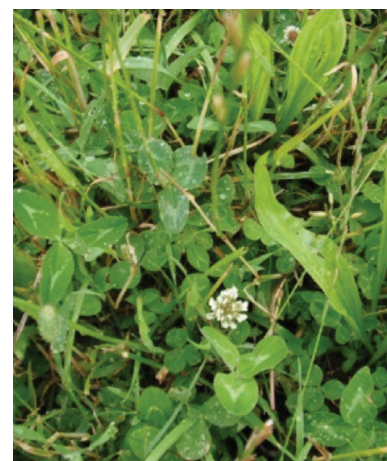
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Multi Species Grassland

There is increasing interest in the use of multi species leys that meet the needs of grassland agriculture to produce meat and milk whilst also increasing biodiversity and improving soil function. Multi species or herbal leys have a much wider range of plant types and research has shown that they may be higher yielding and contain more trace elements, minerals and medicinal components that benefit the grazing animal.

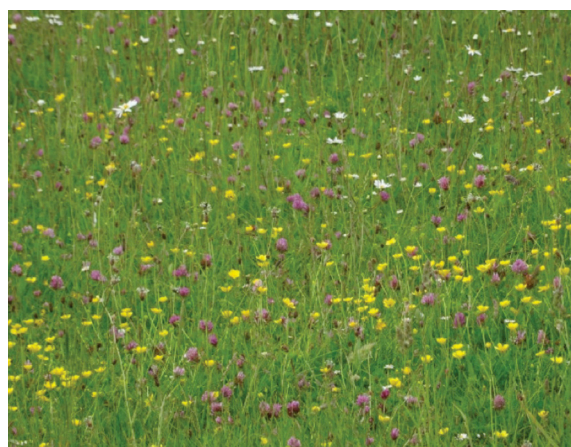
Why choose a multi species ley?

Multi species or herbal leys (MSL) can be used to help modify the mineral and trace element content of the sward and have a role to play when livestock depend upon forage as the main source of minerals and trace elements in their diet. In the IBERS PROSOIL project <http://www.prosoilproject.uk/en/> leys were able to support healthy productive livestock and stock preferred to graze the MSL compared to a ley containing ryegrass only. The multispecies ley contained ryegrass, 4 different clovers and a range of pasture species including sainfoin, chicory, yarrow, and plantain. Individual forage species have a different mineral and trace element profile and red and white clover and chicory contain more minerals and trace elements than perennial ryegrass.



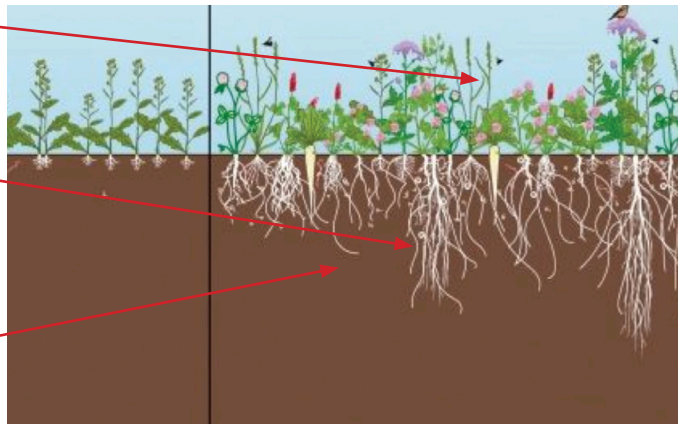
Benefits of multi-species leys

- A wider range of forage plants with additional benefits compared to mono-culture ryegrass swards
- Increased forage intake and improved livestock performance
- Providing dietary protein from legume content and fixing nitrogen
- Potential to improve mineral content in the diet
- Contains forage species suitable for your soil type- e.g. timothy on heavy soils, chicory on drought prone soils
- Diverse root structure in a multi species ley can improve uptake of plant nutrients and water; soil structure and nutrient cycling within the soil
- Deep tap roots may have a role to play in breaking up compacted layers in the soil
- Over 3 years the multi species ley on an IBERS PROSOIL project farm was also higher yielding and deeper rooting.



Greater biodiversity and ecosystem service

- Above-ground, *shade tolerant species and light loving species co-exist* giving rise to denser forage and biodiversity aids pollination and pest control
- Species rich grassland supports **arbuscular mycorrhizal fungi associations** so are able to use available resources better and adapt to competition
- Greater diversity of **decomposer organisms** below ground make resources more available and bio-control bacteria protect plants from adverse effects of soil borne pathogens
- Increasing species richness makes it possible to **sequesterate and store more carbon**



For further reading:

TECHNICAL ARTICLE:

Multi-species grassland: Is it time to consider your roots? Dr William Stiles: IBERS, Aberystwyth University

RESEARCH:

Brophy, C., Collins, R., et al, (2017). Major shifts in species' relative abundance in grassland mixtures alongside positive effects of species diversity in yield: a continental-scale experiment. *Journal of Ecology* **105** (5) pp. 1210-1222. Cadair

Marley, C.L., et al, (2013). Trace element content of chicory compared with perennial ryegrass, red clover or white clover over two harvest years. In À. Helgadóttir, A. Hopkins. (eds) *Proceedings of the 17th Symposium of the European Grassland Federation: The role of Grasslands in a Green Future, Threats and Perspectives in Less Favoured Areas. Grassland Science in Europe*, vol. 18 pp. 252-253. Cadair

PHOTO CREDITS:

IBERS; Rachel Lewis; Cotswolds Seeds

