

2023

ORGANIC CATALOGUE

50TH EDITION

The right advice...



...fast delivery



...bespoke mixtures



...what's on at FarmED?



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Once again it is a pleasure to introduce you to the new Cotswold Seeds Catalogue for 2023. What a 12 months we have had, most notably the extreme weather and political turbulence across the world, which have contributed to a stressful growing season for many. However the rain did finally come and for most it was just in time for their autumn sowings. Although accessing some seeds was a challenge at times, the shortages were few and isolated.



The recent drought conditions have brought into our minds, once again, how important it is to choose our mixtures and species carefully. Along with increased interest in legumes like red clover, even more encouraging is the uplift in the use of diverse mixtures and herbal leys. With their complexity comes not only free N and drought tolerance but also huge benefits for the soil, food quality, livestock health and the wider ecology of the landscape. This can help to build not only resilience in the ecosystem but also for our farm businesses, protecting and building our natural capital - the soil. If you want to find out more about how to get the most from your mixtures, come and have a field day at FarmED by joining one of our workshops or courses. Details on the pages, or check out www.farm-ed.co.uk

We continue to offer our fast mixing and delivery service, and have expanded our mixing plant with another new mixer, more staff and all important training, as well as an additional delivery capacity, so that we can provide the best possible service in our industry. Sam Lane, Lizzie Arnold and their eminently capable technical team are ready to take your call and discuss your requirements - however simple or complex they might be. Nothing is too much trouble so don't be afraid to pick up the phone or visit our website. We look forward to hearing from you.



Paul Totterdell
General Manager

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In the event of shortages we reserve the right to use alternative varieties in our mixes without notice. Please check website for latest updates.

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Grasses



Grassland is the single most important source of forage for British farmers.

Our climate is ideal for grass growth, making grazed grass easily the cheapest source of forage for livestock. In order to capitalise on this great natural resource, extensive research over many decades has improved UK grassland productivity and its on-farm utilisation dramatically.

However, of the 50 or so different types of grass found in the UK, only a handful are cultivated on any scale, with the most important outlined here.

Ryegrass, which comes in many different forms, is the most widely sown of all grasses. Ryegrasses have high sugars and respond to nitrogen fertiliser better than any other grass species. These two qualities have made it the most popular grass for silage over the last sixty years (since the Plough Up policy of WW2 and the advent of cheap nitrogen fertiliser).

Increased demand resulted in the development of new varieties led by Sir George Stapledon at the Aberystwyth Plant Breeding Station. Other plant breeders across Europe followed suit and, as a result, we now have a comprehensive range of varieties to select from.

How Long Do Ryegrass Leys Last?

Perennial ryegrass based leys last between three and five years reliably. On good soils they can last longer, but all eventually deteriorate as unsown species such as meadowgrasses and bents increase to make up more of the sward.

There are differences within ryegrass species and between individual varieties. Generally, late heading perennial ryegrasses such as Cancan are very persistent with good ground cover. Earlier heading ryegrasses such as AberEve, a hybrid type, offer early season growth but do not persist as well.

In all circumstances, ryegrass leys should be considered temporary and should not be routinely extended beyond the duration recommended for each mixture. Over-seeding is a good way to prolong their life (see page 8).

1 Perennial Ryegrass (*Lolium perenne*)

This is the most persistent type of ryegrass and by far the most widely sown. It yields around 13t DM per hectare which is lower than Italian ryegrass. However, it is more flexible in use because it can be grazed or cut and made into silage, haylage or hay. There are many varieties to choose from, some are very leafy with little stem and are excellent for grazing, others have much earlier, upright growth which make them well suited to silage making. Most perennial ryegrasses last around five years or more.

2 Westerwolds Ryegrass (*Lolium westerwoldicum*)

Westerwolds is the highest yielding ryegrass with similar forage quality to the well known Italian ryegrass. Westerwolds is capable of extremely fast growth and is grown largely for silage production. It is an annual, surviving for one season only. It may be sown in the autumn for production the following spring and summer, or planted in the spring for summer cropping. When sown in the spring it is ready for cutting after only 12 weeks and further growth will follow where soil moisture is plentiful.

3 Italian Ryegrass (*Lolium multiflorum*)

This is a short lived grass lasting for two years. It is very high yielding and reliably provides up to 18t DM per hectare on soils that suit it. (All ryegrasses yield less on light soils, especially in low rainfall areas.) It has a very open growth habit with fewer tillers than other grasses and is therefore better suited to cutting than grazing. Modern varieties offer high yields and good disease resistance.

4 Hybrid Ryegrass (*Lolium x boucheanum*)

This form of ryegrass is perhaps one of the best grasses available to the intensive farmer. The hybrid is a cross between the Italian and perennial forms of ryegrass and shares characteristics of both. The dominant parent determines how the variety performs in the field. Most hybrid varieties have the Italian gene dominant and the best cultivars provide the same or similar high yields as Italian ryegrass. But, as they also contain some of the persistent genes of the perennial ryegrass parent, they

last longer. The genes of the perennial ryegrass parent produce a plant with more tillers and more leaf which gives increased ground cover, making it better for grazing.

Tetraploid ryegrass

Modern plant breeding has produced tetraploid ryegrass varieties. These are available in Italian, hybrid and perennial form. With double the number of chromosomes of the standard diploid varieties their characteristics differ. Tetraploid ryegrasses are highly palatable which leads to higher voluntary intakes, of great value in seed mixtures. However, they also tiller less than diploids which means that they do not cover so much ground, leaving more soil showing. They are also less persistent. For these reasons, tetraploids should be used at low levels in long term grazing leys but can be used at higher levels in silage leys.

5 Cocksfoot (*Dactylis glomerata*)

Of all the grasses, cocksfoot has the deepest roots and, when grown on dry or free-draining soil, offers continued growth in dry weather while adding plenty of organic matter to hungry, thin soils. Cocksfoot provides 'early bite' in spring and quick recovery after grazing or cutting. It is very good for up to four years provided it is grazed hard as it will then remain leafy. However, cocksfoot is not a grass to choose for long term pasture as it tends to become clumpy, coarse and unpalatable.

6 Timothy (*Phleum pratense*)

Possibly the most important long term agricultural grass, timothy is commonly found in pasture throughout the UK. It will grow abundantly on heavy ground and, although it only has a shallow root structure, persists well on lighter land in dry years. It is very persistent and disease free. The forage it produces is acceptable to most stock and it can be made into silage and hay or grazed. Another form of timothy, smaller catstail (*Phleum bertolonii*), is shorter, less dominant and lower yielding but is a useful component of mixtures for environmental purposes.

7 Meadow Fescue (*Festuca pratensis*)

A long duration grass that is often sown with timothy to provide hay or grazing. For longer term leys it is an alternative to perennial ryegrass, especially in upland areas. It will grow on nearly all soils ranging from light, brashy types to stiff clays. It has the same growth habit as perennial ryegrass and, although more persistent and drought tolerant, is slower to establish.

Festulolium

A recent development in plant breeding has produced this natural hybridisation of ryegrass and fescue, combining the stress resistant genes of fescue with the bulky yield of ryegrass, improving drought resistance with high yield.

8 Common Bent (*Agrostis capillaris*)

This delicately flowered grass is included in the majority of agri-environmental mixes. As it has a tiny seed it is added to mixes at low levels. It is a creeping grass and, although of little agricultural value, is very common in old grasslands. It is adaptable to most soils and is drought tolerant.

9 Creeping Red Fescue (*Festuca rubra rubra*)

This common grass has creeping roots which enable it to remain green in dry times and give pasture a good bottom. Sometimes this can also be a disadvantage as it stifles some of the more delicate species and should therefore be used with caution. An alternative fescue, such as sheeps, red or slender creeping red will allow the development of finer species. However,

creeping red fescue is an inexpensive seed and can be included in simple mixtures, particularly those for low grade amenity use.

10 Meadow Foxtail (*Alopecurus pratensis*)

A tufted perennial which is widespread throughout the British Isles. It is commonly found in low-lying areas, particularly river meadows. Nutritious and palatable to stock, it is one of the first grasses to flower in the spring. When making hay, it makes a useful contribution to yields.

11 Red Fescue (*Festuca rubra commutata*)

Also known as chewings fescue, this is a fine leaved, tufted grass. It is distinguished from creeping red fescue by an absence of creeping rhizomes. It tolerates drought well and is common on well-drained, gravelly, chalky and sandy soils in the south. It forms a dense turf and is one of the main species used with bent to form lawns.

12 Sheeps Fescue (*Festuca ovina*)

The finest leaved and least aggressive fescue which allows other delicate species room to establish. It only grows to 15 – 25cm, is very hardy and can be found in all areas of the UK. Although it provides only low levels of production, the forage it produces is of reasonable quality. It will grow on most soils and tolerates low fertility situations.

13 Crested Dogtail (*Cynosurus cristatus*)

Traditionally a grazing grass, this compact, tufted perennial is found in

abundance in sheep pastures. It is not aggressive and grows well late into the season when other grasses are giving up. It grows in most areas, even on clay soils, but is found naturally in dry areas. It has good winter greenness but is inclined to produce wiry stems if not cut or grazed.

14 Smooth Stalked Meadowgrass (*Poa pratensis*)

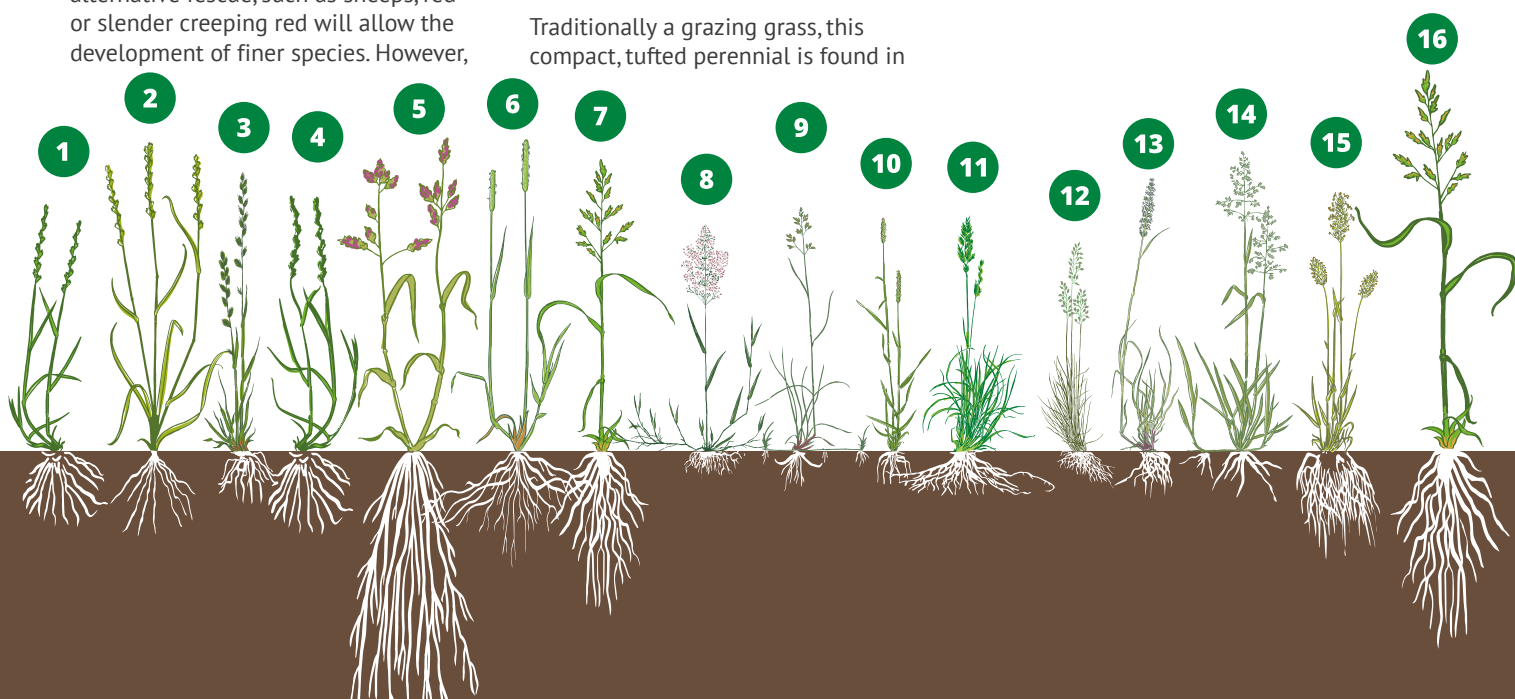
This perennial has creeping rhizomes and is very drought resistant. It is common throughout the UK, particularly on lighter soils. It should not be sown late in the autumn as it is slow to establish. Shallow sowing is also essential as the seed needs light to germinate. Early to grow in the spring, once topped or cut it tends not to re-flower so regrowth is leafy.

15 Sweet Vernal Grass (*Anthoxanthum odoratum*)

An early flowering grass, strongly scented with coumarin, often found in old pastures and meadows and sometimes included in seed mixtures to give scent to hay. It has a high proportion of stem to leaf and so is unpalatable to stock. It is an attractive grass but seed is expensive so is usually included at a low level in seed mixtures.

16 Tall Fescue (*Festuca arundinacea*)

The largest fescue which forms sizable, dense tussocks. It can grow to six feet tall, particularly on damp or wet soils. On light soils it is drought resistant but it is less palatable than meadow fescue and so is less attractive to farmers for forage production.



Legumes



Legumes provide healthy, nutritious forage and free nitrogen.

All legumes share the ability to collect nitrogen from the air and make it available in the soil for plant growth.

Legume-rich forage is therefore low cost as it requires little or no nitrogen fertiliser. Legumes are also high in protein and, because they are particularly relished by livestock, improve animal performance.

There are twelve legumes commonly used including the true clovers, the medics, sainfoin, birdsfoot trefoil and vetches.

True Clovers

1 White Clover (*Trifolium repens*)

White clover is probably one of the most valuable plants in existence and is the most popular forage legume. It differs from other clovers in having a stolon (or stem) that runs along the ground. This produces edible leaves and flower heads at low levels, making it ideal for grazing. It is long lasting and drought resistant and grows on nearly all soils. White clover has received more research funding than any other legume and so is well understood. In common with most fodder legumes, it is best grown with grasses which increase total forage yield and produce a flexible sward which can be cut or grazed.

Increase livestock productivity

White clover has a high protein content at around 20-25%. Perennial ryegrass contains about 16%. Combining these two together in the field increases the overall protein content of forage by 2-3% to around 20%.

The extra protein available from clover leys has a direct impact on live weight gains. At the same time, grazing animals consume more as they find clover very palatable. This all results in animals fattening faster compared to those on non-clover leys.

A leaf size for every purpose

There is a large range of white clovers available, classified by leaf size, with the tolerance for close grazing increasing as leaf size decreases. Medium-leaved varieties, such as AberHerald and AberDai, are good for grazing, silage or hay. Large-leaved strains, such as Alice, give slightly higher yields but are less persistent when grazed and are therefore for cutting only.

2 Red Clover (*Trifolium pratense*)

Red clover produces a third more yield than white clover but is less persistent, only lasting for between two and four years. It is normally used to produce silage, although it can be grazed occasionally.

It is an erect and dominant plant that is best sown with aggressive ryegrasses. However, it may be included in more complex seed mixes but its inclusion rate must be low to counter its aggression. It grows on nearly all soils except acidic ones where alsike clover should be used.

Oestrogen and livestock fertility

Red clover contains oestrogen which can cause concern to livestock breeders. Freshly grazed forage causes most concern but the problem can be avoided by moving breeding animals off red clover around conception. Cattle are not normally affected but ewes should be taken off red clover at least a month either side of tupping.

Varieties

Modern plant breeding programmes have increased disease and pest resistance and improved persistence with varieties such as Milvus and Global.

There are two distinct types of red clover: early and late flowering. The former starts spring growth earlier in May followed by another growth flush. The latter flowers 10-14 days later after its one main growth period.

3 Alsike Clover (*Trifolium hybridum*)

A perennial which is slower to grow in the spring than red clover and is slightly lower yielding but otherwise has similar characteristics. Good for heavy and acidic soils.

4 Crimson Clover (*Trifolium incarnatum*)

An annual which can be sown after an early harvested cereal to provide winter sheep keep. It can also be used to give soil a fertility boost in a short period of time.

5 Persian Clover (*Trifolium resupinatum*)

An annual used to provide a quick boost to soil fertility on most soil types. It provides a good forage which may be grazed or conserved.

6 Berseem Clover (*Trifolium alexandrinum*)

Also known as Egyptian Clover, this is a short term, fast growing annual clover, which quickly provides large amounts of biomass and improves soil fertility. The least winter hardy of the true clovers.

Other Key Legumes

7 Lucerne (*Medicago sativa*)

No one can really understand why so little lucerne (or alfalfa) is grown in the UK, when worldwide there are 13 million hectares cropped for forage. There are however a small number of UK farms now retrying this capable legume. Cut three times a year, it produces a protein-rich 14t DM per hectare without nitrogen fertiliser and on dry land.

Lucerne is a large plant with a similar erect growth habit to red clover. It is deep rooting, very drought resistant and has a yield high enough to be grown on its own. However it is usually sown with a companion grass such as meadow fescue or timothy which fill in the bottom of the crop.

Lucerne is useful to dairy farmers wanting to produce a high protein silage that is complementary to maize. It can be quite slow to establish and is only suitable for free-draining land that is not acidic.

8 Sainfoin (*Onobrychis viciifolia*)

Along with other forage legumes, sainfoin offers free nitrogen and extra protein content. But it has other benefits that mark it out as unique.

Sainfoin is capable of growing on the thinnest of alkaline soils, particularly the dry chalk and limestone land in the south of England. It is extremely drought-resistant and never stops growing, even in prolonged dry spells. Its root structure leaves

soil in excellent condition and sainfoin can be considered an invaluable part of a light land rotation. It penetrates soil and rock to a great depth where it seems able to extract nutrients better than any other species.

Boosting livestock production and health

Sainfoin contains tannins which aid protein absorption resulting in faster liveweight gains when compared to any other forage. This may also help reduce the amount of methane produced by ruminants, very useful from an environmental perspective. These tannins have another benefit: they mean sainfoin never causes bloat. Trials have shown that as little as 20% of sainfoin in the diet can offset the risk of bloat to near zero.

Sainfoin has a remarkable effect on wormy lambs, being a natural anthelmintic. EU projects 'Healthy Hay' and 'LegumePlus' have confirmed that feeding sainfoin disrupts the lifecycle of parasitic worms, so improving livestock performance yet further.

9 Sweet Clover (*Melilotus* spp.)

Also known as yellow blossom, this biennial which has a feed value similar to lucerne can produce huge quantities of green material in July if sown in May. It is also a very good green manure, fixing a great deal of nitrogen and adding huge amounts of organic matter to the soil.

10 Yellow Trefoil (*Medicago lupulina*)

This is a low growing, short-lived plant which sheds seeds freely and so regenerates itself. It is sometimes included in seed mixtures to give early spring growth which is unusual as most legumes are quite late to start growing.

11 Birdsfoot Trefoil (*Lotus corniculatus*)

Like sainfoin, this legume contains tannins and is best suited to poorer soils where it outperforms other legumes. Including birdsfoot trefoil in seed mixes may offer other medicinal benefits, something that is currently being researched.

12 Vetches (*Vicia sativa*)

This legume, also known as tares, when sown in the autumn or spring can provide one large crop for silage, and is excellent at out-competing weeds, fixing large amounts of nitrogen and improving soil structure.

Herbs



Deep-rooting herbal leys are becoming popular on many farms as they offer huge benefits to livestock and soil structure. Using deep-penetrating roots instead of diesel-consuming tractors, herbal leys are an alternative way to aerate soil.

Agricultural herbs also provide minerals, essential for normal, healthy animal growth. Single species grass swards are often found to be lacking in these micro-nutrients. Deep-rooting herbs are a rich source of these and are currently being researched by agricultural scientists. Many expert farmers consider that adding these valuable plants to seed mixtures is a logical step.

13 Chicory (*Chicorium intybus*)

A true 'ground breaking' plant with deep roots that can penetrate plough pans and grow well on the driest soil. This high-yielding perennial is a rich source of minerals and has anthelmintic effects. It is therefore excellent for sheep or cattle threatened by intestinal parasites.

14 Ribgrass (*Plantago lanceolata*)

This reliable perennial herb, also known as ribwort plantain, is relatively low yielding but has deep roots and is grown for its vitamin and mineral content (especially copper, calcium and selenium).

15 Yarrow (*Achillea millefolium*)

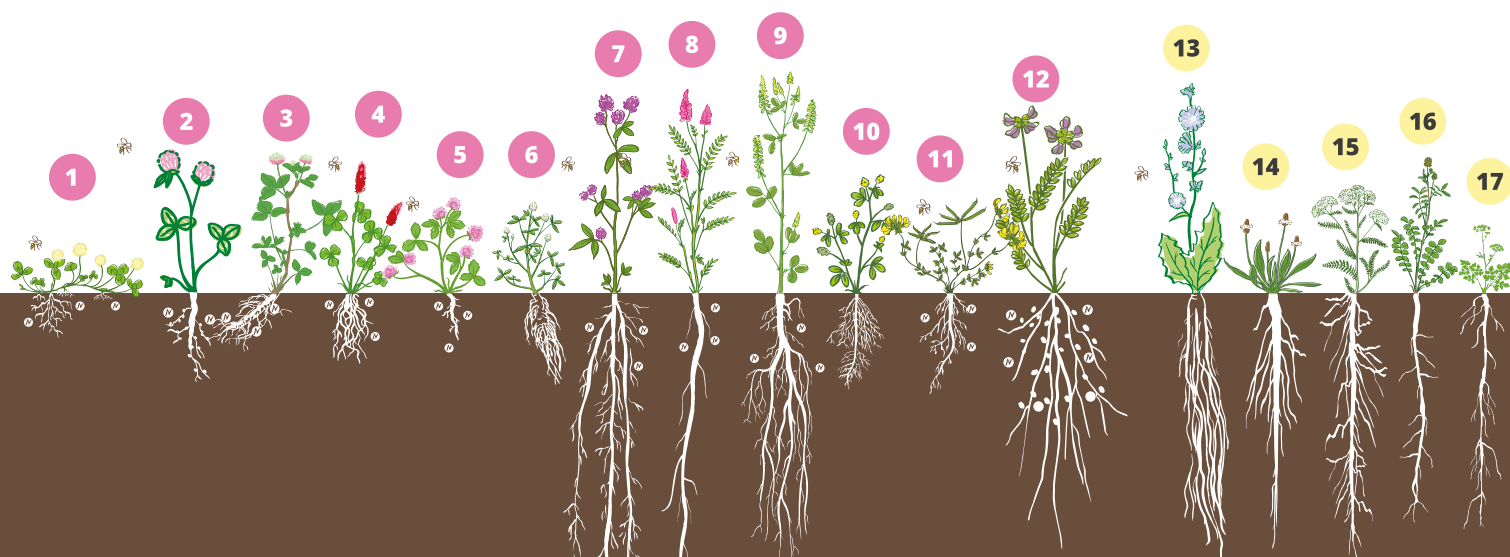
Yarrow is a deep-rooting perennial and a rich source of vitamin A.

16 Burnet (*Sanguisorba minor*)

On light, alkaline soils this is a long lived perennial forage. All parts of the plant are palatable and it is extremely drought resistant.

17 Sheeps Parsley (*Petroselinium crispum*)

A short lived but useful herb, suits lighter soil types.





Over-Seeding

Over-seeding is a simple, effective and low cost way to improve worn leys or old pasture without ploughing or reseeding.

Around a quarter of the grass seed sold in the UK is used for over-seeding. This seed is sown to improve worn or damaged leys and for patching up recent sowings which have not taken well.

To many farmers, over-seeding has advantages over the plough. It's cheap, quick and low risk, with existing grass being retained and improved without loss of forage or time.

Not all grasses and clovers are suitable for over-seeding. The best results come from the large seeded and vigorous strains of tetraploid ryegrass.

The best results come from the large seeded and vigorous strains of tetraploid ryegrass.

Of these, the Italian and hybrid forms are the quickest and best for cutting, with perennials being ideal for grazing leys.

White clovers usually give good results when sown into warm, moist soils especially where careful post-sowing grazing management is practiced.



Over-Seeding
Chipping Norton
15th September

Sowing and Growing

Suitable soils and optimum pH

Over-seeding can be beneficial on most soil types. Routine monitoring of pH levels will allow for any necessary corrections to be made.

When to sow

When soil temperatures are above 7°C, usually between March and September. Sufficient soil moisture is vital. Avoid seeding into competitive swards during May and June when excessive grass growth will smother new seedlings.

How to sow

Broadcast or shallow drill into recently grazed or cut leys. Before sowing, create a tilth using a chain or comb harrow. After sowing, roll thoroughly using a ring or flat roller, or tread in with sheep. Grass drills such as the 'Moore's' or 'Aitchinson' can be used. Cereal drills should be avoided as they can sow the grass seed too deep. Clover should never be sown deeper than 1cm. Spinners such as the 'Stocks' are good for applying small quantities of clover.

Management

Gentle grazing should be resumed around five weeks after sowing. Cattle or sheep may be employed, but sheep should not be left on for long as they will graze too close, damaging new seedlings. Although cattle exert more pressure on the ground, they do not bite so accurately or as close and are the preferred choice provided that dry ground conditions prevail.

Nutrient requirements

P and K levels should be maintained at ADAS Index 2.

Grass

Legume

Herb

Mixes: Ryegrass

Ryegrass Over-Seeding

Short Term 2-3 Years **70% ORGANIC** Code: MIXOSORG

Ideal for the short term improvement of silage leys. The mixture is very competitive and provides good early spring growth. First cut is usually taken between the second and third weeks of May.

- 7.00 kg certified TEANNA **ORG** tet. Italian ryegrass
- 3.00 kg certified ABEREVE tet. hybrid ryegrass

10.00 kg/acre - £46.15 25.00 kg/ha - £115.38

Ryegrass Over-Seeding

Longer Term 4-5 Years **70% ORGANIC** Code: MIXOSLORG

A flexible mixture for grazing or cutting fields which require longer term improvement. The grasses will provide growth from spring through the summer.

- 7.00 kg certified SOLID **ORG** tet. hybrid ryegrass
- 3.00 kg certified CALIBRA tet. perennial ryegrass

10.00 kg/acre - £53.55 25.00 kg/ha - £133.88

Ryegrass & Clover Over-Seeding

Longer Term 4-5 Years **70% ORGANIC** Code: MIXOSLCORG

A combination of ryegrasses and a half-rate of persistent clovers, this mixture can be grazed by sheep or cattle and can also be cut for silage.

- 7.00 kg certified SOLID **ORG** tet. hybrid ryegrass
- 2.00 kg certified CALIBRA tet. perennial ryegrass
- 0.80 kg certified MERWI white clover
- 0.20 kg certified S184 wild white clover

10.00 kg/acre - £65.86 25.00 kg/ha - £164.65

Additions

Bottom grass



The addition of a bottom or grazing-type ryegrass can help to fill in the sward in open leys.

Add 2kg of **70% ORG** per. ryegrass **£13.12 per acre**

Mixes: Clover and herbs

White Clover Over-Seeding

Long Term Grazing **70% ORGANIC** Code: MIXOSCORG

This persistent mixture combines medium and small leaved clovers which provide grazing for sheep or cattle. It may also be used for silage making.

- 1.40 kg certified HEBE **ORG** white clover
- 0.40 kg certified MERWI white clover
- 0.20 kg certified RIVENDEL wild white clover

2.00 kg/acre - £40.88 5.00 kg/ha - £102.20

White Clover Over-Seeding

Dairy Graze or Silage **70% ORGANIC** Code: MIXOSDCORG

Using a highly productive mixture of white clovers this mixture is ideal for dairy grazing or silage making. It can also be grazed by sheep occasionally if required.

- 1.40 kg certified HEBE **ORG** white clover
- 0.60 kg certified BARBLANCA white clover

2.00 kg/acre - £40.90 5.00 kg/ha - £102.25

Herbal Over-Seeding

Deep-Rooting Grazing **70% ORGANIC** Code: MIXHOSORG

Deep rooting herbal leys are becoming more and more popular. Grass-only swards lack protein rich clovers and mineral rich herbs. Ideally, herb-rich swards are best established by reseeding but where this is not possible this mixture can be oversown into a grass-only sward.

- 2.00 kg commercial **ORG** sainfoin
- 0.80 kg certified BONUS **ORG** red clover
- 0.70 kg certified HEBE **ORG** white clover
- 0.25 kg certified LEO birdsfoot trefoil
- 0.20 kg certified AURORA alsike clover
- 0.35 kg certified PUNA II chicory
- 0.25 kg certified ENDURANCE ribgrass
- 0.40 kg burnet
- 0.05 kg yarrow

5.00 kg/acre - £59.19 12.50 kg/ha - £147.98



Silage & Hay

Good silage comes from a good ley.

Good silage depends on many factors. These include soil fertility, growth stage when cut and how the crop is wilted and stored. But the most important factor is to select the right crop species and varieties to suit the soil type from the start.

Short term leys are beneficial in arable rotations and are a solution on the many farms with deteriorating soil structure.

Ryegrass leys produce a large amount of root mass in a short time which improves soil structure when it decays at the end of the ley's term. Deep-rooting legume-based leys are also excellent at improving soil, and have the additional benefit of fixing nitrogen.

These leys are also effective in the battle against blackgrass as a one, two or three year ley breaks the lifecycle of this weed, so benefiting subsequent crops.

Ryegrass leys

Ryegrass in all its forms (see page 4) has been the building block of short term silage leys for the last 60 years. With the various high yielding types such as westerwolds, Italian, hybrid and perennial lasting between one and five years, there is a ryegrass variety to suit every system. Highly responsive to FYM and slurry, ryegrass-based swards produce palatable silage that increases milk and meat production.

Red clover leys

With its high yields, forage quality and suitability for silage, red clover swards are playing an increasingly important role in sustainable systems of grassland farming.

At 19% crude protein, red clover's nutritional value is higher than grass' and

its high voluntary intake leads to enhanced animal performance. Thriving on most soils, its ability to 'fix' atmospheric nitrogen in the root nodules (an average of 200kg N/ha) makes it indispensable for organic farmers.

Red clover is tolerant to winter cold and, due to its deep rooting characteristic, is drought resistant. Used as a break crop it will improve soil structure and fertility while also giving excellent forage yields.

Lucerne

At 20% protein lucerne is an attractive feed. It is a good complement to maize and is leafy and low in fibre, breaking down rapidly in the rumen and passing out quickly, allowing a greater intake of forage than many other species. Lucerne has significant benefits but few people grow it believing, incorrectly, that it is a difficult crop to maintain.

Sainfoin

Sainfoin performs better than any other crop on thin, dry, calcareous and brashy soils. This remarkable plant is extremely drought resistant with its deep-penetrating roots, it fixes its own N and offers a protein-rich forage with medicinal qualities that will appeal to all types of livestock farmer.

Vetch

This is a short term annual with a high protein and mineral content. Vetch is fast to grow and can be sown alone for silage or grazing and is also suitable for mixing with cereals such as oats for whole-crop silage. Quick to establish, it can also be sown with grass and clover mixes to produce extra yield.



First Hand

Andy Dawson



Farm Type	Livestock
Location	Oxfordshire
Size	180 Acres
Soil Type	Heavy Clay
Mixes Used	Traditional Haymaker

Andy Dawson is Farm Manager at New House Farm which produces high quality beef and lamb which is sold direct to local customers. The aim is to produce the livestock on nothing but grazed grass and hay produced on the farm. Cotswold Seeds' Traditional Haymaker mix, a long term cut and graze ley combining ryegrass, meadow fescue and Timothy is integral to the business. This mix works really well on the heavy clay soils. More recently Andy has managed to overseed clover and herbs into these fields to further boost self sufficiency and protein.

The Briarland herd, based at New House Farm, is another evolution of the farm which has been in the same family for the past 100 years. The original property and land were purchased by the current owner's grandparents, Sir George and Lady Schuster, in 1919. Joanna Clarke became involved with the farm in 1984 and now runs it with her son Nicholas. The farm started as a dairy and then focused on arable cropping for a number of years, but in a drive to become more self sufficient, the focus shifted back to livestock. Andy considered various traditional cattle breeds, settling on Shorthorn cattle and 30 Llanwenog ewes. In 2015 the arable fields were sown with grass and hay mixtures.

The fields include long term grazing pasture and 40 acres of the specialist Haymaker Mix.

Almost all the cows are now home-bred, with more coming into the herd each year. The home-bred bull, Ludo, produced his first crop of calves in 2019. The flock of Llanwenogs increases each year by the addition of home-bred ewe lambs. Lambing takes place in April. Some are added to the flock, some sold as live lambs and the rest are available to buy in the farm's lamb boxes later in the year.

'We now have 70 Beef Shorthorn cows and rare breed Llanwenog sheep', explains Andy. 'This year we were thrilled that our ewe lambs won 1st prize and the flock won 3rd prize in the Llanwenog Society competition.'

The cows and sheep are 100% pasture fed. 'We don't use any concentrates or fertilisers, except for muck', says Andy. 'The cattle spend around 8 months grazing outside, only coming inside when the land becomes too wet. The sheep are outside all year except for lambing time. We make hay in July and the cows graze the aftermath. Then we put the sheep on it with rams until early December. After that it's left until we make hay again. The livestock are inside feeding on the hay until we let them out when the weather improves in April. The cows and sheep do really well on it. They don't lose any weight over winter and the weight gain is good and steady.'

The local abattoir is only 11 miles from the farm, after which the carcasses are transferred to a local butcher at Wykham Park Farm. 'Most of our meat is sold direct to an

"Timothy and meadow fescue grass species really suit this heavy clay soil,"

increasing number of customers, ready-packed in boxes', Andy explains. 'The farm also supplies local restaurants and pubs.'

'The hay crop has just got better and better as time goes on', Andy says. 'It's so palatable and rich in clover. The Timothy and meadow fescue grass species really suit this heavy clay soil and the Timothy is great for providing that high fibre 'scratch factor' which is essential for the cattle.'

For this farm it's all about growing and rearing as much as possible on the farm, being as self sufficient as possible and keeping inputs to a minimum which is a very smart approach in the current economic climate.



Red Clover & Vetch Leys

Red clover leys produce a protein rich 15t DM per hectare.

Red clover produces silage with a 2-3% higher protein content than a grass-only equivalent. This, combined with its high intake characteristics, leads to improved milk and meat production.

Red clover is drought tolerant and like many fast-growing legumes it's able to 'fix' up to 250 kg N/ha. To provide enough free nitrogen for a successful crop, legumes need to be included at high proportions in a mixed sward.

Legumes do not fix nitrogen all year round. For this natural chemistry to occur, the soil needs to be warm and, in the UK, this usually means that nitrogen fixation occurs between April and September.

With or without grass?

Red clover can be sown as a monoculture at 5-6 kg/acre for silage, but a mixture with grasses is preferable since this gives higher total forage yield and makes better silage. Mixtures of 9 kg/acre grasses and 3 kg/acre red clover are commonly sown to provide the correct balance. A pure stand of red clover generally yields lower than the grass and clover mixture at about 5-6t DM/ha.

For a one or two year ley Italian ryegrass is an excellent component, but for a duration of three years or more a mixture of hybrid and perennial ryegrass is a better option.

To allow full expression of the red clover, it is best to use tetraploid varieties of ryegrass since they tiller less densely than diploids. Their early-season ear emergence patterns should also coincide with the flowering pattern of the red clover. They are then at the same maturity stage and digestibility is similar.

What you need to know about oestrogen

There are questions over the effect that the oestrogen content of red clover may have on reducing animal fertility. There are relatively few confirmed cases and it is commonly accepted because a ewes diet may be made up solely of red clover, it is best to flush and tup ewes on leys that do not contain red clover, do not feed or graze ewes 6 weeks before or after tupping to be safe.

There is no known detrimental effects on fattening lambs, in fact they can fatten very well on this high protein crop.

Sowing and Growing

Suitable soils and optimum pH

Grows on most soils, including the drought prone. The optimum pH is 6.0-6.5 for N fixation, but red clover will tolerate 5.6.

When to sow

Sow from March until September. Red clover mixtures can be undersown in an arable crop, or after harvest provided there is enough time for the plants to develop sufficiently prior to winter cold.

On light soils in dry districts autumn sowings perform better as these will have well established roots capable of better growth in dry seasons.

How to sow

For sound establishment, a well cultivated, firm, level seedbed is needed to ensure that the small clover seeds are drilled uniformly at a shallow depth of 10-15 mm. Use a roller prior to and after sowing.

Management

The competitiveness of red clover against weeds is low at the early establishment phase particularly if sown alone.

Topping is of value although it can check red clover development to some degree. To avoid clover sickness (a combination of soil-borne sclerotinia and stem eelworm) a five year gap should be allowed between leys containing red clover.

Nutrient requirements

Red clover will fix its own N, but P and K levels must be maintained at an ADAS Index 2.

Yield potential

Forage yield in the establishment year of a spring-sown sward is circa 60% of that possible in the first harvest year which should be around 15t DM/ha.

The yield is spread over 2-3 cuts per year. Typical silage analysis has a dry matter of 30%, a crude protein of 19%, a D-value of 72 and an ME of 12MJ.

Grass

Legume

Mixes

Fast and Vast

One-Two Year Ley **70% ORGANIC**

Code: MIXFVORG

This short term ley is for those wishing to produce a large amount of forage in a short time. Yields are high, especially on rich, moist soils and the majority of crops are made into silage. In addition to red clover, the mixture also contains crimson clover and vetch which increase yield over a short period of time. It can be relied upon for one full year of production or left down for a second.

- 10.00 kg certified EBENA **ORG** vetch
- 2.00 kg certified GLOBAL red clover
- 1.00 kg certified HEUSERS OSTSAAT crimson clover
- 5.40 kg certified TEANNA **ORG** tet Italian ryegrass
- 3.60 kg certified SHAKIRA Italian ryegrass

22.00 kg/acre - £104.18 55.00 kg/ha - £260.45

Short Term Red Clover Ley

One-Two Year Ley **70% ORGANIC**

Code: MIXCGO3ORG

Two years maximum production of silage. First cut is to be expected during the third week of May.

- 3.00 kg certified GLOBAL red clover
- 8.40 kg certified TEANNA **ORG** Italian ryegrass
- 0.60 kg certified SHAKIRA Italian ryegrass

12.00 kg/acre - £75.48 30.00 kg/ha - £188.70

Longer Term Red Clover Ley

Three Year Ley **70% ORGANIC**

Code: MIXCGO6ORG

Persistent and high yielding, this ley is tried, tested and highly successful. It is usually cut in the third or fourth week of May and incorporates the best red clover with hybrid and perennial ryegrasses, giving yields nearly as high as our two year red clover ley.

- 3.00 kg certified DIPLOMAT red clover
- 5.20 kg certified SOLID **ORG** tet. hybrid ryegrass
- 3.20 kg certified TEANNA **ORG** tet. Italian ryegrass
- 0.60 kg certified ABEREVE tet. hybrid ryegrass

12.00 kg/acre - £79.98 30.00 kg/ha - £199.95

Westerwold and Vetch

Six Month Ley **70% ORGANIC**

Code: MIXWWVORG

A good balance between a vigorous grass and a fast growing short term legume, this mixture can be used to provide a very large cut or early spring grazing. As westerwolds will regrow after cutting, this ley can be left for a further cut or grazed if required. To minimise the risk of ryegrass seed being shed, it is advisable to cut before the seed heads are visible

- 18.90 kg certified EBENA **ORG** vetch
- 8.10 kg certified POLLANUM westerwolds ryegrass

27.00 kg/acre - £97.60 67.50 kg/ha - £244.00



Red Clover Ley
Gloucestershire
30th May

Additions



Vetch

Vetch may be added to red clover and ryegrass mixes to increase yield in the first growing season.

Add 10kg of **70% ORG** vetch

£36.15 per acre

Sainfoin

High yielding silage or hay crop with occasional grazing for dry, alkaline soils. Bloat free and a natural anthelmintic.

Sowing and Growing

Suitable soils and optimum pH

Performs best on free-draining alkaline soils. Do not sow on land below 6.2pH.

When to sow

Always sow sainfoin into warm soils in the spring.

How to sow

Sainfoin seed can be undersown to spring cereals or direct drilled in April or May at around 30mm. If undersown, the cereal sowing rate should be reduced to 40 kg/acre.

Management

A sainfoin ley should be managed carefully to maximise performance. Sainfoin produces a cut of silage in early June or hay may be taken if preferred. Sainfoin should be cut during early flowering but this may be delayed without much loss of feed value if needed. Regrowth is less after the first cut and may be cut again or grazed. Grazing should be light and quick to avoid damage to the plant. Never set stock it or it will become thin.

Nutrient requirements

Sainfoin requires no N or P but K levels must be maintained at ADAS Index 2 to safeguard yields.

Yield potential

14t DM/ha annually. Typical silage analysis has a dry matter of 14%, a crude protein of 18%, a D-value of 62 and an ME of 9.5 MJ. However, sainfoin produces better results than this analysis indicates as its high tannin content protects the protein in the rumen so increasing absorption and producing higher liveweight gains.

There are few crops quite like sainfoin. It is a high-yielding, drought-resistant plant which needs no nitrogen fertiliser and little phosphate. It won't cause bloat, is a natural anthelmintic and, with rumen-protected protein, produces top quality meat and milk.

Sainfoin has deep-penetrating roots making it highly suitable for the dry, alkaline soils of England. In the future plants, like sainfoin, that can provide high quality feed without the need for fertilisers or increasingly expensive and resistant anthelmintics are of great value.

It grows best on stony brash or chalks, but does not like wet soils where red clover should be chosen in preference.

Sainfoin

Four Year Cut or Graze **70% ORGANIC** Code: MIXSAIORG

On the right ground this is a superb crop. Lasting for four years or more, it is extremely valuable for finishing lambs.

- 24.50 kg commercial **ORG** sainfoin
- 10.50 kg commercial sainfoin

35.00 kg/acre - £158.56 87.50 kg/ha - £396.40

Companion Grass Option

Four Year Mixture **70% ORGANIC** Code: MIXLUCORG

We recommend the use of a non-competitive grass mixture to be sown with sainfoin. The grass fills the base of the crop, increasing yield and soluble sugars to improve silage fermentation. The grass seed element should be surface sown and rolled in.

- 2.10 kg certified **TORÉD ORG** meadow fescue
- 0.90 kg certified **WINNETOU** timothy

3.00 kg/acre - £32.79 7.50 kg/ha - £81.98

Sainfoin & Lucerne Field Day

A practical workshop

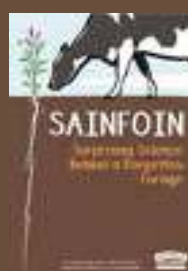


- For farmers wanting protein from dry land
- Understand more about these N fixing legumes
- How to choose between sainfoin and lucerne
- Seeds, sowing, establishment and management

For dates & to book online www.farm-ed.co.uk

From £60 per person

Groups welcome



For more information on sainfoin, please download our growers guide - **Sainfoin - Surprising science behind a forgotten forage**.

Visit cotswoldseeds.com to download your copy.

Grass

Legume

Lucerne

Reliable yields for silage on dry gravels.

Lucerne is highly productive and reliably provides three to four cuts of protein-rich silage annually, even through drought, and lasts for around five years. Lucerne must be grown on naturally alkaline and free draining soils or gravel.



Hay time
Oxfordshire
10th June



Sowing and Growing

Suitable soils and optimum pH

Gravels and free-draining soils with a pH 6.5-8.

When to sow

Lucerne must be sown into warm soils and is often undersown to a spring cereal crop as it is slow to establish. Reducing the cereal seed rate by a third and cutting it as arable or wholecrop silage will give lucerne the best start. Alternatively, sow in the summer following an early-harvested cereal such as winter barley. The middle of August is the latest date for sowing if a good seed bed can be made and there is sufficient moisture available.

How to sow

The seed of lucerne is small and needs to be sown to a maximum depth of 15mm otherwise a patchy, thin crop will result. Roll before and after sowing to help achieve fast germination and weed competitiveness. Sowing with a companion grass mix helps out-compete weeds enabling lucerne leys to be left down for longer.

Management

Following a direct spring sowing a light cut may be taken in mid August. From a summer sowing or an undersowing there will be little to cut in the first year. Leave until the following spring when it should be cut for the first time in early June at almost full flowering. Thereafter cut at the bud stage as this provides the ideal balance between yield and quality. Two or three further cuts follow at six week intervals. After cutting, the crop needs wilting so that it contains less than 70% moisture when made into baled silage. Hard or frequent grazing should be avoided especially during its first year as the crop will not tolerate it. Lucerne can also cause bloat when grazed.

Nutrient requirements

Although lucerne requires no N once established it can be beneficial to apply FYM or slurry to the seedbed, especially for an autumn sowing to promote rapid plant development. P and K requirements are higher than for grass and should be maintained at ADAS Index 2 to maintain yields.

Yield and nutrient data

14t DM/ha annually. A well fermented lucerne/grass silage has a dry matter of 30%, a crude protein of 20%, a D-value of 60 and an ME of 9.7MJ.

Culture



To Fix N

The use of culture to provide the correct type of bacteria to initiate nodulation is considered essential. Mix with seed on the day of sowing.

Sachet for 25 kg of seed

£10.00 plus VAT

Lucerne

Four Year Cutting Crop **70% ORGANIC** Code: MIXLORG

Lucerne should be sown as a four or five year temporary ley. It may also be made into hay for the equine market where it is known as alfalfa.

The use of culture to initiate N fixing nodulation is required. Mix with seed on the day of sowing. Sachet for 25kg of seed costs £10 +VAT. Short supply - please call for availability.

- 5.60 kg certified PLATO **ORG** lucerne
- 2.40 kg certified MILKY-MAX lucerne

8.00 kg/acre - £106.92

20.00 kg/ha - £267.30

Companion Grass Option

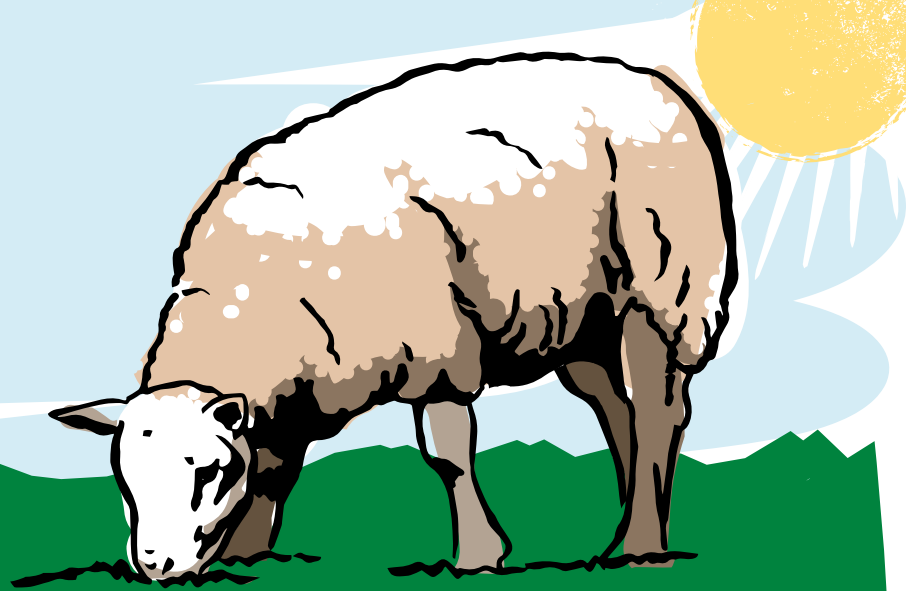
Four Year Mixture **70% ORGANIC** Code: MIXLUCORG

We recommend the use of a non-competitive grass mixture to be sown with sainfoin. The grass fills the base of the crop, increasing yield and soluble sugars to improve silage fermentation. The grass seed element should be surface sown and rolled in.

- 2.10 kg certified TORED **ORG** meadow fescue
- 0.90 kg certified WINNETOU timothy

3.00 kg/acre - £32.79

7.50 kg/ha - £81.98



Grazing

Seed mixtures to suit the UK's many grazing systems.

Whether you want grass to grow in the uplands or the lowlands, on dry or wet soil, on acidic, neutral or alkaline soils, we can provide a seed mix to suit.

The number of species in our grazing mixtures varies from one to eighteen, providing a huge range of choices to meet the requirements of the diverse grazing systems on farms across the country.

Pioneers of grassland management such as Andre Pochon, Robert H Elliot and William Lamin developed complex mixtures of grasses and legumes for grazing and cutting. In recent times however, intensively bred strains of ryegrass in temporary leys have been very popular on conventional farms, but organic farmers have generally favoured more complex mixes.

Single species versus diversity

While some have good reason to grow single species swards, sowing mixtures of grasses and clovers offers real benefits. A single grass alone will often be lower yielding and more vulnerable to failure or poor performance due to pests, disease or the effects of unusual weather. A diverse mixture is therefore more reliable and preferable to sowing a single species.

This is especially important for leys which are expected to last for more than one year. Higher yields from mixtures of grasses and clovers are due to better seasonal distribution of growth: grasses give high yields during May and June, clovers produce theirs in July and August. Critically, it is the contribution of both grass and clover that provides the optimum balance between bulk yield and feed value. Grasses tend to have higher annual yields, but are lower in protein than clovers. Animals grow faster and 'do' better on a mix of clover and grass.

Alternatives to ryegrass

Timothy and meadow fescue are generally considered to be the most palatable of the permanent grasses. Although they may lack some of the digestibility associated with ryegrass, they are consumed readily by the grazing animal. In addition, when grown with red and white clovers, the forage produced will be higher in protein, more digestible and largely self-sufficient. They also offer impressive yields. These grasses are excellent in mixtures and a very good alternative in circumstances where ryegrass is not suitable, such as on low fertility and/or wet soils or in the uplands.

Drought resistant swards

In recent summers extended dry periods have put a real strain on livestock farmers battling to ensure they have sufficient forage year round. Grass species such as cocksfoot and clover continue to produce even when there has been no rain for weeks, and many of our mixes are designed with these conditions in mind.

Herbal Leys: feeding health

The most diverse grazing mix we offer is the herbal ley which contains a huge range of grasses, herbs and clovers. It produces well-balanced forage, not just large volumes of grass, and thrives in dry conditions. Species such as cocksfoot, red clover and chicory are deep-rooting soil improvers with the ability to unlock mineral resources from deep in the soil profile.

Herbs are richer in minerals than grasses or clovers and including them in seed mixes is an effective way of improving forage to ensure good animal health and performance.

Yield and longevity

A newly sown ley on good soil, with plenty of moisture will significantly out-yield older swards. Over time, deterioration of any seed mix is inevitable as unsown, less nutritious species invade. Mixes containing late heading ryegrasses (such as Cancan) have greater persistence, so reducing the need to reseed frequently.



First Hand

George Young



Farm Type	Agroecological Mixed
Location	Essex
Size	1200 acres arable, 150 acres conservation grazing
Soil Type	London Clay
Mixes Used	Herbal Leys & Legume & Herb Rich Swards

'I describe myself as an agroecological mixed farmer,' says George Young. 'Farming with nature is one of the key things I want to do here on the farm, utilising nature's toolkit rather than machines and chemicals.'

Nine years ago, Fobbing Farm was growing wheat, OSR and peas in a standard six course rotation but George wanted to change the cropping system, revitalise the soil, build resilience, improve the ecology to encourage beneficial insects and get rid of problematic weeds. He began introducing large scale herbal leys into his arable rotation.

George has sown 250 acres of herbal leys over the past 4 years and felt it was important to incorporate ruminant livestock. He chose cows and now values them immensely. 'We've had to get the infrastructure right but we've worked hard with semi-permanent fencing and I feel confident about rolling out herbal leys across the rest of the farm. After four years of a diverse mix of herbs, legumes and grasses grazed by the cows I can mine the

nutrition in the soil for three years. The leys really are the base for me being able to farm in a sustainable and regenerative way and they look and smell stunning too.'

They are established with a direct drill - a New Zealand style cross slot. 'We don't sow deep and we roll twice for maximum seed to soil contact. We've had great success even with hit and miss rainfall.' The combination of leys and livestock enables different types of farming with different income streams, explains George. 'I can produce meat, grow fruit and nuts, or heritage grains, even high value market garden vegetables!'. The eleven varieties of ancient grains have deep roots to tap into the rich nutrition of the soil. Fobbing Farm now has a mill room, featuring Vermont granite and sells direct to bakers.

George has also introduced agroforestry, planting a plethora of tree species - quince, plums, cherries, pears, walnuts and cobnuts. He's trialling apricots, nectarines and almonds on frost-free fields. Belts of timber run up the middle of the farm, with birch on the outside. Willow is great medicinally for livestock and can be coppiced for wood chip and compost. Belts of trees reduce erosion during the early stages of any arable crops.

'From a livestock management perspective it's exciting. I wanted to make sure my livestock can graze on all the interesting parts of the farm. Trees provided them with shade and protection from rain.'

'We are seeing really exciting changes after just 4 years and I can't wait to see what this farm will be like in twenty years time. It's a generational project.'

So what next? The farm is currently in organic conversion and George says he has 'fallen in love with ecology.'

'Ecologically, it's tremendous. I saw my first dung beetle on the farm 18 months ago and now there are at least 10 species. They are key ecological builders, eating slug eggs, feeding birds and mammals. You simply don't get them without a diverse ley because you'd be using synthetic wormers which kill dung beetles. The herbal leys are doing a vital job for pollinators too. They contain around 10 flowering plants, are building life into the soil, encouraging small mammals, larger mammals and birds of prey to live on the farm.'



Drought Resistant Leys

Drought can devastate forage crop yield. Avoid the severe consequences by choosing deep-rooting mixtures.

Sowing and Growing

Suitable soils and optimum pH

These mixes are designed for light, free-draining land with a pH of 5.6-7.

When to sow

Sow between March and early September. Avoid late autumn sowing when mixtures contain clovers.

How to sow

Sow into a fine, firm seedbed at around 10mm. Seed can be broadcast on a windless day, harrowed lightly and rolled. Alternatively, seed may be drilled in two directions into a well consolidated (rolled) seedbed.

Management

These leys depend upon developing a large number of deep roots. To achieve this these leys should be allowed to accumulate a lot of leaf and should then be heavily grazed (rotationally) before being allowed to repeat the cycle. Set stocking is less effective. Leys containing cocksfoot should be grazed frequently and cut young to ensure that growth remains leafy.

Nutrient requirements

Manure or slurry can increase early spring growth. P and K levels should be maintained at ADAS Index 2.

Yield potential

Cocksfoot-based leys: 12t DM/ha

Ryegrass-based leys on dry, light land: 7t DM/ha

Ryegrass-based leys with rainfall: 12t DM/ha

The dry conditions suffered by many in recent years demonstrates the need for grass mixtures which continue to yield even during prolonged spells of drought. By combining deep-rooting grasses and clovers with differing growth habits, it is possible to provide summer grazing from dry soils.

Recent weather has shown that ryegrass does not thrive in dry conditions. However there are other grasses, such as meadow fescue, timothy and cocksfoot, which can be relied upon. These species can offer great benefits over ryegrass to those in challenging conditions. If you farm on dry land then these leys are well worth considering.

Growing grass on droughty land

Pioneers of grassland farming, Robert H Elliot and William Lamin, developed complex ley mixtures comprising deep-rooting species such as cocksfoot, chicory and red clover.

Then, as now, some farmers were reluctant to use too much cocksfoot (see page 5), as it was inclined to grow coarse and clumpy. However, this is only a problem when seed is sown too thinly, allowing the cocksfoot too much freedom, or when it is allowed to become too mature when making hay.

Elliot observed first hand at Clifton Park that his deep-rooting four year ley provided good quality forage and improved soil so much that he was able to grow subsequent cash crops for four years with little fertiliser input. Lamin, who used a simplified version of Elliot's mix, observed "...it's like throwing money away to put ryegrass on dry land."

It's worth noting that although ryegrass is vulnerable to drought and is one of the first grasses to stop growing, it does recover very quickly when rain comes and can make a valuable contribution after prolonged dry periods.

Mixes

Grass

Legume

Herb

Cholderton

Four Year Grazing/Cutting **70% ORGANIC** Code: MIXCMORG

A ley developed on the thin, chalk soils of Wiltshire which provides good growth for early grazing or cutting. It regrows powerfully through the spring and into the summer, giving an outstanding second cut yield. The ley tolerates dry conditions due to the deep roots of cocksfoot and red clover.

- 2.00 kg certified SOLID **ORG** tet. hybrid ryegrass
- 2.00 kg certified NIFTY **ORG** tet perennial ryegrass
- 1.10 kg certified DIWAN **ORG** tet. perennial ryegrass
- 2.60 kg certified TWYMAX tet. perennial ryegrass
- 2.00 kg certified COMER **ORG** timothy
- 2.00 kg certified DONATA **ORG** cocksfoot
- 0.50 kg certified DIPLOMAT red clover
- 0.35 kg certified BARBLANCA white clover
- 0.35 kg certified MERWI white clover
- 0.10 kg certified S184 wild white clover

13.00 kg/acre - £97.19

32.50 kg/ha - £242.98

Chicory Grazing Ley

Three - Four Years **70% ORGANIC** Code: MIXLFORG

This high-protein, mineral-rich, drought resistant mixture combines chicory, clover and a small quantity of ryegrass. It will last for three to four years. A mixture of chicory and clover can be effectively used to fatten lambs. Live weight gains are around 250 grams per day and chicory is a valuable natural anthelmintic.

- 1.65 kg certified PUNA II chicory
- 0.20 kg certified ENDURANCE ribgrass
- 1.50 kg certified BONUS **ORG** red clover
- 0.60 kg certified HEBE **ORG** white clover
- 0.10 kg certified MERWI white clover
- 2.45 kg certified SOLID **ORG** tet. hybrid ryegrass

6.50 kg/acre - £78.25

16.25 kg/ha - £195.63

Long Lasting Upland

Dual Purpose Mix **70% ORGANIC** Code: MIXCGO5ORG

This ryegrass-free mix is very long lasting and will tolerate harsh upland conditions. It is very palatable and is best when rotationally grazed to allow a period of recovery and regrowth. It can also be cut for silage or hay with the best quality forage coming from swards which are cut before heading

- 5.75 kg certified TORED **ORG** meadow fescue
- 1.75 kg certified SENU meadow fescue
- 3.00 kg certified COMER **ORG** timothy
- 1.00 kg certified ALTASWEDE late flowering red clover
- 0.40 kg certified MERWI white clover
- 0.40 kg certified ABERSWAN white clover
- 0.20 kg certified S184 wild white clover

12.50 kg/acre - £135.46

31.25 kg/ha - £338.65

'Lamins' Drought Resistant

Four Year Ley **70% ORGANIC**

Code: MIXCGO4ORG

This is a traditional humus building, drought resistant ley which is ideal for continuous grazing. This 'Clifton Park' type mixture will provide good quality forage which is high in protein. It starts early in the spring and will grow well through the summer and into the autumn. All the species included are drought tolerant.

- 5.75 kg certified DONATA **ORG** cocksfoot
- 2.10 kg certified COMER **ORG** timothy
- 0.55 kg certified TORED **ORG** meadow fescue
- 0.75 kg certified SENU meadow fescue
- 1.00 kg certified DIPLOMAT red clover
- 0.50 kg certified MERWI white clover
- 0.35 kg certified ABERSWAN white clover
- 0.50 kg certified PUNA II chicory
- 0.25 kg burnet
- 0.10 kg certified ENDURANCE ribgrass
- 0.10 kg sheeps parsley
- 0.05 kg yarrow

12.00 kg/acre - £116.00

30.00 kg/ha - £290.00

Additions



Cover Crops:

- 3kg **70% ORGANIC** westerwolds
- 3kg **70% ORGANIC** Italian ryegrass
- 10kg **70% ORGANIC** vetches

£11.37 per acre**£13.17 per acre****£36.15 per acre**

Grazing Chicory

FarmED

12th August

First Hand

Bradwell & Macaroni



Farm Type	Arable & Dairy
Location	Cotswolds
Size	4500 Acres
Soil Type	Cotswold Brash
Mixes Used	Bespoke Herbal Leys

Two neighbouring Cotswold farmers have gone into partnership in an innovative, joint venture with a Cornish dairy farmer and herbal leys are driving the business.

The Bradwell Grove Estate, near Burford, totals 3000 acres. Macaroni Farm, tenanted by Sam Phillips and his father, comprises just over 1950 acres. Charles Hunter-Smart manages the Bradwell Grove Estate for the Heyworth family, and explains how the joint venture came about.

‘We’ve farmed organically since 2005, utilising the single farm payment, but in 2016-2017 the reduction of BPS was going to have a big impact. One member of staff was retiring and I was getting older too. We had a simple rotation of three cereal crops and two fertility-building crops. We had a hundred Limousin-Angus cross suckler cows and were running a joint venture sheep business with about a thousand ewes. At that point all our grass crops were multispecies herbal leys which we’d been growing for 6-7 years.

‘Sam Phillips, a young, fourth generation farmer and our immediate neighbour, was exploring the idea behind the new System Cameleon inter-row drill & hoe which looked to suit organic cropping. We got chatting and did some exploratory visits together to look at the drill on a farm in Suffolk. We realised neither of us could afford the drill on our own. Out of that conversation, I thought there might be an opportunity to share a little more than just the machine. Sam is full of enthusiasm, passionate about organic farming and food. I saw it as a way of providing economies of scale, pooling ideas and provide a seamless transition for the Heyworth family to enable me to step back and do a bit less.’

That was the start. Two years into the arable joint venture, Sam and Charles started talking about livestock, as Sam explains:

‘The herbal ley element within our rotation is the fertility building stage but we could only afford to keep the leys in the ground for two years because we needed to get back to a cash crop. So we wanted to make sure that when the land was in a herbal ley we were still making money. We were adamant we wanted to be profitable without subsidy. The traditional suckler beef herd wasn’t making much profit. We were set-stocking and housing for 6-7 months, bedding on organic straw at £90 a ton and feeding baled silage with the need for lots of day to day labour. So we decided to look at an alternative dairy enterprise that would tick all the boxes in terms of soil, biodiversity and profitability. Because the margin on the dairy is much better than beef or sheep we could afford to stretch the rotation to four years of herbal ley.’

The next major hurdle was securing a contract for the milk. The solution was to create a three way venture - The Cotswold Mobile Dairy. Dave Sanders, based near Bodmin in Cornwall providing the milk contract and cows. Bradwell Grove and Macaroni Farm between them providing the land and infrastructure.

‘The cows are drawn through the parlour because they know on the other side is fresh grass. Every time they get moved they know they are going on to something new, palatable and good. In a conventional fixed milking system they are drawn through with feed concentrates but we don’t have to do that.’

Dairyman, Rob Richmond, now manages 350 cows for the Bradwell Grove and Macaroni Farm partnership, along with 100 heifers and 100 heifer calves. Rob explains the choice of a mobile dairy. 'Because of the size of the land in the Bradwell Grove/Macaroni joint venture we didn't want a fixed dairy - we wanted to spread as much fertility over the 4,500 acres as we could. So we looked at a mobile milking system. We have a 24:48, Herringbone Waikato Milking system on a tri-axle flatbed trailer which follows the cows around the grazing platform.'

The cows are milked in the morning, then go on to fresh pasture. They graze for the main part of the day and in the late part of the afternoon they move to a night paddock, then back round to the parlour. After milking the next morning the parlour moves to the next block.

'The cows are drawn through the parlour because they know on the other side is fresh grass,' says Charles. 'Every time they get moved they know they are going on to something new, palatable and good. In a conventional fixed milking system they are drawn through with feed concentrates but we don't have to do that.'

'The herbal ley has a crucial role in our rotation. The dairy is so reliant on the leys,' Sam explains. 'Legumes fix nitrogen, improving soil fertility and the deep roots make the soil structure ideal for subsequent cereal cropping. I think its better with livestock. Their manure fertilises the soil and is broken down by worms, bugs and beetles. It creates a soil fertility cycle that enables our farming system to work.'

The four year herbal ley system is a big advantage to help control black grass. 'Two years of grazing the crop and then putting it back into arable cropping was not enough to kill the black grass seeds, but if we can bury them for four years a lot of that seed will become unviable. So having the cows and being able to run the herbal leys for four years is a great bonus.'

Sam explains how the leys are managed. 'I go to Cotswold Seeds in late autumn and discuss our seed mix and what seed rate to use etc. Typically, we use the previous mix as a template. We look at what worked and what didn't. Sam Lane, the Technical Manager at Cotswold, then formulates a mix with a high percentage of sainfoin, as well as clovers and trefoils for maximum nitrogen fixation. Our mix includes a diverse range of grasses to hold the sward together, such as Timothy, red fescue, a little ryegrass and plenty of deep rooting cocksfoot. The thin brashy soil is prone to drying up in the summer, so the mix needs to include drought tolerant herbs like the mineral rich chicory and plantain. We try to mimic the plant diversity of nature, with all the benefits to the soil. Every farm is different and every farmer has ways they want to work - Cotswold Seeds are brilliant at accommodating that.'

The Cameleon Drill, which kicked off the JV journey, offers consistent establishment of herbal leys. 'We undersow into a spring cereal, typically barley or oats. We don't reduce the seed rate for the cereal nurse crop. We like to roll it to make sure there is good seed to soil consolidation. Weather and dry spells are not good for spring sowing and that's a risk we take. But we feel this is the best way to establish a herbal ley. There's big excitement when it appears. It's so rewarding.'



Leys established with Cameleon Drill

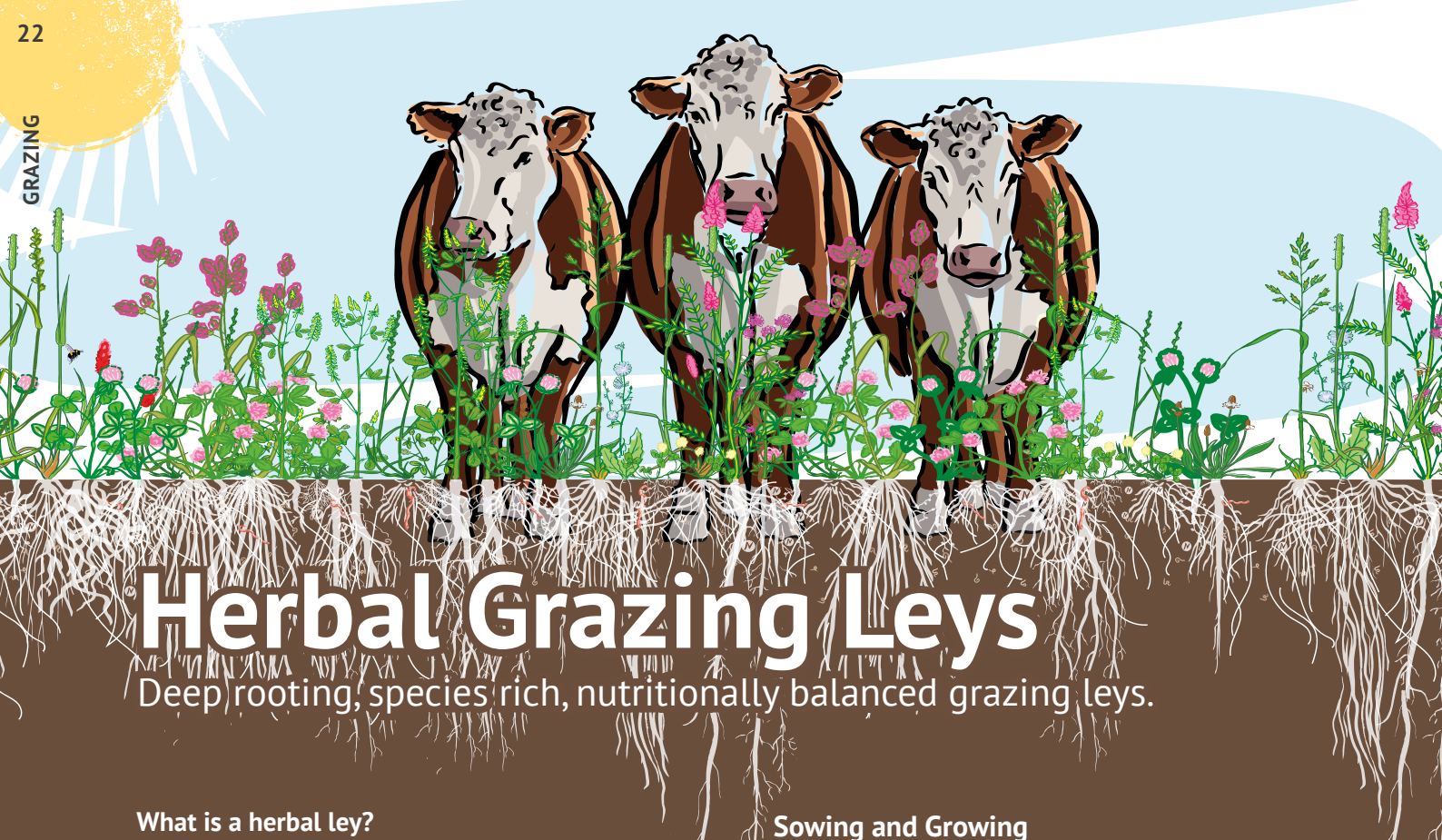
The herbal leys remain for four years, then the land is cultivated for cereals for four years.

'We have a blueprint of an eight year rotation,' says Sam. The dairy has 4 blocks and the arable has 4 blocks. Every year a new block rotates into dairy. We are building the soil, then using that, but instead of just being sustainable - building and using, building and using - we are building, using a little bit, building more.'

Sam says that setting up the business during the Covid pandemic was stressful but they are now reaping the rewards.

'When we were set-stocking and grazing tighter we felt we were taking more out of the ground than we were putting back. Now we are seeing the benefits of mob grazing and out wintering all stock. It's amazing how the land has transformed in just a year. By grazing a third, trampling a third, leaving a third, the land is recovering and regenerating.'

'The herbal ley mix will change again next year,' says Sam. 'Conservation or regen-ag is about observation and trying different things. If you are learning from mistakes you are progressing. Every day is a school day.'



Herbal Grazing Leys

Deep rooting, species rich, nutritionally balanced grazing leys.

What is a herbal ley?

A herbal ley is a complex seed mixture of grasses, legumes and herbs, which bring a range of benefits to forage, livestock health and soil fertility. Herbal leys can often include a mixture of up to 17 species, depending on the aims of the ley, location and soil type.

They have traditionally been used to build soil fertility and structure in an arable rotation, acting as a minimal input, four year break crop, but they bring significant benefits not only to the soil health, but also to the health and diet of livestock and the wider environment.

The deep rooting species in the mixture add drought tolerance when grown on thin soils or during dry summers, remaining green and palatable for much longer than other forage mixtures. They work especially well on dry, light land where ryegrass leys prone to burning up in mid summer.

The mixture of species also ensures a longer growing season and certain species included in the mixtures such as sainfoin, chicory and birdsfoot trefoil, have anthelmintic properties, which helps to reduce the worm burden in livestock, creating less reliance on artificial wormers.

The deep rooting herbs, notably chicory, mine the soil for important nutrients and minerals, making them available to the grazing livestock and lowering the need for bought in concentrates. The high legume content fixes plenty of nitrogen and increases the protein content to around 18-20%.

Newman Turner, one of the great advocates of herbal leys, described these mixes as his 'fertiliser merchant, food manufacturer and vet all in one'.



Mob Grazing Herbal Ley
Cotswolds
12th July

Sowing and Growing

Suitable soils and optimum pH

Ideally suited to medium and light soil types with a pH of 6.0-8.0.

When to sow

Sow from March until early September.

How to sow

Sow into a fine, firm seedbed after an application of FYM. These leys contain many small-seeded species and are best broadcast as this leads to more even plant distribution. Once sown, roll immediately to ensure good soil-to-seed contact.

Management

Grazed lightly while the crop is establishing. Once growing well, rotationally graze allowing at least 28 days or more for recovery and regrowth. Using electric fencing, ration an area per day (e.g. about one acre for 100 cattle) but adjust this area to match growth and stock requirements. Over-grazing will damage chicory crowns. Surplus production from Herbal Leys can be made into silage.

Nutrient requirements

P and K should be maintained at ADAS Index 2.

Yield potential

Yields of 13t DM/ha for the Herbal Ley and 10t DM/ha for the Chicory Ley (page 19) should be achieved.

Herbal Ley Field Day

Establishment & Management



- A comprehensive day for mixed farmers
- Will equip you to choose and grow herbal leys
- From seed choice to sowing and establishment
- Includes visit to mob grazed herbal ley demo

For dates & to book online www.farm-ed.co.uk

From £50 per person

Groups welcome

Mixes

Grass

Legume

Herb

Simple Herbal Ley

Four Year Grazing/Cutting **70% ORGANIC**

Code: MIX23ORG

Our Simple Herbal Ley is designed for farmers who may be considering experimenting with a diverse seed mixture that's more complex than ryegrass and clover mixes. Our Simple Herbal Ley contains ryegrass, cocksfoot, timothy, meadow fescue and legumes, red clover, white clover, and mineral rich forage herbs including chicory and ribgrass.

- 1.20 kg certified LOFA festulolium
- 2.00 kg certified SOLID **ORG** tet. hybrid ryegrass
- 3.00 kg certified NIFTY **ORG** tet. perennial ryegrass
- 1.50 kg certified COMER **ORG** timothy
- 1.50 kg certified DONATA **ORG** cocksfoot
- 0.80 kg certified SENU meadow fescue
- 0.50 kg certified MERWI white clover
- 0.40 kg certified BARBLANCA white clover
- 0.40 kg certified BONUS **ORG** red clover
- 0.20 kg certified AURORA alsike clover
- 0.30 kg certified PUNA II chicory
- 0.20 kg certified ENDURANCE ribgrass

12.00 kg/acre - £99.23 30.00 kg/ha - £248.08

Herbal Over-Seeding

Deep-Rooting Herbal Ley **70% ORGANIC** Code: MIXHOSORG

Deep rooting herbal leys are becoming more and more popular. Grass-only swards lack protein rich clovers and mineral rich herbs. Ideally, herb-rich swards are best established by reseeding but where this is not possible this mixture can be oversown into a grass-only sward.

- 2.00 kg commercial **ORG** sainfoin
- 0.80 kg certified BONUS **ORG** red clover
- 0.70 kg certified HEBE **ORG** white clover
- 0.25 kg certified LEO birdsfoot trefoil
- 0.20 kg certified AURORA alsike clover
- 0.35 kg certified PUNA II chicory
- 0.25 kg certified ENDURANCE ribgrass
- 0.40 kg burnet
- 0.05 kg yarrow

5.00 kg/acre - £59.19 12.5 kg/ha - £147.98



Interested in herbal leys? Learn more about their benefits and how they've stood the test of time in our 32 page farmers guide - **The Herbal Ley Farming System**

Visit cotswoldseeds.com to download your copy.

Herbal Grazing Ley

Four Year Drought Resistant **70% ORGANIC**

Code: MIXHDORG

Based on Newman Turner's original recommendations, this all round mixture provides wholesome and substantial forage for grazing and occasional cutting. It can provide grazing for early turnout and continues to produce forage right through the summer and autumn. Containing deep-rooting ingredients, this ley not only improves soil structure but also draws up essential vitamins and minerals for the ruminant animal.

- 1.50 kg certified DONATA **ORG** cocksfoot
- 1.30 kg certified SOLID **ORG** tet. hybrid ryegrass
- 1.30 kg certified TODDINGTON **ORG** perennial ryegrass
- 1.20 kg certified COMER **ORG** timothy
- 1.00 kg certified TORED **ORG** meadow fescue
- 1.00 kg certified LOFA festulolium
- 2.00 kg commercial **ORG** sainfoin
- 0.60 kg certified BONUS **ORG** red clover
- 0.30 kg certified MERWI white clover
- 0.20 kg certified HEBE **ORG** white clover
- 0.20 kg commercial sweet clover
- 0.30 kg certified MILKY-MAX lucerne
- 0.25 kg certified AURORA alsike clover
- 0.30 kg certified LEO birdsfoot trefoil
- 0.50 kg certified PUNA II chicory
- 0.25 kg certified ENDURANCE ribgrass
- 0.65 kg burnet
- 0.15 kg sheeps parsley
- 0.05 kg yarrow

13.00 kg/acre - £119.57 32.50 kg/ha - £298.93

Herbal Heavy Land Ley

For Medium and Clay Soils **70% ORGANIC**

Code: MIX22ORG

Still deep rooting but without cocksfoot this grazing mix suits heavier soils and lasts up to five years.

- 3.55 kg certified SOLID **ORG** tet. hybrid ryegrass
- 2.40 kg certified COMER **ORG** timothy
- 1.00 kg certified TORED **ORG** meadow fescue
- 1.45 kg certified SENU meadow fescue
- 1.15 kg certified TODDINGTON **ORG** perennial ryegrass
- 1.00 kg certified BONUS **ORG** red clover
- 0.40 kg certified AURORA alsike clover
- 0.60 kg certified MERWI white clover
- 0.50 kg certified PUNA II chicory
- 0.25 kg certified ENDURANCE ribgrass
- 0.70 kg burnet

13.00 kg/acre - £121.90 32.50 kg/ha - £304.75



Chewing it Over

Sam Lane, our Technical Man reminds us that we need a resilient farming system that can withstand the vagaries of economic and climate change.

It's with some relief that we wave goodbye to 2022. It's certainly been a year of challenges! In terms of growing conditions the spring season gave way to prolonged dry weather, hose pipe bans and a serious summer drought, causing major issues for spring planted seed mixtures.

These extreme summer temperatures were certainly a shock. During my time spent travelling in Australia 10 years ago, I vividly remember driving just outside the Blue Mountains and noticed the temperature gauge on the car reading 41.5 degrees, never for one minute considering that in the future we may have summer days reaching 40 degrees in the UK!

However, we must try to remain positive. The rains did eventually come as we got to the autumn season, just in time to get most autumn sown leys, winter cereals and forage crops in the ground in some form or other. Despite some late sowings the mild autumn has helped many of these plantings establish reasonably well and we hope for more balanced weather in 2023.

As we look ahead to next year, the economic outlook both at home and on the international stage looks equally challenging. We seem to be in a period of alarmist news stories, with the next catastrophe just over the hill, and through all this we are reminded time and time again how fragile our food system can be. However, with all the challenges we currently face, comes the opportunity to adapt our farming practices where possible and endeavour to keep moving forward.

In my role as advisor I'm lucky to speak to a range of farmers, landowners and growers throughout the year, all of whom are producing food under a range of banners - from conventional systems to organic, Biodynamics to Regen Ag. It's becoming clearer and clearer to me that while these labels are useful, truly open-minded and progressive farmers can consider, discuss and learn from all of these strands to create a really sustainable system.

The older agricultural books describe in detail the use of various legume species to boost soil fertility, helping to reduce our reliance on bought in inputs.

Red clover can be used to power short term grass leys, while also fixing up to 200 kgs per ha N for the next crop. A silage mix containing a robust level of red clover can provide 3 cuts of high protein forage each year.

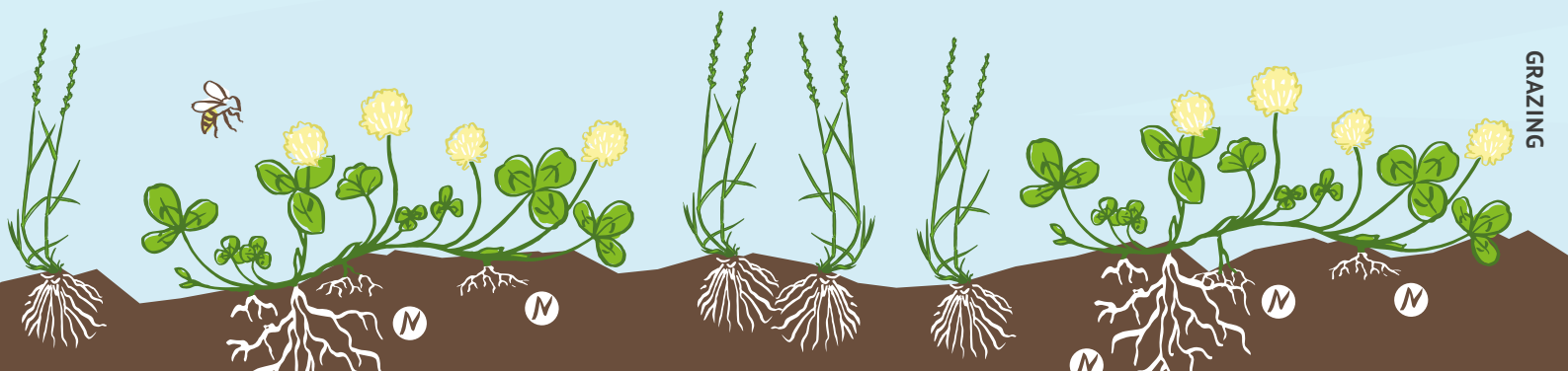
Similarly large perennial forage legumes like lucerne can provide 4 cuts of high quality silage every year. On the right soils lucerne can last for 5 years and has the added benefit of great drought tolerance.

“travelling in Australia 10 years ago, I vividly remember the temperature gauge on the car reading 41.5 degrees, never for one minute considering summer days reaching 40 degrees in the UK!”

Shorter term legumes like vetch and crimson clover can be included in forage mixtures or used as a standalone crop to add a short, sharp fertility boost to tired soils.

We have also seen some arable growers pushing the boundaries by introducing white clover into cereal rotations by growing a 'Living Mulch'. The idea being to grow a legume alongside a cash crop to help feed it with natural nitrogen as the crop progresses.

While this method has shown many positive results such as reduced inputs and a lower weed burden, it has also highlighted plenty of challenges. However, this and other legume-based farming systems are a clear way forward.



Pochon White Clover Leys

Good traditional leys that will produce grass for years to come.

These mixtures are ideal for those looking to graze and cut a medium to long term ley. High levels of white clover make these self-sufficient in nitrogen. Of course, the benefits derived from clover are proportional to the amount in the sward, both in terms of animal nutrition and nitrogen fixation.

If using for silage or hay, the ley should be shut up at least six weeks before cutting, with the best combination of yield and quality silage coming from grasses that are just beginning to produce a seedhead and clovers in bud or early flower. A first cut of silage is ready during late May. These leys will provide a second cut but are more usually grazed.

Sowing and Growing

Suitable soils and optimum pH

These ryegrass-based leys grow on all but the most waterlogged soils. They are best suited to a pH of 6.0 and above, but will grow down to pH 5.6. Clover content may fall in acidic conditions.

When to sow

Sow from March until early September.

How to sow

Sow into a fine, firm seedbed after an application of FYM. These leys contain small seeds and are best broadcast as this leads to more even plant distribution. Once sown, roll immediately.

Management

As the main period of grass growth is May and June, a cut of silage or hay can be taken during this time to remove surplus growth. Additionally, where grass growth exceeds grazing demand, further cuts can be taken. Ideally, these leys should be rotationally grazed with an interval of 3-5 weeks for recovery.

Nutrient requirements

These leys should be largely self-sufficient in N but FYM or slurry can be applied if a cut is to be taken. P and K levels should be maintained at ADAS Index 2.

Yield potential

12t DM/ha should be achieved.

Pochon Dairy

Two-Four Year Ley **70% ORGANIC**

Code: MIXCGO2ORG

Designed specifically for the dairy farmer wishing to produce silage and high quality grazing. This ley has an open growth habit allowing the white clover plenty of space to exploit. Including Aberystwyth ryegrass and white clovers, this mixture is principally intended to be grazed by the dairy cow. For sheep grazing use 'Pochon' Persistent.

- 2.80 kg certified SOLID **ORG** hybrid ryegrass
- 2.10 kg certified CALIBRA tet. perennial ryegrass
- 2.80 kg certified NIFTY **ORG** per. ryegrass
- 2.80 kg certified TODDINGTON **ORG** perennial ryegrass
- 0.30 kg certified ABERSWANI white clover
- 0.60 kg certified MERWI white clover
- 0.60 kg certified BARBLANCA white clover

12.00 kg/acre - £89.56 30.00 kg/ha - £223.90

Pochon Persistent

Long Term Grazing Ley **70% ORGANIC** Code: MIXCGO1ORG

For over forty years Pochon has proven very successful on a wide range of conventional and organic farms. This mix is suitable for taking a cut of silage, but is mainly for rotational grazing. Including the best strains of high yielding white clovers from Aberystwyth, it gives excellent mid-summer production.

- 5.60 kg certified TODDINGTON **ORG** perennial ryegrass
- 2.80 kg certified NIFTY **ORG** perennial ryegrass
- 2.10 kg certified TWYMAX tet. perennial ryegrass
- 0.70 kg certified MERWI white clover
- 0.60 kg certified ABERPEARL white clover
- 0.20 kg certified S184 wild white clover

12.00 kg/acre - £93.87 30.00 kg/ha - £234.68

Additions



Heavy Land:

2kg **70% ORGANIC** timothy

£19.48 per acre

Light land:

2kg **70% ORGANIC** cocksfoot

£13.51 per acre

Red clover:

1kg **70% ORGANIC** red clover

£11.00 per acre

Cover crop:

3kg **70% ORGANIC** westerwolds

£11.37 per acre

Anti bloat:

5kg **70% ORGANIC** sainfoin

£22.36 per acre



Root Crops

Fodder crops provide essential forage when grass is restricted. They are also a vital break crop.

Once sown, brassicas quickly produce a fodder crop. Adding muck to the crop makes it as productive as possible. This then feeds a larger number of livestock, so returning more dung to the soil, making the most of a very beneficial cycle. Once the decision has been made to break up a ley or pasture, many farmers sow a brassica fodder crop. These are not troubled by grass pests or diseases and thrive on the nitrates released by the decaying sward.

Reduce feed costs

These short-term catch crops are sown in late spring or summer to provide valuable home-grown fodder for buffer feeding dairy cows or finishing lambs in autumn or winter, when other sources of forage are limited. Turnips and rape grow quickly, needing just 10 weeks. Kale, swede and hardy turnip take a bit longer but are much more winter hardy and excellent for late-winter grazing. All are highly beneficial break crops which reduce grassland weeds and pest attacks.

Summer feed for dairy cows

Stubble turnips are palatable, energy-rich and offer dairy farmers the opportunity to prevent a feed shortage over the summer. To allow the rumen to adjust, cows should be introduced gradually to the crop for the first few days.

Lamb finishing

Lambs can be successfully fattened on fodder brassicas, gaining around 100-150 grams per day. The addition of a small quantity of hay, barley or concentrates is beneficial. Root crops, especially when grown on free-draining soils, are excellent for late autumn and winter use.

Sowing and Growing

Suitable soils and optimum pH

These crops will grow on most soil types provided they are well-textured and can give a fine tilth when cultivated. However, it is important to sow on well-drained, dry ground for winter grazing. Optimum pH 6.2.

When to sow

Fast growing root crops can be sown anytime from spring through till early autumn providing soil moisture is sufficient.

The slower growing crops such as the Hardy Root Mix, maincrop turnip, swede, fodder beet and kale should be sown in late spring (April – June).

How to sow

Root crops (except fodder beet) can be direct drilled with a Moore Uni-Drill (or similar). A good dose of slurry or FYM should be applied before sowing if possible.

Management

Electric fencing allows the crop to be fed at a controlled rate and should be long enough to give all stock access to the crop face. By doing this there is also less wastage through trampling. Ideally, a grass 'runback' should be provided for animals to lie on.

Nutrient requirements

These crops use 70kg N, 50kg P and 50kg K per hectare and therefore a dressing of farmyard manure prior to sowing is recommended.

Yield potential

Species	DM/Ha	CP (%)	D-Value
Stubble turnip	4.5t	17	69
Maincrop turnip	6.0t	9	80
Swede	8.5t	11	82
Fodder beet	14.0t	12	78
Kale	9.0t	17	68
Forage rape	4.5t	19	65
Hybrid - Interval	5-8t	19	68
Hybrid - Redstart	6-8t	19	68

Mixes

Early Fold Root Mix

Fast Growing **70% ORGANIC**

Code: MIXEFORG

This is a fast growing mixture capable of producing up to 45 tonnes per hectare with a dry matter content of 10% in approximately 10-12 weeks. Three acres feeds 100 sheep (complete diet) or 50 cows (quarter of diet) for a month.

- 1.75 kg certified DYNAMO **ORG** stubble turnip
- 0.75 kg certified HOBSON forage rape

2.50 kg/acre - £22.75

6.25 kg/ha - £56.88

Hardy Root Mix

Longer Term **NON ORGANIC**

Code: MIXHR

Combining different brassicas together in a mixture is often beneficial as the crop is more reliable and higher yielding. This longer term mixture needs 20 weeks or more to produce its full yield, but will provide winter hardy keep until February or March. Three acres feeds 150 sheep (complete diet) or 75 cows (quarter of diet) for a month. **Needs derogation.**

- 0.65 kg certified PINFOLD kale
- 0.65 kg certified GREEN GLOBE hardy turnip
- 0.20 kg certified GOWRIE swede

1.50 kg/acre - £30.96

3.75 kg/ha - £77.40



Straights

Brassica

Forage Rape **NON ORGANIC**

This protein rich green forage can be ready to graze in as little as 12 weeks and is ideal for fattening lambs. The Hobson variety is mildew resistant and front tolerant. **Needs derogation.**

Hobson (4.00 kg/acre)**£4.90 per kg**Stubble Turnip **ORGANIC**

Turnips are grown in most areas of the UK as a highly digestible catch crop, ready within 10-12 weeks from sowing.

Dynamo (2.00 kg/acre)**£10.90 per kg**Kale **NON ORGANIC**

Kale is high yielding, protein rich and winter hardy. Usually grazed between September and March, depending on sowing time. Full crop ready in 20 weeks. **Needs derogation.**

Pinfold (2.00 kg/acre)**£17.15 per kg****Maris Kestrel (2.00 kg/acre)****£19.60 per kg**Hybrid Rape/Kale **NON ORGANIC**

Introduced to capitalise on the benefits of both rape and kale, this fodder crop is ready in 12 weeks from drilling. Many farmers favour this crop as it can offer good regrowth. Choose redstart for winter hardiness and strong regrowth or interval for good yields and high palatability. **Needs derogation.**

Redstart (3.00 kg/acre)**£8.73 per kg****Interval (3.00 kg/acre)****£5.70 per kg**Maincrop Turnip **NON ORGANIC**

This is the hardier type of turnip which requires 20 weeks growth and is suitable for grazing late into the winter. Hardy turnips yield around a third more than stubble turnips. **Needs derogation.**

Green Globe (2.00 kg/acre)**£11.40 per kg**

Swede

This crop is ideally suited to cooler, wetter parts of the north and west of Britain. For stock or pot. **Needs derogation.**

Gowrie (1.50 kg/acre)**£62.00 per kg**

For more information on specific varieties visit
cotswoldseeds.com/knowledgehub.asp



Green Manures

Protecting and enhancing our soils.

Summer Sown Mixes

Summer green manures are planted from late spring onwards on bare ground and are incorporated before the sowing of a winter cash crop. A good summer green manure will be ready for turning-in after only 8-10 weeks. These crops give good leaf canopy cover to block out light, suppressing weed growth.

These green manures can be sown on their own or as an understory to a main crop and last between two and six months. As legumes will only fix nitrogen when the soil is above 8°C they are effective between April and August.

Overwinter Mixes

Winter green manures such as rye or westerwolds scavenge excess nitrogen from previous crops which prevents it leaching over the winter. The nitrogen held within the green manure crop is then released when it is incorporated.

Legumes like vetch can be used for winter cover and, provided that these are sown by September, can fix up to 200kg N/ha for use by the following cash crop. The canopies of these plants also protect against soil erosion.

Longer Term Leys

Slower growing perennial legumes such as red and white clover are used to add nitrogen to the soil over a long period.

Red clover fixes upwards of 200kg N/ha which is released rapidly after incorporation. To delay the release of nitrogen, clover is mixed with grass which is higher in carbon and acts like a sponge, holding the nitrogen for longer. This is especially important for subsequent autumn-sown crops where the nitrogen demand is highest six or seven months after the green manure crop.

Sowing and Growing

Suitable soils and optimum pH

These will grow on most soil types with a pH above 5.6.

When to sow

Sow summer mixes in warm soil between May and July. If undersowing, seed should be broadcast from mid March in damp conditions before the host crop canopy closes in. Cover for the winter should be sown by late September although rye and vetch can be sown into October.

How to sow

Rye and vetch seeds can be drilled at up to 25mm. All other mixes should be drilled or broadcast at no more than 10mm.

Management

Summer green manures will be ready for incorporation after 8-10 weeks normally at the onset of flowering. Winter green manures can be incorporated in April or May. Westerwolds ryegrass will regrow after cutting so can be left through the summer for further cutting or mulching. To minimise the risk of ryegrass seed being shed, cut before the seed heads are visible.

Yield potential

The amount of N fixed by legumes depends on the success of the green manure. Generally, a reasonable crop can fix over of 100kg N/ha from a spring or summer sowing. Rye can scavenge and hold 90% of soil N, westerwolds about 70% and vetch and red clover can fix upwards of 200kg N/ha if left to grow.



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- Why use green manures and which ones to choose
- Seed mixtures to suit different soils and systems
- Learn how to establish, manage and terminate them

For dates & to book online www.farm-ed.co.uk

From £60 per person

Groups welcome

Brassica

Legume

Herb

Cereal

Grass

Others

Short term mixes

Summer Quick Fix

Nitrogen Boost **70% ORGANIC**

Code: MIXSQFORG

The purpose of this mixture is to build soil N in a short time. It is a fast-growing, annual mixture that is at its best when sown into warm soils.

- 1.20 kg certified CABRI **ORG** mustard
- 0.60 kg certified IKARUS **ORG** fodder radish
- 1.50 kg certified DIOGENE **ORG** crimson clover
- 0.50 kg commercial sweet clover
- 0.40 kg certified BONUS **ORG** red clover
- 1.30 kg certified AXI berseem clover
- 0.50 kg certified MARAL persian clover

6.00 kg/acre - £46.90

15.00 kg/ha - £117.25

Winter Cover Crop

Diverse Winter Mix **70% ORGANIC**

Code: MIXCCLORG

Sown in August, just after the combine, this super quick mix covers the soil, fixes N while the weather is warm and picks up N that would otherwise be washed out of the soil. This mix will stay green and continue to grow until severe frosts.

- 1.10 kg certified TEANNA **ORG** tet Italian ryegrass
- 0.95 kg certified HEUSERS OSTSAAT **ORG** crimson clover
- 1.00 kg certified CABRI **ORG** mustard
- 0.85 kg certified IRIS fodder radish
- 0.25 kg certified NECTAR **ORG** phacelia
- 0.10 kg certified BONUS **ORG** red clover
- 0.40 kg certified STRUCTURATOR tillage radish
- 0.10 kg certified PASAT **ORG** persian clover
- 0.15 kg certified AURORA alsike clover
- 0.10 kg certified MARAL persian clover

5.00 kg/acre - £33.56

12.50 kg/ha - £83.90

Yellow Trefoil/White Clover

Intercrop Mixture **70% ORGANIC**

Code: MIXICORG

This mixture will fill the base of a main crop brassica or cereal without affecting its yield. It reduces weed competition, adds organic matter and fixes nitrogen. Trefoil rarely interferes with harvest as it is low growing. This strong growth can eliminate weeds, especially if left in for a second year.

- 0.90 kg certified VIRGO PAJBIERG yellow trefoil
- 2.10 kg certified RIVENDEL **ORG** small white clover

3.00 kg/acre - £53.76

7.50 kg/ha - £134.40

Over winter mixes

Rye/Vetch

Overwinter Mix **70% ORGANIC**

Code: MIXRYEVORG

Growing a N lifter and fixer together is a reliable way of improving soils over the winter. An excellent weed suppressor. Available from September.

- 52.50 kg certified ELEGO **ORG** rye
- 22.50 kg certified JOSE common vetch

75.00 kg/acre - £134.63

187.50 kg/ha - £336.58

Ryegrass/Vetch

Overwinter Mix **70% ORGANIC**

Code: MIXWWVORG

An economical, effective option for overwinter soil management. Adds large amounts of N and organic matter.

- 18.90 kg certified EBENA **ORG** vetch
- 8.10 kg certified POLLANUM westerwold ryegrass

27.00 kg/acre - £97.60

67.50 kg/ha - £244.00

Longer term mixes

Fertility Builder

One - Two Year Mix **70% ORGANIC**

Code: MIXFBORG

A grass and clover mix is the most effective green manure of all for improving soil fertility and structure. To realise its full potential it should be grown for at least one full year before incorporation.

- 2.20 kg certified GLOBAL red clover
- 0.50 kg certified BONUS **ORG** red clover
- 0.50 kg certified MERWI white clover
- 5.80 kg certified SOLID **ORG** tet. hybrid ryegrass

9.00 kg/acre - £70.85

22.50 kg/ha - £177.13

Humus Builder

Two - Four Year Mix **70% ORGANIC**

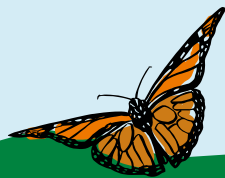
Code: MIXHBORG

This mix utilises species with very strong tap roots for huge improvements to soil structure and organic matter levels, ideal on light or dry land.

- 2.25 kg certified BONUS **ORG** red clover
- 1.75 kg certified DIPLOMAT red clover
- 0.50 kg certified PUNA II chicory
- 3.00 kg certified DONATA **ORG** cocksfoot

7.50 kg/acre - £73.40

18.75 kg/ha - £183.50



Environmental

Stewardship seed mixtures.

Environmental seed mixtures are one way of protecting and enhancing wildlife across farmland. Many existing entry level & higher level stewardship schemes are still providing important resources and habitats. The more recent Countryside Stewardship scheme offers a further range of options, some based on the OELS/HLS prescriptions such as LHR SOP4.

The mixtures below are common environmental stewardship prescriptions for OELS, HLS and Countryside Stewardship, all options can be tailored to better suit the location, soil type and aim of the scheme.

OP2 One Year Winter Bird Food

OELS/HLS/CSS Codes: OP2

Survival Mixture **70% ORGANIC**

Code: MIXSMORG

This mixture should be sited on field margins or next to hedges or woodland. It contains a range of species which provides food for birds, including finches and sparrows, over one winter while also feeding small mammals.

- 20% certified ORG buckwheat
- 20% certified ORG triticale
- 15% certified ORG mustard
- 15% certified ORG fodder radish
- 10% red millet
- 10% white millet
- 5% certified gold of pleasure
- 2.60% certified brown mustard
- 2.40% certified linseed

5.00 kg/acre 12.50 kg/ha

£4.66 per kg

OP2 Two Year Wild Bird Seed

OELS/HLS/CSS Codes: OP2

Farmland Bird Feeder **70% ORGANIC** Code: MIXWBSSORG

This mix includes cereal and quinoa for the first winter, while kale provides late seed in the second winter. It is a good food source for wild birds and is reliable if managed properly, as well as being more economical.

- 70% ORG spring wheat (supplied separately)
- 12% certified kale
- 4% red millet
- 4% white millet
- 2% certified hybrid rape/kale
- 2% certified mustard
- 2% game fodder radish
- 2% certified linseed
- 2% fennel

20.00 kg/acre 50.00 kg/ha

£4.05 per kg

Legume & Herb Rich Sward (OP4)

OELS/HLS/CSS Codes: OK21

Whole Field Option **70% ORGANIC**

Code: MIXOP4ORG

This all round mixture promotes biodiversity, creates habitats, produces pollen and nectar and is also a superb soil conditioner and top quality forage. It contains deep rooting species which are drought resistant and also draws up micronutrients from deep within the soil.

- 14.5% certified ORG cocksfoot
- 14.5% certified ORG tet. perennial ryegrass
- 10% certified ORG timothy
- 10.1% certified festulolium
- 7.5% certified ORG meadow fescue
- 17% commercial ORG sainfoin
- 5.5% certified ORG red clover
- 3.3% certified birdsfoot trefoil
- 3% certified alsike clover
- 2% certified white clover
- 1% commercial sweet clover
- 1% certified ORG white clover
- 4% certified chicory
- 4.5% burnet
- 2% certified ribgrass
- 0.1% yarrow

10.00 kg/acre 25.00 kg/ha

£8.99 per kg

Retrieve Mix

Fast and Economical **70% ORGANIC** Code: MIXRETORG

For a summer sowing after a failed spring crop nothing beats rape and mustard. It's quick, reliable and it works.

- 50% certified ORG mustard
- 20% certified ORG fodder radish
- 25% certified forage rape
- 5% certified hybrid rape/kale

6.00 kg/acre 15.00 kg/ha

£5.58 per kg

Pollinators & Predators

How to attract beneficial insects



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- Managing and maintaining habitats for insects
- Farm walk to see arable and horticultural habitats

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Groups welcome

Grass

Legume

Herb

Cereal

Wildflower

Others

Brassica

Pollen & Nectar

Legume and flower margins.

Mixes

AB8 Nectar Stewardship Mix

ELS/HLS/CSS Codes: EC24, EE1, EE2, EE3, EE9, EF1, HE10, AB8

Long Term Pollen & Nectar **13% ORGANIC** Code: MIXNSORG

An economical pollen & nectar source satisfying the AB8 stewardship criteria of 90% grasses and 10% flowering species. These mixes are relatively slow to establish, after the first year there are flowers for insects, seeds for birds and cover for mammals. **Needs derogation.**

- 5% certified common bentgrass
- 10% certified **ORG** creeping red fescue
- 15% certified smooth stalked meadowgrass
- 30% certified red fescue
- 30% certified sheeps fescue
- 3% commercial **ORG** sainfoin
- 2% certified birdsfoot trefoil
- 1% native red clover
- 0.65% lesser knapweed
- 0.65% wild carrot
- 0.60% salad burnet
- 0.50% ox-eye daisy
- 0.50% certified late flowering red clover
- 0.20% cornflower
- 0.20% corn marigold
- 0.20% yarrow forage herb
- 0.15% self heal
- 0.15% red campion
- 0.15% ribwort plantain
- 0.05% ladys bedstraw

8.00 kg/acre 20.00 kg/ha

£12.73 per kg

Floristically Enhanced AB8 Field Margin

ELS/HLS/CSS Codes: EF1, EE12, AB8

Long Term Pollen & Nectar **1.5% ORGANIC** Code: MIXAB820ORG

Containing 7 grass species and over 10 true wildflower species. This provides a long-term, diverse pollen and nectar source, with the inclusion of the suggested 2kgs per hectare wildflower component. **Needs derogation.**

- 5% certified common bentgrass
- 5% certified smaller catstail
- 10% certified crested dogstail
- 10% certified slender creeping red fescue
- 15% certified smooth stalked meadowgrass
- 20% certified sheeps fescue
- 25% certified red fescue
- 1.50% commercial **ORG** sainfoin
- 1.05% wild carrot
- 1.05% salad burnet
- 1% ox-eye daisy
- 1% lesser knapweed
- 1% native red clover
- 1% self heal
- 0.50% musk mallow
- 0.50% red campion
- 0.50% ribwort plantain
- 0.30% white campion
- 0.20% yarrow
- 0.20% ladys bedstraw
- 0.20% meadow buttercup

8.00 kg/acre 20.00 kg/ha

£23.57 per kg

Pollen & Nectar Flower

OELS/HLS Codes: OE1, OE2, OE3, OE9

Grass and Legume Margin **70% ORGANIC** Code: MIXPNORG

The mixture below is designed for ELS Pollen & Nectar margins but can also be used for HLS. It is best on light soil and lasts for around four years. Excellent for bumblebees and butterflies.

- 5% certified sheeps fescue
- 5% certified smooth stalked meadowgrass
- 6.75% certified red/chewings fescue
- 29% certified **ORG** meadow fescue
- 28.25% certified **ORG** creeping red fescue
- 7.5% commercial **ORG** sainfoin
- 6.25% certified late flowering red clover
- 5.25% certified **ORG** vetch
- 4.5% certified birdsfoot trefoil
- 2.5% certified alsike clover

8.00 kg/acre 20.00 kg/ha

£9.39 per kg

The Operation Pollinator

OELS/HLS/CSS Codes: OF4

Just Legumes **70% ORGANIC**

Code: MIXPNJLORG

Approximately 50% of all ELS Pollen & Nectar areas have been sown with the Operation Pollinator seed mix. It is a mixture of legumes without grasses to provide a flower-rich area. This mix works well on heavy soil types where sown grasses can become dominant.

- 42% certified **ORG** red clover
- 24% commercial **ORG** sainfoin
- 12.20% certified birdsfoot trefoil
- 16% certified alsike clover
- 4% certified **ORG** crimson clover
- 1% ox-eye daisy
- 0.60% lesser knapweed
- 0.20% musk mallow

5.00 kg/acre 12.50 kg/ha

£13.16 per kg

First Hand

Dr Sarah Beynon



Farm Type	Wildlife & Conservation
Location	West Wales
Size	200 acres
Soil Type	Varied neutral and acidic soils from peat to clay with some free draining and stony
Mixes Used	Herbal Ley, Bespoke Wildflower Legume Pollinator Mixtures

‘Although I’m a farmer’s daughter I always had a passion for wildlife and over the years, studying to become an entomologist, I realised just how important insects and other invertebrates are,’ says Dr Sarah Beynon, who bought what is now The Bug Farm from her cousins.

‘The soils here are varied neutral and acidic soils from peat to clay with some free-draining stony fields,’ Sarah explains. Traditionally this is assigned a low economic value by farmers but we look at it in a different way. It’s our most rich and valuable land because it’s not been possible to grow intensive crops reliably over the years, meaning habitats have not been destroyed.’ Building on this, Sarah turned it into a nature reserve where she manages her own herd of pedigree Welsh Black Cattle for conservation grazing. ‘Their dung fertilises the land and provides a home for dung beetles and other insects, which in turn provide food for birds and mammals.’

The Bug Farm grows wheat and barley alongside other arable crops such as linseed, buckwheat and wild bird seed mixes, all from Cotswold Seeds, but these are not

currently harvested for human consumption, leaving it for overwintering birds to feed on instead. It’s an integrated system with clover inter-cropping, herbal leys and a lot of perennial wildflower meadows.

‘We want to get the balance right,’ Sarah says. ‘We are farming food and habitats for wildlife and also producing food for humans at the same time.’

Over the years Sarah has worked with Cotswold Seeds using a mixture of simple and complex herbal leys and tailoring wild flower mixes to suit the local conditions, converting rotational arable fields to these diverse leys to give them a break from arable production. Sarah also uses the grass and wild flower mix, Cotswold Wildflora on some areas of the farm. ‘It’s a real wow factor,’ she says. ‘There’s a flash of colour in year 1 from the annuals like Cornflower and Poppy and then the perennials come through to provide a longer-term meadow. We don’t have any issue with annuals competing with perennials. The corn marigolds do really well and the knapweed has been fantastic - goldfinches and linnets have been returning to the farm in huge flocks.’

‘We want to get the balance right, we’re growing food for human consumption but at the same time preserving habitats.’

Sarah is working on a Nature Networks Fund project, monitoring results with a team of ecologists. Cotswold Seeds has also produced a special wildflower mixture and The Bug Farm has given a packet of it to every resident in St Davids - the smallest city in the UK - to grow mini meadows in their garden.

Sarah is now doing a trial with Cotswold Seeds clover mixtures. ‘We are planting a woodland across the farm and are keen to reduce the use of herbicides in tree establishment. By sowing clover rich mixtures to out-compete the grass, hopefully we won’t need to spray around the trees for the first couple of years.

‘It’s really exciting,’ says Sarah. ‘We’re farming for wildlife in a sustainable way for the long term. We need to reverse the mass extinction we’re facing and change our food systems - and show how it all works financially and ecologically.’

The Bug Farm includes a museum, art gallery and tropical bug zoo. There are farm trails and wildlife walks plus the UK’s first restaurant with insect-based dishes on the menu full-time.

Resource Protection

Grassy areas to shield water courses and provide wildlife habitats.



Sowing & Growing Environmental Mixes

When to sow

For grass only or pollen & nectar mixes sow between late March and early May, or August and early September. Legume based mixtures should be sown into warm soils. Generally mixes containing wild flowers are sown in the autumn, especially if they contain Yellow Rattle. Sow Wild Bird seed mixtures when the risk of frost has passed in the spring.

How to sow

Species included in pollen and nectar or grass mixtures are small in size and should be shallow sown into a fine but firm seedbed. They can be broadcast and harrowed or shallow drilled at 10mm. Both options should be well rolled after sowing for maximum seed to soil contact.

Wild Bird seed mixtures containing a range of annual species can be shallow drilled or broadcast and well rolled in to a fine but firm seedbed. Two year Wild Bird mixtures containing high levels of cereals can be supplied separately, the cereals can be drilled in rows to a depth of 25mm, and the smaller seeds broadcast in a second pass.

Management

Pollen & nectar and grass only mixtures can be lightly topped several times during establishment, normally 6-8 weeks after sowing, to control annual weeds and encourage tillering. They are also cut back as growth slows in the autumn.

Weed control in Wild Bird mixtures is difficult, its important to create a clean, weed free seedbed before sowing.

Mixes

Species Rich Parkland Grassland

OELS/HLS Codes: HK7

Low Maintenance Long Term **20% ORGANIC**

Code: MIXPGLMORG

A slow growing and manageable seed mix for those with low requirements from permanent grassland. This mixture can be grazed periodically or topped to keep a tidy appearance. **Needs derogation.**

- 2% commercial sweet vernal grass
- 2% commercial meadow foxtail
- 5% certified common bentgrass
- 5% certified crested dogstail
- 20% certified smaller catstail
- 20% certified **ORG** creeping red fescue
- 20% certified smooth stalked meadowgrass
- 26% certified sheeps fescue

16.00 kg/acre 40.00 kg/ha **£11.39 per kg**

Recreating Grassland

OELS/HLS Codes: HK7, OD2

Long Term **70% ORGANIC**

Code: MIXRGORG

The mixture below is suitable for sowing on most soil types ranging from clays to calcareous. Provides grass for grazing or hay production (if no forage is required use the mix above).

- 5% certified red/chewings fescue
- 10% certified sheeps fescue
- 15% certified smooth stalked meadow grass
- 20% certified **ORG** creeping red fescue
- 20% certified **ORG** timothy
- 30% certified **ORG** meadow fescue

10.00 kg/acre 25.00 kg/ha **£9.55 per kg**

Buffer Strip Grass Margin

OELS/HLS Codes: OJ5, OJ9, OJ8, OC24, OE1, OE2, OE3, OE9, OE7

Two, Four or Six Plus Metre **70% ORGANIC** Code: MIXGMORG

An ideal mixture for buffer strips on cultivated land. This mixture is suitable for ELS and can also be used in HLS.

- 5% certified common bentgrass
- 10% certified cocksfoot
- 15% certified smooth stalked meadow grass
- 20% certified **ORG** timothy
- 25% certified **ORG** meadow fescue
- 25% certified **ORG** creeping red fescue

10.00 kg/acre 25.00 kg/ha **£9.95 per kg**

Wild Flowers

During the last decade, we've seen an increasing demand for wild flower seeds which are being sown to recreate traditional meadows which have been in decline.

Wild flower meadows are either managed under an agri-environmental agreement, where a list of species and management prescription will be provided by Natural England, or often for aesthetic purposes alone. They take many years to evolve naturally and can't be instantly created just by sowing seeds.

Nevertheless, with proper preparation and management, excellent results can be achieved in a relatively short time. **See our website for case studies and management advice. There is no organic seed available for these mixtures so a derogation is required.**

Wildflower Meadows & Margins

A sowing and growing workshop



- Learn about biodiversity and environmental benefits
- How to select and establish seed mixtures
- When and how to cut, graze or reseed
- Visit the FarmED wild flower meadow and margins

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FarmED Courtyard
22nd July

Mixes

Meadow Over-Seeding

Just Wild Flowers **NON ORGANIC**

Code: MIXWFOS

This wild flower-only mixture can be sown into open swards that are free of aggressive grasses and weeds. *Due to some shortages of wild flower seeds the contents of this mixture may vary depending on stock availability. Please call or check our website for the latest information.*

2.00 kg/acre 5.00 kg/ha **£193.20 per kg +VAT**

Cornfield Annuals

For One Summer **NON ORGANIC**

Code: MIXANN

This is a one year mix to provide a colourful display between June and August. Must be planted by April.

- 40% corn cockle
- 14% field poppy
- 13% cornflower
- 13% corn marigold
- 7% birdsfoot trefoil
- 6.5% crimson clover
- 6.5% persian clover

6.00 kg/acre 15.00 kg/ha **£65.65 per kg +VAT**

Cotswold Wild Flora

Long Term **NON ORGANIC**

Code: MIXFLO

Our most popular mix combines annuals, for an exceptional display in the first year, with perennials which get better and better from year two onwards.

- 5% certified common bentgrass
- 5% commercial yellow oatgrass
- 10% certified crested dogtail
- 10% certified smaller catstail
- 15% certified sheeps fescue
- 15% certified smooth stalked meadowgrass
- 20% certified red fescue
- 2% salad burnet
- 1.5% sainfoin
- 1.2% lesser knapweed
- 1% self heal
- 1% ox-eye daisy
- 1% ribwort plantain
- 1% red campion
- 1% lady's bedstraw
- 1% wild carrot
- 1% field scabious
- 0.75% musk mallow
- 0.5% meadow buttercup
- 0.5% yarrow
- 0.5% betony
- 0.5% white campion
- 0.05% cowslip
- 1.5% corn cockle
- 1% corn marigold
- 1% cornflower
- 1% field poppy
- 1% yellow rattle

10.00 kg/acre 25.00 kg/ha **£53.54 per kg**

Mixes

Grass

Wildflower

Legume

Woodland Edge and Shady Area

Long Term **NON ORGANIC**

Code: MIXWOOD

In open and semi-shaded areas a number of grasses and wild flowers will thrive many of which are in this mix.

- 2% commercial tufted hairgrass
- 10% certified common bentgrass
- 10% certified crested dogstail
- 15% certified wood meadowgrass
- 24% certified slender creeping red fescue
- 24% certified red fescue
- 2% red campion
- 2% white campion
- 2% self heal
- 1.3% meadow vetchling
- 1.25% hedge bedstraw
- 1% garlic mustard
- 1% tufted vetch
- 1% betony
- 1% wood avens
- 0.8% perforate st john's wort
- 0.5% yarrow
- 0.5% teasel
- 0.3% upright hedge parsley
- 0.25% bluebell
- 0.1% autumn hawkbit

10.00 kg/acre 25.00 kg/ha

£79.39 per kg

Acid & Clay Soil

Long Term **NON ORGANIC**

Code: MIXACID

A suitable mixture for both acidic and heavy clay soil types. Prepare a well worked, weed-free seedbed and spread seeds at no more than 10mm deep.

- 5% wavy hairgrass
- 5% commercial meadow foxtail
- 5% certified rough stalked meadowgrass
- 10% certified crested dogstail
- 20% certified common bentgrass
- 20% certified red fescue
- 20% certified sheeps fescue
- 2.3% lesser knapweed
- 2% self heal
- 1.5% lady's bedstraw
- 1.5% ox-eye daisy
- 1% betony
- 1% ribwort plantain
- 1% meadow buttercup
- 1% sheeps sorrel
- 1% yarrow
- 1% yellow rattle
- 0.7% meadowsweet
- 0.5% native red clover
- 0.5% meadow vetchling

10.00 kg/acre 25.00 kg/ha

£73.61 per kg

Chalk & Limestone Soil

Long Term **NON ORGANIC**

Code: MIXCHA

This mixture is designed for chalk and limestone soil. Known to support a large selection of wild flower species which is why we have been able to create such a diverse mix.

- 2% quaking grass
- 2% crested hair-grass
- 4.5% commercial sweet vernal grass
- 10% certified crested dogstail
- 10% certified smaller catstail
- 18% certified smooth stalked meadowgrass
- 18% certified sheeps fescue
- 20% certified red fescue
- 3.1% sainfoin
- 2% field scabious
- 1.5% salad burnet
- 1.2% kidney vetch
- 1% meadow buttercup
- 1% wild carrot
- 1% ladys bedstraw
- 1% ox-eye daisy
- 1% self heal
- 1% agrimony
- 1% vipers bugloss
- 0.5% yarrow
- 0.1% small scabious
- 0.05% birdsfoot trefoil
- 0.05% hoary plantain

10.00 kg/acre 25.00 kg/ha

£71.18 per kg

Damp Meadow

Long Term **NON ORGANIC**

Code: MIXDAM

Wetter soils require a slightly different seed mixture. This one should give reliable results on most damp soils and may also be used around water courses or ponds.

- 2% certified meadow foxtail
- 5% certified common bentgrass
- 10% certified crested dogstail
- 10% certified rough stalked meadowgrass
- 18% certified smooth stalked meadowgrass
- 20% certified red fescue
- 20% certified sheeps fescue
- 2% great burnet
- 2% yellow rattle
- 1.8% self heal
- 1.5% lesser knapweed
- 1.25% ox-eye daisy
- 1.25% common sorrel
- 1% meadowsweet
- 1% ribwort plantain
- 1% lady's bedstraw
- 1% betony
- 0.5% ragged robin
- 0.5% meadow vetchling
- 0.1% devil's-bit scabious
- 0.1% native red clover

10.00 kg/acre 25.00 kg/ha

£66.60 per kg

Perennials

Wild Flower Directory

There is no organic production of wild flower seed so a derogation is required

Agrimony

Agrimonia

Upright plant found in hedges and field edges. Late seeding.

Late



Flowers: June-Aug

Devil's Bit Scabious

Succisa pratensis

Found in damp meadows and wetter (but not waterlogged) areas.

Late



Flowers: June-Sept

Meadow Buttercup

Ranunculus acris

Found in older grasslands and damp grassy places with a long flowering period.

Early



Flowers: Apr-Oct

Betony

Stachys officinalis

Found in shady areas, woodland fringes & hedge rows. Likes damp sites.



Flowers: June-Sept

Field Scabious

Knautia arvensis

Frequent in cornfields, grassland and roadsides on calcareous dry soils.

Late



Flowers: June-Oct

Meadowsweet

Filipendula ulmaria

Found in and alongside meadows. Prefers wet ground. Strongly scented flowers.

Late



Flowers: June-Sept

Birdsfoot Trefoil

Lotus corniculatus

Found in downlands and old pasture, esp. on calcareous soils, drought resistant.



Flowers: June-Sept

Great Burnet

Sanguisorba officinalis

Oblong burgundy flower heads, found on wetter meadow ground.



Flowers: June-Sept

Meadow Vetchling

Lathyrus pratensis

Yellow pea-like flower, grows in grassy fields and hedgerows.



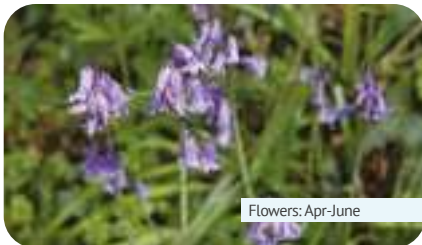
Flowers: June-Sept

Bluebell

Hyacinthoides non-scripta

Found in hedge-banks and woodland where they can form a distinctive blue carpet.

Early

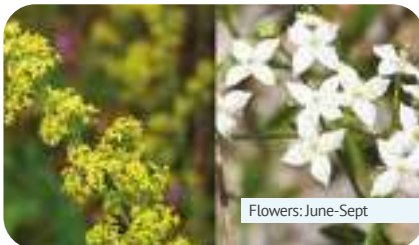


Flowers: Apr-June

Ladys/Hedge Bedstraw

Galium verum/Galium mollugo

Ladys bedstraw suits most soils. Hedge bedstraw prefers free-draining.



Flowers: June-Sept

Musk Mallow

Malva moschata

Prolific on soils rich in nitrogen. Grows in hedgerows and grassland.



Flowers: June-Sept

Cowslip

Primula veris

Found on chalky grassland and open calcareous woodland.

Early



Flowers: Apr-May

Lesser Knapweed

Centaurea nigra

Also known as common or black knapweed. Good nectar source



Flowers: June-Sept

Ox-Eye Daisy

Leucanthemum vulgare

Robust, reliable plant for alkaline soils. Found in meadows, pastures and banks.



Flowers: May-Sept

Perennials continued

Ragged Robin*Lychnis flos-cuculi*

Delicate ragged flowers usually found in damp meadows.

Early



Flowers: May-Aug

Red Campion*Silene dioica*

Often found in woodland and shady areas. Likes damp soils.

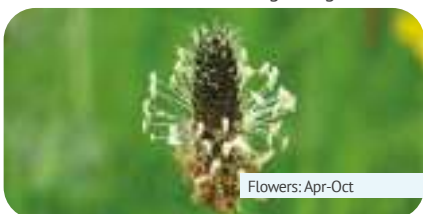
Early



Flowers: May-Sept

Ribwort Plantain*Plantago lanceolata*

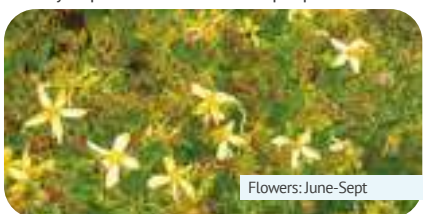
Established in most older grassland. Source of vitamins and minerals for grazing animals.



Flowers: Apr-Oct

St Johns Wort*Hypericum perforatum*

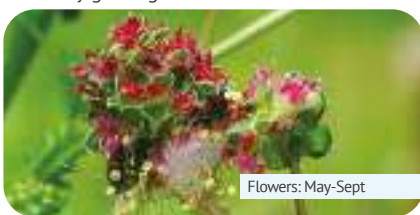
Likes free-draining calcareous soils with a sunny aspect. Has medicinal properties.



Flowers: June-Sept

Salad Burnet*Sanguisorba minor*

Found on dry, lime rich, calcareous soils. Liked by grazing animals.



Flowers: May-Sept

Self Heal*Prunella vulgaris*

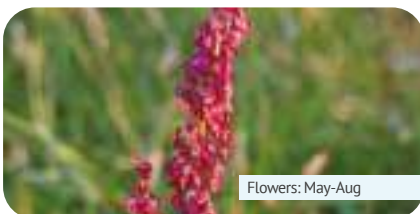
A low growing, creeping plant which is common in most grassland.



Flowers: June-Oct

Sorrel*Rumex acetosa*

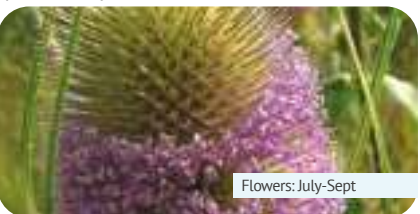
Grows well in loamy soils rich in nutrients.



Flowers: May-Aug

Teasel*Dipsacus fullonum*

A tall plant found in field margins, particularly in the south of Britain.



Flowers: July-Sept

Tufted Vetch*Vicia cracca*

Creeping, sprawling growth habit. Found in hedgerows and climbing up vegetation.



Flowers: June-Aug

White Campion*Silene latifolia*

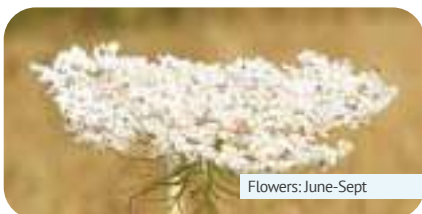
Frequent in roadside verges, hedgerows and waste ground.



Flowers: May-Oct

Wild Carrot*Daucus carota*

Found in grassy places, field margins and roadsides. Prefers calcareous soils.



Flowers: June-Sept

Yarrow*Achillea millefolium*

Found in grassland and grass margins, hedgerows and open spaces.



Flowers: June-Nov

Late

Annuals

Corn Chamomile*Anthemis arvensis*

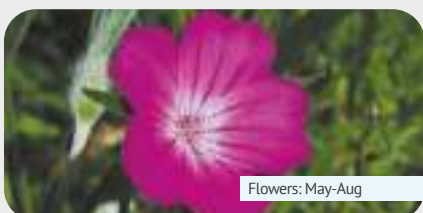
Corn field annual which thrives in loamy soils rich in nutrients.



Flowers: June-July

Corn Cockle*Agrostemma githago*

A tall annual with an attractive vivid purple flower.



Flowers: May-Aug

Cornflower*Centaurea cyanus*

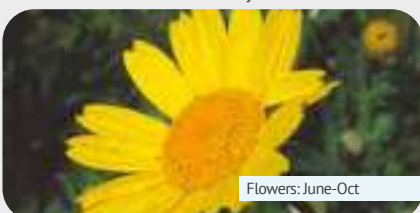
A pretty bright blue solitary flower. Was used as a dye in champagne wine.



Flowers: June-Aug

Corn Marigold*Crysanthemum segetum*

A former weed in spring-sown corn. Now rare on farmed land. Bold yellow flowers.



Flowers: June-Oct

Field Poppy*Papaver rhoeas*

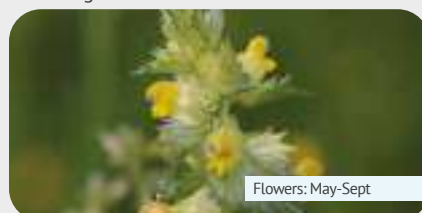
Found in arable fields and disturbed ground. Silky, deep scarlet flowers.



Flowers: June-Oct

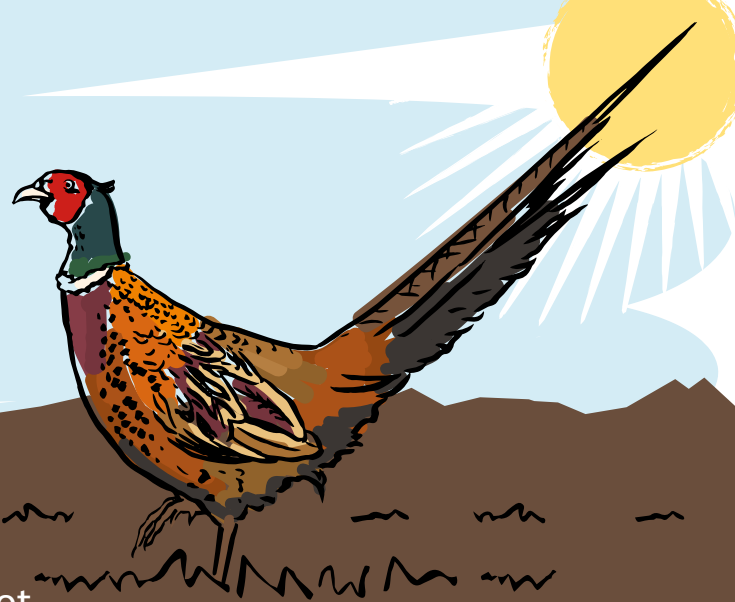
Yellow Rattle*Rhinanthus minor*

Parasitic plant which restricts grass growth allowing delicate wildflowers to establish.



Flowers: May-Sept

*Please note wild flower seed sold as straights attracts VAT at the current rate of 20%



Game

Reliable game cover and food for any shoot.

The game cover section helps to provide a wider choice of mixtures that have been developed through the years.

The FlexiCover mixtures provide both 1 and 2 year options and can be used for both flushing and holding cover. The combination of grain sorghum and brassica species provides reliable cover all the way through the winter.

The new Cotswold Partridge mix combines species attractive to partridge and a broken canopy to protect against predators from above.

While our range is more comprehensive than ever before, no one mixture will fit all shoots and sites, so we are more than happy to talk through different species and options and tailor bespoke mixtures to fit.

Game and Bird Food Crop Overview

Species	Duration	Sowing Time	Sowing Depth	Full Growth Height (cm)	Comments	Sowing Rate (kg/ac)	Feed	Cover
R. Millet	1 Yr	April-June	2.5	100 - 120	Later seeding than W.Millet	5 - 10	✓	
W. Millet	1 Yr	April-June	2.5	100 - 120	Produces more seed than R. Millet	5 - 10	✓	
Reed Millet	1 Yr	April-June	2.5	100 - 120	Strong standing ability	5 - 10		✓
D. Sorghum	1 Yr	May-June	3 - 5	100	Sow in wide rows	8		✓
Giant Sorghum	1 Yr	May-June	3 - 5	180	Prone to brackling/falling over	12		✓
Grain Sorghum	1 Yr	May-June	3 - 5	100 - 120	Produces seed	8	✓	✓
Sunflower	1 Yr	Mid April onwards	5	90 - 175	Dwarf varieties reach 3ft	10	✓	
Buckwheat	1 Yr	May-June	3.5	90	Not frost hardy	20 - 30	✓	✓
Linseed	1 Yr	March-June	2	50 - 60	Good for Partridge	20	✓	✓
S. Cereals	1 Yr	March-May	2 - 3	70 - 80	Sow in spring for winter grain	50 - 75	✓	✓
W. Cereals	1 Yr	March-Sept	2 - 4	70 - 90	Sow in autumn for grain in Yr 2	50 - 75	✓	✓
Quinoa	1 Yr	May-June	0.5 - 1	90 - 140	Produces high protein seed	5	✓	
F. Rape/OSR	1 Yr	May-August	1	80 - 90	Flea beetle risk	4		✓
Mustard	1 Yr	May-August	1	80 - 120	Sow in august for late cover	6 - 10	✓	✓
Brown Mustard	1 Yr	May-August	1	80 - 100	More winter hardy than Mustard	2	✓	✓
Fodder Radish	1 Yr	May-August	1	80 - 120	Holds seeds late in season	6	✓	✓
Hybrid Brassica	1 Yr	April-August	1	90 - 120	Sow by mid Aug	3		✓
Gold of Pleasure	1 Yr	April-May	1	50 - 70	High seed shed	5	✓	✓
Kale	2+ Yr	April-June	1	70 - 110	2 year cover	3		✓
Sweet Clover	2+ Yr	April-June	0.5 - 1	120	Significant growth in Yr 2	6		✓
Chicory	2+ Yr	April-Sept	0.5 - 1	90 - 150	Lasts 3-4 Years	6	✓	✓
Canary Grass	2+ Yr	May-June	1	180	Main growth in Yr 2 onwards	3	✓	
Reed C. Grass	2+ Yr	May-June	1	200	More winter hardy than Canary Grass	3	✓	

Grass

Legume

Cereal

Others

Brassica

Herb

Mixes

FlexiCover One Year Game Mix

Cover and Feed **70% ORGANIC**

Code: MIXFLEXORG

This flexible mixture combines brassicas, sorghums and cereals. Sowing in wide rows allows game birds easier movement if pushing them into a flushing point or sow in narrow rows to create a denser holding cover, or windbreak alongside maize.

- 12.65 kg certified **ORG** triticale
- 3.00 kg certified grain sorghum
- 1.00 kg red millet
- 0.67 kg white millet
- 0.75 kg certified **ORG** crimson clover
- 0.60 kg certified forage rape
- 0.38 kg certified hybrid rape/kale
- 0.32 kg certified **ORG** fodder radish
- 0.30 kg certified **ORG** mustard
- 0.25 kg reed millet (japanese)
- 0.08 kg certified gold of pleasure

20.00 kg/acre - £60.53

50.00 kg/ha - £151.33

General Purpose Game Mix

Cover and Feed **70% ORGANIC**

Code: MIXGAMEORG

This is our best-selling game crop which is a traditional spring sown mixture containing species selected to provide feed and cover. It is of particular interest to pheasants and partridges, but is also attractive to other wild farm birds. Sow at 20mm.

- 3.00 kg certified **ORG** vetch
- 2.00 kg certified **ORG** triticale
- 0.50 kg certified **ORG** red clover
- 0.50 kg certified **ORG** crimson clover
- 1.00 kg certified dwarf sunflower
- 0.75 kg certified **ORG** mustard
- 0.65 kg certified INTERVAL hybrid rape/kale
- 0.35 kg red millet
- 0.35 kg white millet
- 0.35 kg reed millet (japanese)
- 0.25 kg certified **ORG** fodder radish
- 0.30 kg certified REDSTART hybrid rape/kale

10.00 kg/acre - £48.38

25.00 kg/ha - £120.95

FlexiCover Two Year Game Mix

Cover and Feed **70% ORGANIC**

Code: MIXFLE2ORG

The inclusion of Kale can ensure this mixture lasts for two full years. Best grown on fertile soil in warm, sunny positions.

- 15.70 kg certified **ORG** triticale
- 2.80 kg certified grain sorghum
- 2.15 kg certified kale
- 0.80 kg red millet
- 0.80 kg white millet
- 0.60 kg certified **ORG** red clover
- 0.50 kg certified **ORG** fodder radish
- 0.40 kg fennel
- 0.15 kg certified hybrid rape/kale
- 0.10 kg certified gold of pleasure

24.00 kg/acre - £99.90

60.00 kg/ha - £249.75

Cotswold Partridge Mix

Cover and Feed **70% ORGANIC**

Code: MIXPARTORG

The mix is designed to include species which attract partridge, as well as creating a broken canopy with room for birds to move through the cover.

- 13.25 kg certified **ORG** spring triticale
- 1.20 kg certified linseed
- 1.00 kg white millet
- 1.00 kg red millet
- 1.00 kg certified vetch
- 0.75 kg certified **ORG** crimson clover
- 0.45 kg fennel
- 0.35 kg certified forage rape
- 0.35 kg certified gold of pleasure
- 0.40 kg reed millet (japanese)
- 0.25 kg certified hybrid rape/kale

20.00 kg/acre - £56.90

50.00 kg/ha - £142.25

Retrieve Mix

Fast and Economical **70% ORGANIC**

Code: MIXRETORG

For a summer sowing after a failed spring crop nothing beats rape and mustard. It's quick, reliable and it works.

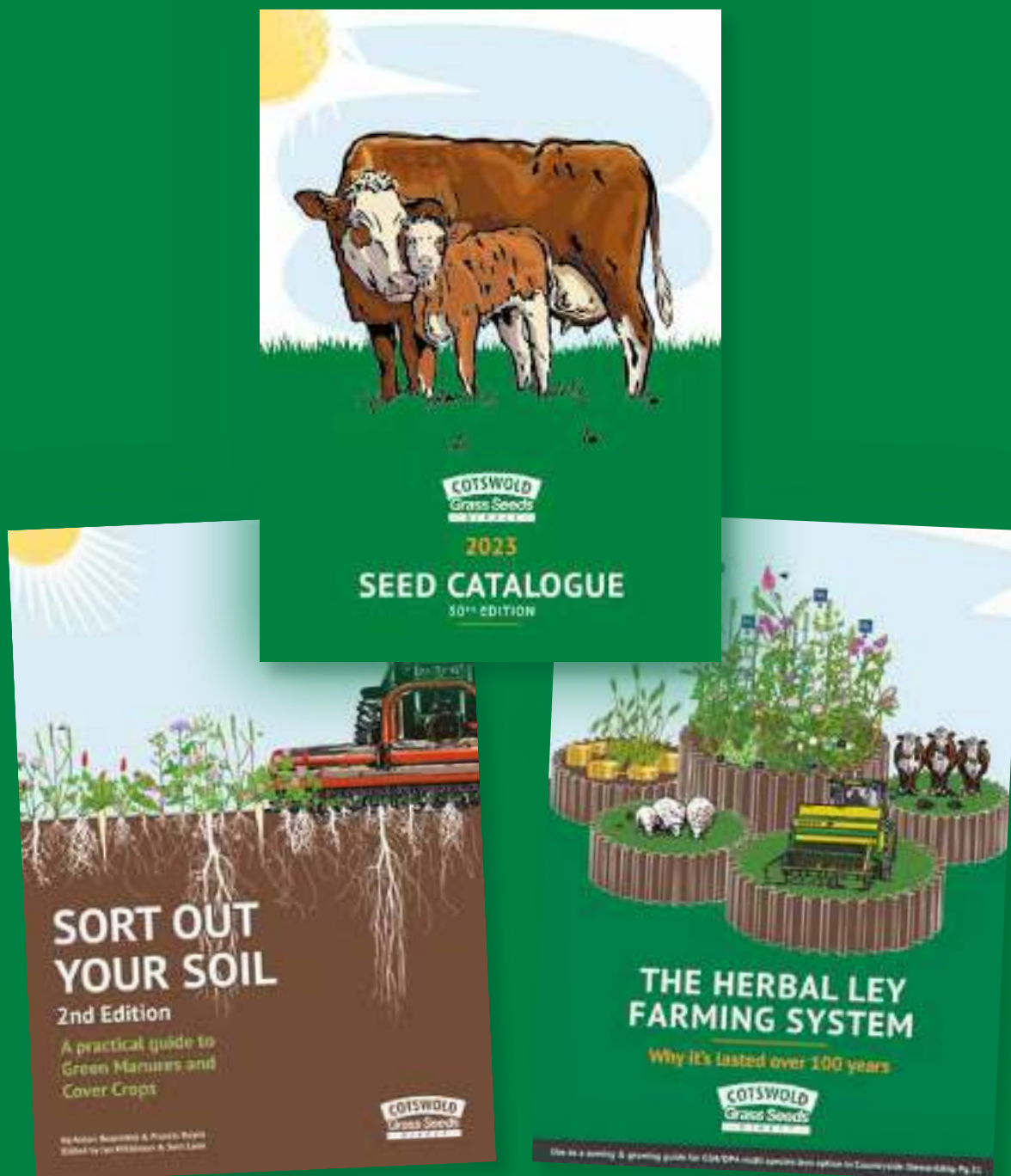
- 50% certified **ORG** mustard
- 20% certified **ORG** fodder radish
- 25% certified forage rape
- 5% certified hybrid rape/kale

6.00 kg/acre - £33.48

15.00 kg/ha - £83.70



FlexiCover
Leicester
19th November



Available to request or download at cotswoldseeds.com

COTSWOLD SEEDS

Cotswold Seeds was founded in 1974 and deals with over 18,000 farmers throughout the UK. The company has a specialist interest in grass and legumes, offering advice on growing and managing these crops to farmers and growers in the livestock, arable and horticultural sectors. The company, in conjunction with FarmED, is also involved in a wide range of research and educational projects.

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