

COTSWOLD
Grass Seeds
1974-2024



YEARS OF ADVICE

ORGANIC CATALOGUE

The right advice...



...fast delivery



...bespoke mixtures

INDEX

OVER-SEEDING	06
SILAGE & HAY	09
GRAZING & FORAGE	14
ROOT CROPS	24
SOIL REGENERATION	26
ENVIRONMENTAL	28
WILD FLOWERS	32
GAME	36



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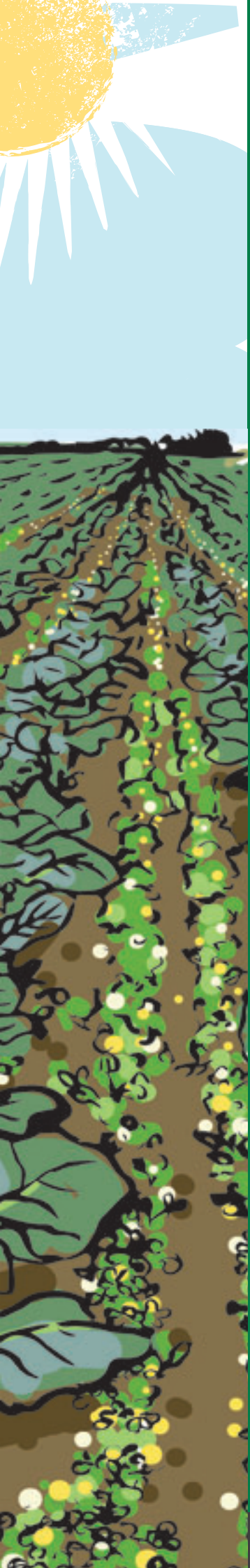
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Welcome to the 50th!

Like many of you I've seen quite a few editions of this catalogue, so it's a milestone and a privilege to be presenting the 50th edition to you. I started at Cotswold Seeds in 2001 on the ground floor, literally, working part time in the mixing warehouse. Once I graduated university I took a permanent job in the summer of 2005 with Ian and Robin. A never ending stream of orders came downstairs to be mixed during those busy seasons. I didn't know much about grass back then but I understood how to mix seed, and realised that the forage production system we were a part of was complex and time-critical. Seeds arrived from different parts of the world and we mixed each order separately for the differing requirements of each farmer. Every order was unique. They still are. Many people assume that the mixes in this catalogue are fixed but in reality many of you make adjustments to them. We know that every field is different, used in a distinctive way and your seed mix needs to reflect this.



Many of you frequently compliment the Cotswold Seeds website, which has become, like the catalogue, industry leading. This, along with computerisation of our in-house systems is where myself and the team have spent considerable effort in creating a place for us to hold your farm seed records along with the increasing amount of useful information we hold on grasses, legumes and herbs. Between this catalogue, the website and our conversations with you, we will continue to provide knowledge and information for the next 50 years. A future which will be different to the past but one where farmers will still be central to providing solutions to food systems, climate change and nature. The latest SFI scheme is a good example and we have dedicated an article to this on page 8.

Finally, the cost and availability of seed is of the utmost importance. Although seed production continues to be a challenge as the weather becomes more extreme across the world, slightly lower consumption in 2023 has led to reasonable seed availability this year and in many cases we have been able to ease some of our prices to reflect this. Technical Manager Sam Lane along with Lizzie Arnold and their team are ready to advise on the best choices for you in 2024.

Let's keep our fingers crossed for a good growing season this year, and as always we look forward to hearing from you and discussing your needs.

Paul Totterdell
General Manager

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Free delivery on orders over £75

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Seed varieties

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 6).

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)**

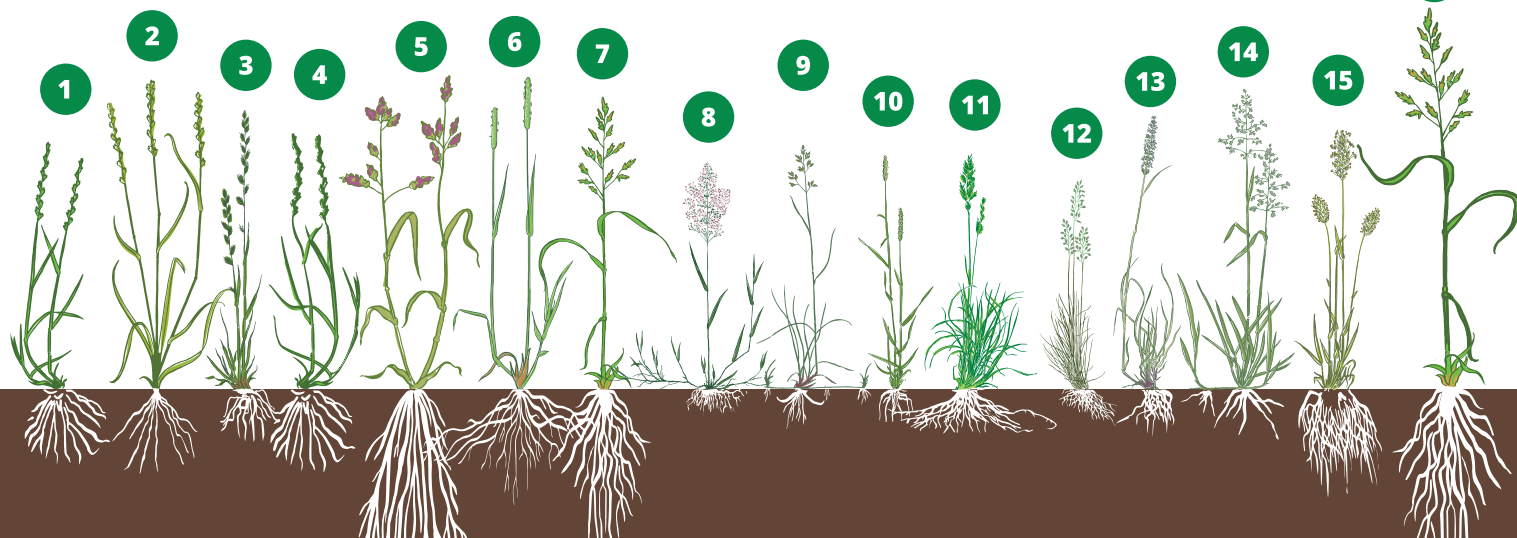
This perennial has creeping rhizomes and is very drought resistant. It is common throughout the UK, particularly on lighter soils. It should not be sown late in the autumn as it is slow to establish. Shallow sowing is also essential as the seed needs light to germinate. Early to grow in the spring, once 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 levels 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 Violin, 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 tugging.

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

Herbs

Drought resistant and mineral rich.

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.

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*)

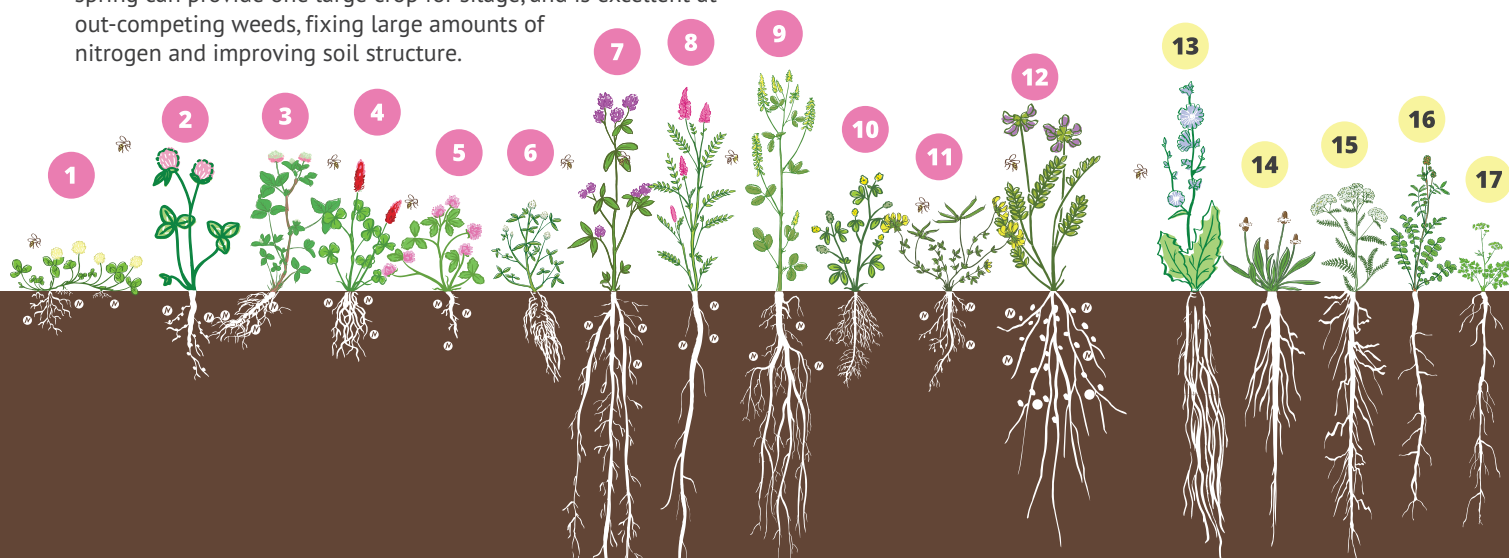
Yarrow is a deep-rooting perennial and a rich source of vitamin A.

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.



Check cotswoldseeds.com for SFI Mixtures



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. 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.



T. Carrick
HighCrossgill, Cumbria

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 'Moores' 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.

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

Grass

Legume

Mixes: Ryegrass**Ryegrass Over-Seeding**Short Term 2-3 Years **70% ORGANIC** Code: MIXOSORC

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

Mixes: Clover and herbs**White Clover Over-Seeding**Long Term Grazing **70% ORGANIC** Code: MIXOSCORC

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 IONA white clover
- 0.20 kg certified ABERACE wild white clover

2.00 kg/acre - £40.58 5.00 kg/ha - £101.45

Ryegrass Over-SeedingLonger 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

White Clover Over-SeedingDairy Graze or Silage **70% ORGANIC** Code: MIXOSCDORG

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 VIOLIN white clover

2.00 kg/acre - £40.50 5.00 kg/ha - £101.25

Ryegrass & Clover Over-SeedingLonger Term 4-5 Years **70% ORGANIC** Code: MIXOSLORG

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 IONA white clover
- 0.20 kg certified ABERACE wild white clover

10.00 kg/acre - £67.58 25.00 kg/ha - £168.95

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% ORGANIC** per. ryegrass **£13.06 per acre**

Springtime in Gloucestershire
12th March



Chewing it Over

Sam Lane, our Technical Manager explains some of the options available through SFI and the need to carefully consider which seed mixtures will best suit the farming system.

Looking towards 2024, the SFI scheme seems firmly on the horizon. The outline of SFI is becoming clearer, we now have accessible and flexible options for arable and grassland farms, although some concerns have been raised about the suitability for upland areas.

As we head into the season, we hope to see further options rolled out, including an eagerly awaited summer cover crop option, specific organic choices and the ability to make more use of stacking certain actions.

While the flexibility of the scheme has been broadly welcomed, it has led to some grey areas within some options, we have seen confusion about how rigorously the guidance for each criteria in terms of seed mix contents should be followed, especially for those who may have been in previous Countryside Stewardship schemes, which were generally more prescriptive.

In my view the flexibility should help make them easier to integrate into a range of farming systems, and is a response to calls for less constrictive criteria in older environmental schemes.

However it should be remembered that in order to fully harness the benefits of these options and ensure the criteria is fully met, a pragmatic approach should be taken. I fear merely ticking boxes could lead to a tightening of rules and less flexibility in the next 3 year tranche.

‘It should be remembered that in order to fully harness the benefits of these options and ensure the criteria is fully met, a pragmatic approach should be taken.’

For example, options which aim to introduce legumes to fix ‘free’ nitrogen will only contribute substantially to soil fertility and reduce input costs if sown at a reasonable rate to ensure a sufficient legume population. A sward requires around 30-35% legume inclusion to fix approximately 150-200kgs of N per ha. Introducing or sowing a very low legume percentage, with low plant populations is unlikely to ensure the pasture is self-sufficient in terms of N fixation, which may not bring down the Nitrogen bill.

Thought should also be given to which plant species are being included in seed mixes.

As an example farmers looking to utilise the NUM3 Legume Fallow option as a short term, spring sown fertility builder, may wish to include a higher proportion of the fast establishing, cost effective annual legumes like berseem and crimson clover, which would suit this narrow gap in the rotation. Those wishing to use a Legume Fallow option for several years which will go through a number of winters, will need to utilise more perennial, winter hardy species like red clover, birdsfoot trefoil, alsike clover and white clover.

The subtle differences of these species may seem minor, but they will certainly help ensure the mixture does the job it needs to do for the best value and lasts in the ground for as long as the option requires.

Over the next few pages you will see a range of mixtures that have been tailored to suit certain time frames and gaps in the rotation, as well as trying to match the correct plant species depending on the ground type and soil pH.

We have ensured these mixes do the best job they can, specifying for example a ‘Light Land SAM3 Herbal Ley’ for those on thin, drought prone soil, or a ‘Stockless Arable’ mix, packed with fertility building red clover. These hardy, perennial clovers, will last several years and can be mulched multiple times throughout the season.

While we have lots to consider when making the decision to apply for the SFI scheme and which options to choose, once accepted, the next important step is giving plenty of thought to sowing timings and what machinery to use. As a rule of thumb the mixtures in the next few pages are generally classed as ‘small seeds’, which should not be sown too deep, aim to either broadcast or very shallow drill to a depth of around 10-15mm max.

We have plenty of structured mixture suggestions in our catalogue and website, if these don’t suit, we also look forward to talking through each scenario and tailoring our mixes to get the best results. [See \[cotswoldseeds.com\]\(https://www.cotswoldseeds.com\) for SFI mixtures.](https://www.cotswoldseeds.com)



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.



Haymaking in the Cotswolds
10th June



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 tugging 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 CARAVELLE **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 - £106.35 55.00 kg/ha - £265.88

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.

- 16.90 kg certified CARAVELLE **ORG** vetch
- 7.50 kg certified PELETON westerwolds ryegrass
- 0.60 kg certified ASTERIX **ORG** westerwolds ryegrass

25.00 kg/acre - £95.21 62.50 kg/ha - £238.03

Short Term Red Clover Ley

One-Two Year Ley **70% ORGANIC** Code: MIXCG03ORG

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** tet. Italian ryegrass
- 0.60 kg certified SHAKIRA Italian ryegrass

12.00 kg/acre - £75.75 30.00 kg/ha - £189.38

Longer Term Red Clover Ley

Three Year Ley **70% ORGANIC** Code: MIXCG06ORG

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 AVISTO red clover
- 5.20 kg certified SOLID **ORG** tet. hybrid ryegrass
- 3.20 kg certified TEANNA **ORG** tet. Italian ryegrass
- 0.60 kg certified ABEREDGE tet. hybrid ryegrass

12.00 kg/acre - £80.39 30.00 kg/ha - £200.98



Red Clover Ley
30th May, Gloucestershire

Additions

**Vetch**

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

Add 10kg of **70% ORGANIC** vetch **£39.40 per acre**

Limited availability of 4 year 'Milvus' red clover.
Call for advice.

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

Code: SAINO

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

■ 35.00 kg commercial **ORG** sainfoin

35.00 kg/acre - £171.50 87.50 kg/ha - £428.75

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 - £30.90 7.50 kg/ha - £77.25



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

Visit cotswoldseeds.com to download your copy.



Sainfoin and Grasses
15th June, Oxfordshire

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.



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



Pure Lucerne Crop
3rd June, Oxfordshire

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.

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

8.00 kg/acre - £109.32 20.00 kg/ha - £273.30

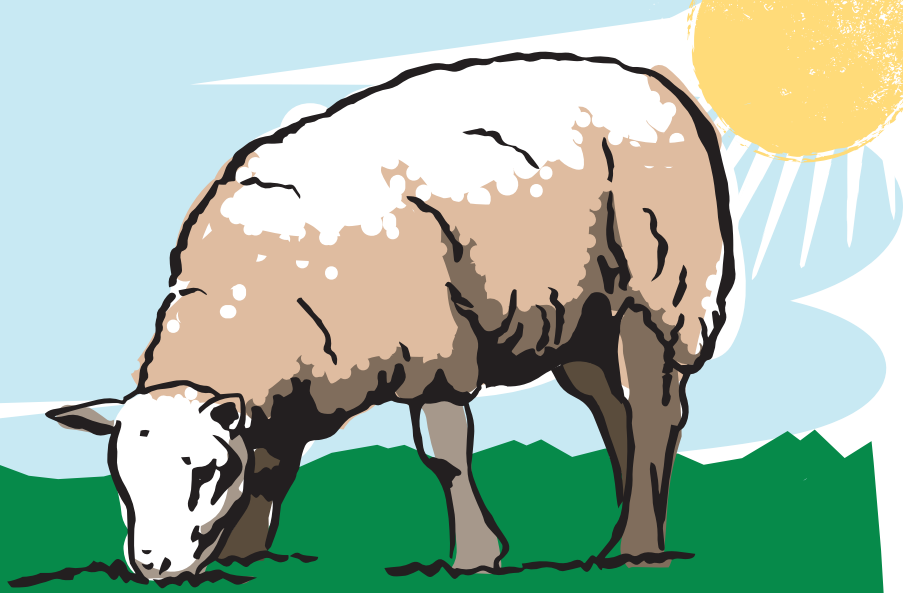
Companion Grass Option

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 - £30.90 7.50 kg/ha - £77.25



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.



Light Land Grazing Mix
10th May, Gloucestershire

First Hand

Jeremy Davis



Farm Type	Mixed Smallholding
Location	East Sussex
Size	40 acres
Soil Type	Sandy Loam
Mixes Used	Bespoke Chicory Mix

After taking over Lynne's Organic Farm, a forty acre smallholding in East Sussex, Jeremy Davis was looking for a bespoke green manure that would be of nutritional benefit to his pigs and laying chickens as well as adding nutrition for horticulture and he worked with Cotswold Seeds to develop a special chicory mix which has consistently produced fantastic results.

Historically the farm was part of the Abergavenny Estate and had been tenanted as pasture for grazing sheep and cattle. Jeremy purchased the farm about 20 years ago and put the whole farm down to green manures for organic conversion.

'In the early days I was seeking advice about what we should plant and I got to know Ian at Cotswold Seeds quite well,' says Jeremy.

After introducing Saddleback pigs and chickens ten years ago he began working with Sam at Cotswold Seeds to refine a mix to give nutritional benefits to the pigs but also the chickens. The special chicory mixture is made up predominantly of chicory with some red clover and cocksfoot and plantain. The results have been very impressive.

'Breeding sows show massively increased fertility when they have been in the green manure prior to going to the boar,' says Jeremy. 'The litter size is substantially bigger. We have had breeding stock on this ley for ten years so that's pretty conclusive. The ley also helps with boar fertility. Since our breeding stock have been moved elsewhere and are not grazing on this ley, their fertility has certainly decreased. We don't get any trouble with worms or other sickness when they are on the ley either.'

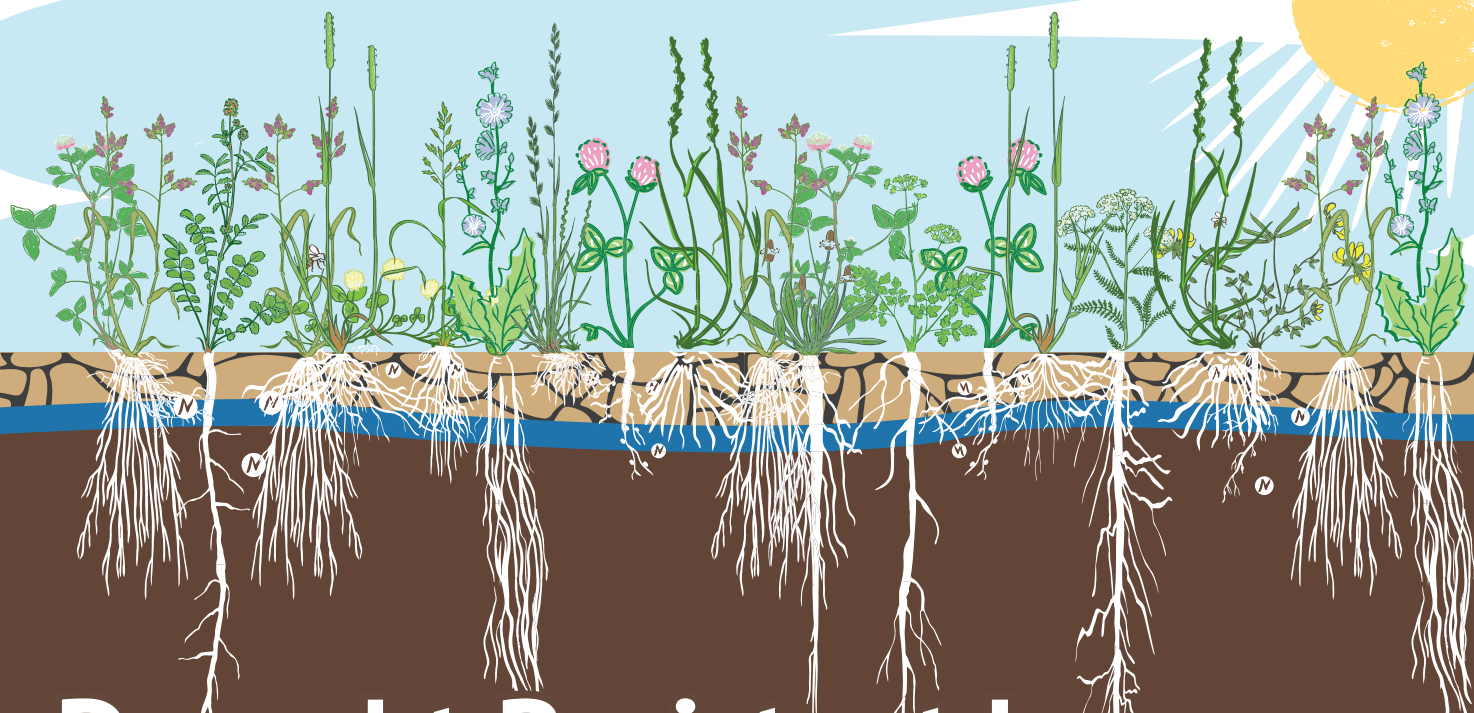
'Breeding sows show massively increased fertility when they have been in the green manure prior to going to the boar.'

So how is the ley established and managed?

'We have always done traditional drilling after working down the seed bed and rolling before sowing,' says Jeremy. 'Because we are organic we have quite a lot of weed. We tend to flail mow a couple of times as it gets established, to knock out any annual weeds like Fat Hen and encourage the plants to tiller out and the sward to thicken up and then we just let it grow. Depending on how long we are going to keep the ley, we will probably mow once or twice a season, depending on the weather. We prefer bulk but don't really want it going to seed.'

The ley is treated differently depending on whether veg crops are grown after it, or the area is used for hens and pigs. 'In the veg field we are turning over and terminating the ley quite frequently. Generally we will try and leave the ley in for at least two years in the veg plot, but longer in the other plots. With the pigs and chickens we try to keep the ley in for three or four years before we terminate and resow. Laying chickens don't destroy the root structure so we will leave the mix to come back and regrow. The chicory will come through first, because the tap roots are so much stronger. We will wait for it to grow a foot and then top it. And then you start to get the rest of the mix coming through. We let it grow to another foot, top it again, then you'll likely get the same mix as you had originally. We will incorporate it eventually, but we don't resow immediately. With pigs we have to cultivate once they have been through the green manure and then resow or plant veg depending on what's happening in that rotation.'

Jeremy has been a customer of Cotswold Seeds for twenty years, ever since he needed advice about growing green manures on the farm. 'I like dealing with them because they are so knowledgeable. They are prompt and delivery is great. Never had a problem.'



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 2), 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.

Grass

Legume

Herb

Mixes

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 AVISTO red clover
- 0.35 kg certified VIOLIN white clover
- 0.35 kg certified IONA white clover
- 0.10 kg certified RIVENDEL wild white clover

13.00 kg/acre - £98.20 32.50 kg/ha - £245.50

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 PARDUS meadow fescue
- 3.00 kg certified COMER **ORG** timothy
- 1.00 kg certified ALTASWEDE late flowering red clover
- 0.50 kg certified IONA white clover
- 0.30 kg certified ABERHERALD white clover
- 0.20 kg certified ABERACE wild white clover

12.50 kg/acre - £136.21 31.25 kg/ha - £340.53

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 / ENDURE chicory blend
- 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 IONA white clover
- 2.45 kg certified DIWAN **ORG** tet. perennial ryegrass

6.50 kg/acre - £79.10 16.25 kg/ha - £197.75

'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.

- 5.00 kg certified DONATA **ORG** cocksfoot
- 2.15 kg certified COMER **ORG** timothy
- 1.40 kg certified BARDOUX tall fescue
- 0.34 kg certified PARDUS meadow fescue
- 0.26 kg certified TORED **ORG** meadow fescue
- 1.00 kg certified BONUS **ORG** red clover
- 0.50 kg certified ABERHERALD white clover
- 0.35 kg certified ABERSWAN white clover
- 0.10 kg certified LEO birdsfoot trefoil
- 0.40 kg certified PUNA / ENDURE chicory blend
- 0.25 kg burnet
- 0.15 kg certified ENDURANCE ribgrass
- 0.05 kg sheeps parsley
- 0.05 kg yarrow

12.00 kg/acre - £119.72 30.00 kg/ha - £299.30



Lamins Mix
15th July, Hampshire

Half a Century of Advice:

A History of Cotswold Seeds



Robin Hill (b.1928) founded Cotswold Seeds in 1974. Unlike many of Cotswold Seeds' customers, Robin didn't come from a farming family. His father served in the Colonial Service, but Robin did spend the first 20 years of his life on a 15 acre smallholding in Northern Ireland and cited this as the roots of his love of agriculture. After finishing school, he made the decision to head to Cambridge, where he obtained a degree in agriculture. 'Which wasn't very helpful,' remembered Robin. 'It was based on pre-war agriculture, so we learned how the reaper and binder are pulled by a horse and were sent on a trip to study carthorses.'



Robin Hill, Founder of Cotswold Seeds.

But Robin's passion for farming directed his career. Choosing to learn 'from the bottom up,' he became an under cowman on a dairy farm in Wiltshire, milking seven days a week, and progressing to jobs as farm manager. But when Robin was nearing the age of 30, he decided to go into business and joined a local merchant as a buyer of malting barley. He remained there for just two years before he decided to set out on his own. 'We planned out the new business on the back of an envelope,' Robin remembered, but he had a clear vision and was determined right from the start to do things very differently, which has been the ethos of Cotswold Seeds ever since.

What set Cotswold Seeds apart in the early days was Robin's insistence on doing away with salesmen, having observed that some of his competitors employed a sales team of up to a hundred, resulting in high costs which could cripple a business. Robin's first employee was the irascible Mr Francis, who had previously been a tea-planter in India. He had strict ethics which Robin respected, but he had his own way with customers, when they asked when they could expect to receive their order. 'You'll be lucky to get that in a fortnight,' he would reply.

It couldn't be further away from the Cotswold Seeds of today, distinguished by high levels of service and popular promise of next day dispatch.

When Mr Francis left the business he was replaced by Elaine Hall. Though Elaine was employed as a book-keeper she did a bit of everything, from sales, to debt-collecting, keeping the customer

file card index up to date - and shovelling the seed mixtures with an aluminium shovel. At this point the business was being run from a little office in Robin's garden in Fifield in West Oxfordshire, and the warehouse was eleven miles away in the village of Aldsworth, later moving to tin sheds in Milton-Under-Wychwood, which was slightly closer. The orders for grass seed were collected during the week and processed over the weekend. The accountants kept questioning Robin's determination to have a warehouse but he was as adamant as ever that Cotswold Seeds would do things differently and the warehouse was one of the company's major USPs. 'Other companies were just agents but we were selling direct to farmers,' Robin said.

He was also buying direct too. Cotswold Seeds obtained its seeds from farmers with growing contracts and the severe drought of 1976 proved a testing time. Many farms dried up altogether and crops were devastated.

The complex seed mixtures in which Cotswold Seeds was increasingly specialising, were made even more complex by the fact that every one of the many ingredients had to be typed out for each invoice. The labels were all done by hand too, with a stamp which took a while to dry, so the orders had to be strung up like washing around the office.

The now iconic Cotswold Seeds catalogue was also starting to take shape, and Robin placed such an emphasis on its quality even in the early days, that he hired an electric typewriter, with built-in memory, for the annual task of catalogue compilation. After all the pages had been painstakingly typed by hand, and a solitary colour photo chosen for the cover, it was photocopied and collated, put into envelopes, addressed, stamped and posted - all by hand. The next difference was to improve the equipment. After five years the trusty aluminium shovel was replaced by a bespoke mixer. Robin had been asking around for a suitable one and eventually found that there was one going begging, in Yorkshire!

Robin and his wife drove up to fetch it and had it modified for grass seed. Filling the 50kg hessian sacks was still a dusty business, and hard work. And this was one of the tasks that fell to the current MD, Ian Wilkinson, when he came to Cotswold Seeds as a rookie, asking Robin for a summer job while he was a student studying farm and grassland management. Robin's wife Susan was roped in to help with deliveries, loading seeds into the back of her Peugeot 504 estate, which conveniently held half a ton of seeds.

It was all well worth the effort, because nobody else was mixing their own seed and 'we liked to know exactly what was going in,'



'None of this would have been possible without the team who have built on Robin and Ian's hard work and vision.'

Robin said. The warehouse and hand-mixed seeds meant that Cotswold Seeds' quality control has always been second to none.

In 1984 Ian finished his studies and joined Cotswold Seeds full time. He persuaded Robin to make the business more robust by dropping the less profitable cereals to concentrate on grass seeds. Then came the next revolutionary change. The company started using carriers and the delivery process became much more efficient thanks to computerisation, which enabled deliveries to be tracked and dispatched all over the country. This enabled the expansion of the business, building on the important base of local customers, to reach farmers further afield. With the introduction of a massively popular overnight delivery service the company was soon turning over £100k. The company started publishing prices and mixture contents as well as advertising straights in Farmers Weekly, which shook up the industry a bit as it had never been done before.



Ian Wilkinson

Cotswold Seeds was now using the mixer for marketing and advertising, symbolising the bespoke mixtures that have always set Cotswold Seeds apart.

The organic movement began just after Ian joined Cotswold Seeds. The use of legumes had long been part of Robin's vision and key to what Cotswold Seeds has always been about, but this interest grew after he was taken to meet Andre Pochon in Brittany, following a suggestion by an agricultural researcher. It helped to shape the future of the company. Monsieur Pochon had persuaded 2000 farmers to give up using nitrogen. 'He believed in low input farming and he changed my attitude,' said Robin. 'He showed us 20 farms and the grass was waist high in May. Very impressive.'

'Would you put petrol in a car if it ran perfectly well on water,' Robin said, by way of demonstrating the benefits of low input biological farming. He was very keen on slogans and believed 'The Best in the Land' was always the best way to describe Cotswold Seeds. Another might be, 'No salesmen and no nitrates!'

The key to success, according to Robin, is 'integrity, and a sense of humour'. Robin also acknowledged how chance can play its part in

a company's success. 'Finding Ian was a key moment,' remembered Robin. 'Nothing short of a miracle. I rang up Berkshire Agricultural College to see if they had any students needing work, and they gave me Ian, their star pupil, who shared the same vision as me.'

'I'm forever indebted to Robin Hill,' says Ian. 'He was my mentor, and taught me so much about farming, business and life. His belief in the use of legumes and a diverse, mixed farming defines what Cotswold Seeds stands for today. Robin's byword was integrity, and he always stressed to me how important it is to be reliable and to believe in what you are doing. Until the end he still had great passion and vision, and was very supportive of the decision to purchase Honeydale Farm and set up the demo farm and the FarmED Centre. Even though he is no longer with us, it's our intention here at Cotswold Seeds to stay true to his dreams and continue his legacy.'

The last quarter century has produced many challenges in the agricultural sector and the wider world, including the Foot & Mouth crisis in 2001 and the COVID pandemic more recently, but Cotswold Seeds has maintained the quality of its advice and service throughout, employing systems and people to enable the company to operate incredibly efficiently with an industry leading website and a purpose built order processing system, reaching more customers than ever. Not only that but the company underwent significant expansion, doubling capacity with a new and improved warehouse and a larger team - on the mixers, in the delivery vans and offering technical advice on the phone.

Close relationships have been forged with local organisations and businesses and the company is consistently involved with international scientific research projects, working with leading scientists and academics on projects such as Healthy Hay, LegumePlus, and lately Legume Legacy and CHC3. Cotswold Seeds has remained at the forefront of industry developments, leading the way in what is now known as regenerative agriculture - the company was promoting the benefits of soil health and herbal leys long before they became mainstream, and is regularly consulted on legislation and policy.

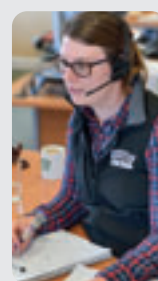
None of this would have been possible without the team who have built on Robin and Ian's hard work and vision. Paul Totterdell took on the daily running of the business in 2015, and alongside Lisa Lane, Sam Lane and Lizzie Arnold in the office and Mike Dearman, Mark Boydell, Rob Moulder and Mark Scarrot in the warehouse who have all been with us for many years. It's thanks to their hard work and dedication that we're able to offer the best mixtures and the best advice in the country, while maintaining true independence and impartiality.



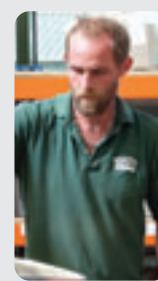
Paul Totterdell



Sam Lane

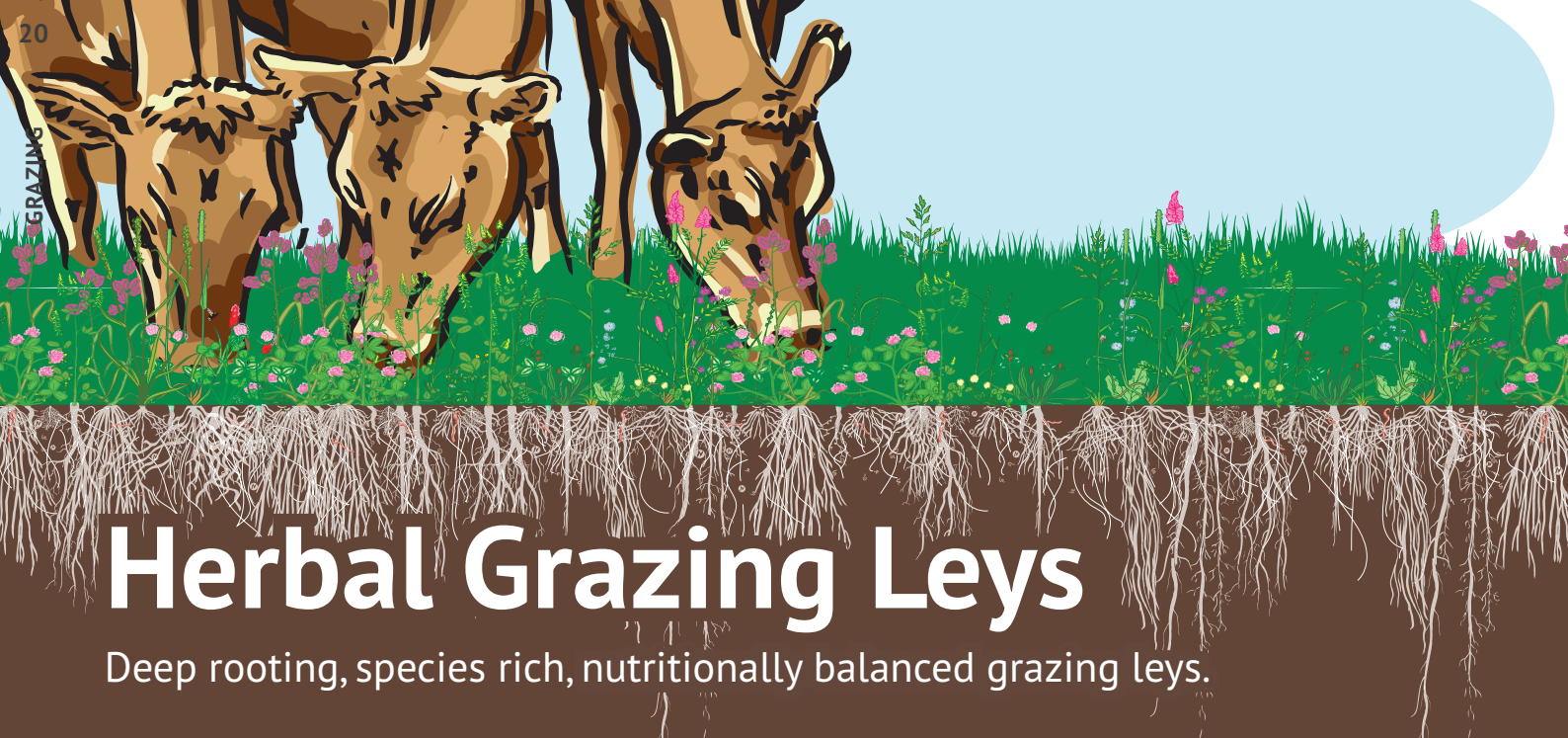


Lizzie Arnold



Mike Dearman

Robin Hill passed away in 2017 but was very much behind the decision to purchase Honeydale Farm (now FarmED) to demonstrate regenerative farming and open a new chapter for Cotswold Seeds. Robin watched the growth of the company, from a team of two to 42 including the expansion into the new warehouse at Moreton-in-Marsh and developments at FarmED, with delight. 'I have seen all my dreams come true,' he said.



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'.

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

Graze 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 17) should be achieved.

Mixes

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 PARDUS meadow fescue
- 0.50 kg certified IONA white clover
- 0.40 kg certified VIOLIN white clover
- 0.40 kg certified BONUS **ORG** red clover
- 0.20 kg certified AURORA alsike clover
- 0.30 kg certified PUNA / ENDURE chicory blend
- 0.20 kg certified ENDURANCE ribgrass

12.00 kg/acre - £98.98

30.00 kg/ha - £247.45

Grass

Legume

Herb

Wildflower

Mixes

Diverse Over-Seed Heavy Land

Grazing or Cutting Mix (SAM3) **70% ORGANIC**

Code: MIXSHOSORG

Over-seeding mix for cutting regimes and med/heavy land. This is an over-seeding mix aimed for cutting and grazing swards, chicory has been left out because it can become woody and stemmy. It will suit medium to heavy soils. For light land consider MIXHOSORG.

- 1.00 kg certified DIWAN **ORG** tet. perennial ryegrass
- 0.80 kg certified BONUS **ORG** red clover
- 0.50 kg certified HEBE **ORG** white clover
- 0.15 kg certified RIVENDEL **ORG** white clover
- 0.15 kg certified LEO birdsfoot trefoil
- 0.30 kg certified AURORA alsike clover
- 0.32 kg burnet
- 0.25 kg certified ENDURANCE ribgrass
- 0.02 kg yarrow
- 0.01 kg self heal

3.50 kg/acre - £47.35 8.75 kg/ha - £118.38

Herbal Over-Seeding

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

A deep rooted over-seeding mix to add diversity to existing swards, this mix suits drier, light land (use MIXSHOSORG for heavy land or silage ground).

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

5.00 kg/acre - £59.59 12.5 kg/ha - £148.98



Herbal Grazing Ley
24th July, Gloucestershire



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.

- 1.70 kg certified DONATA **ORG** cocksfoot
- 1.70 kg certified COMER **ORG** timothy
- 1.40 kg certified DIWAN **ORG** tet. perennial ryegrass
- 1.00 kg certified TODDINGTON **ORG** perennial ryegrass
- 0.50 kg certified FOJITAN **ORG** festulolium
- 1.05 kg certified BARDOUX tall fescue
- 2.20 kg commercial **ORG** sainfoin
- 0.60 kg certified BONUS **ORG** red clover
- 0.33 kg certified ABERDAI white clover
- 0.20 kg certified ABERHERALD white clover
- 0.30 kg certified AURORA alsike clover
- 0.30 kg certified LEO birdsfoot trefoil
- 0.30 kg certified ETINCELLE lucerne - (rhizobium inoc.)
- 0.10 kg commercial sweet clover
- 0.50 kg burnet
- 0.50 kg certified PUNA / ENDURE chicory blend
- 0.25 kg certified ENDURANCE ribgrass
- 0.05 kg sheeps parsley
- 0.02 kg yarrow

13.00 kg/acre - £119.90 32.50 kg/ha - £299.75

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.

- 3.00 kg certified DIWAN **ORG** tet. perennial ryegrass
- 1.70 kg certified TODDINGTON **ORG** perennial ryegrass
- 2.41 kg certified COMER **ORG** timothy
- 1.00 kg certified PARDUS meadow fescue
- 0.50 kg certified TORED **ORG** meadow fescue
- 0.59 kg certified BARDOUX tall fescue
- 0.50 kg certified FOJITAN **ORG** festulolium
- 1.00 kg certified BONUS **ORG** red clover
- 0.60 kg certified ABERDAI white clover
- 0.40 kg certified AURORA alsike clover
- 0.55 kg burnet
- 0.45 kg certified PUNA / ENDURE chicory blend
- 0.30 kg certified ENDURANCE ribgrass

13.00 kg/acre - £122.22 32.50 kg/ha - £305.55

First Hand

Jonathan Chapman



Farm Type	Pastoral
Location	Chiltern Hills
Size	700 Acres
Soil Type	Sandy clay loam, clay and flint, chalk
Mixes Used	Herbal Leys / GS4 Legume & Herb Rich Sward

Jonathan Chapman started using herbal leys five years ago in an arable conversion and says the results have surpassed his expectations.

Bailey Hill Farm, in the Chiltern Hills in South Buckinghamshire, totals seven hundred acres divided into seven areas of land, all of which are in Countryside Stewardship Schemes. One area is in arable conversion and the rest is GS2 long term, low-input permanent grassland. The farm is pastoral, with meat from the mob-grazed sheep and Red Devons and pedigree Murray Grey cattle sold direct to the on-farm butchery.

Jonathan describes the soil type as sandy clay loam, over a clay and flint, over chalk. 'It's quite a mixture and it's quite difficult ground to farm. In many ways it's the worst of both worlds. It tends to dry out in the summer very rapidly because we are on a south-facing hill and it's always breezy but in winter it tends to lie wet because of the clay layer under the topsoil.'

The first herbal ley went in five years ago on a tenanted area of the farm which had been in a continuous short arable rotation of oilseed rape, barley and wheat for nearly thirty years. As

part of the mid-tier stewardship requirements, a soil test was carried out prior to drilling the herbal ley. The results were poor, with carbon content of the soil below 2 per cent. The aim of planting the herbal ley was to regenerate the soil, improve the biodiversity on the farm and produce forage for the cattle.

Jonathan asked Cotswold Seeds to create a bespoke mixture with some late perennial ryegrasses and creeping red fescues to provide 'a bit of infill between the plants and give added soil protection' and he experimented with various methods of establishment - sowing in the spring as well as the autumn. He's used a conventional drill as well as a Cross Slot direct drill and all the establishments were successful, with the help of some well-timed rain and a keen eye to detail on things like sowing depth! After direct drilling in August a lot of grass came through in the mix but after taking a silage cut in the following spring, the legumes all came through really well.

'To say it has surpassed my expectations would be an understatement, especially in the dry years like last year,' enthuses Jonathan. 'Species like the deep rooting legumes, chicory, other herbs, sainfoin and plantain will keep going when the rainfall drops off and commercial ryegrass varieties go dormant and burn off. The chalk loving sainfoin has been a sensation. It's lasted a lot longer than I thought it would. We have just tested the soils on the arable conversion herbal ley and recorded 3.8% organic matter, meaning it's nearly doubled in 5 years!'

'We have just tested the soils on the arable conversion herbal ley and it's nearly doubled in 5 years.'

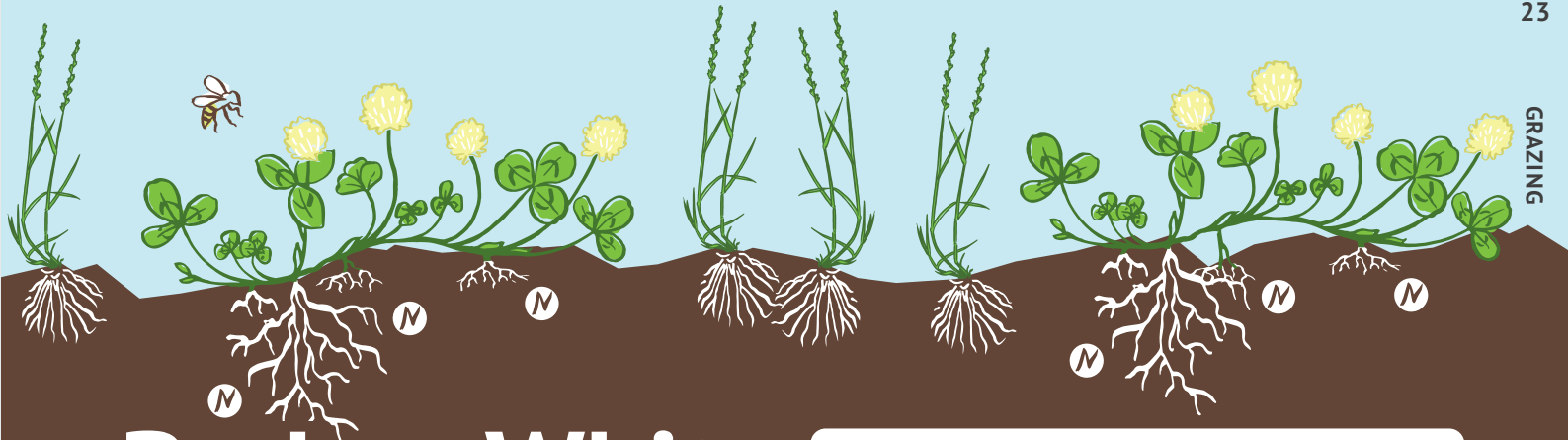
Jonathan has found so many benefits from the herbal leys.

'It's not just about protein and energy. When you are feeding cattle it's also about the mineral content and a balanced diet, which enables body systems to function correctly. The herbal ley provides a good balanced ration. It's like a salad leaf bowl in terms of variety. Instead of boring old ryegrass the cattle can go and nibble on some white clover, red clover, sainfoin, or whatever takes their fancy. Unsurprisingly the quality, marbling and taste of the meat always causes a commotion in the butchery, you can tell these animals have had a great and diverse diet through the finished product. By mob grazing we encourage them to eat the whole lot and it avoids the problems you'd get of certain varieties prospering and other things dying out.'

The herbal leys have improved the animals' condition and growth rates which has been particularly beneficial with young animals. 'We graze the yearlings on the herbal ley because they need protein to help grow a strong frame and regularly achieve average growth rates of 950 grams per day over a whole 8 month grazing season,' says Jonathan.

There's also been a surprising welfare benefit. 'Because the animal puts his head down into the tall herbal it keeps the flies off them. We don't fly treat any of the cattle like we used to.' Jonathan is also recording 'very low faecal egg counts when they are on the herbal leys' thanks to the anthelmintic properties of species like Sainfoin, birdsfoot Trefoil and Chicory.

'It's a win win,' says Jonathan.



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** perennial ryegrass
- 2.80 kg certified TODDINGTON **ORG** perennial ryegrass
- 0.30 kg certified ABERDAI white clover
- 0.60 kg certified ABERSWAN white clover
- 0.60 kg certified VIOLIN white clover

12.00 kg/acre - £89.95 30.00 kg/ha - £224.88

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 ABERHERALD white clover
- 0.60 kg certified ABERPEARL white clover
- 0.20 kg certified ABERACE wild white clover

12.00 kg/acre - £94.05 30.00 kg/ha - £235.13

Additions



Heavy land: 2kg 70% ORGANIC timothy	£18.22 per acre
Light land: 2kg 70% ORGANIC cocksfoot	£14.35 per acre
Red clover: 1kg 70% ORGANIC red clover	£11.32 per acre
Cover crop: 3kg 70% ORGANIC westerwolds	£12.95 per acre
Anti bloat: 5kg 70% ORGANIC sainfoin	£22.70 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 **NON ORGANIC**

Code: MIXEF

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. **Needs derogation.**

- 1.90 kg certified VOLLEND A stubble turnip
- 0.60 kg certified AKELA forage rape

2.50 kg/acre - £13.38

6.25 kg/ha - £33.45

Summer Early Graze

Fast Growing and Cheap Seed **NON ORGANIC**

Code: MIXSEG

An alternative to the Early Fold Root Mix above. Good for sowing in May & June and grazing during autumn.

Needs derogation.

- 1.00 kg certified AVALON leafy turnip
- 1.00 kg certified AKELA forage rape

2.00 kg/acre - £13.40

5.00 kg/ha - £33.50

Straights

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 Akela variety exhibits very good frost tolerance and is extremely late flowering. **Needs derogation.**

Akela**4.00 kg/acre - £19.60**

10.00 kg/ha - £49.00

**Pinfold Kale**

11th November, Worcestershire

Stubble Turnip **NON ORGANIC**

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

Vollenda**2.00 kg/acre - £11.00**

5.00 kg/ha - £27.50

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 - £36.40**

5.00 kg/ha - £91.00

Maris Kestrel**2.00 kg/acre - £40.00**

5.00 kg/ha - £100.00

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 - £26.19**

7.50 kg/ha - £65.48

Interval**3.00 kg/acre - £17.25**

7.50 kg/ha - £43.13

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 - £23.20**

5.00 kg/ha - £58.00

Swede **NON ORGANIC**

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 - £97.50**

3.75 kg/ha - £243.75

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.

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 APOLL **ORG** fodder radish
- 1.50 kg certified ALBEROBELLO **ORG** crimson clover
- 0.50 kg commercial sweet clover
- 0.40 kg certified BONUS **ORG** red clover
- 1.30 kg certified AKENATON egyptian/berseem clover
- 0.50 kg certified LOGUDORO **ORG** persian clover

6.00 kg/acre - £48.04

15.00 kg/ha - £120.10



Interested in insects and reducing pests on your crops? Learn more about them and what insects can do for you in our **Beneficial Insect guide**.

Visit cotswoldseeds.com to download your copy.

Short term mixes

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 PAJBJERG yellow trefoil
- 2.10 kg certified RIVENDEL **ORG** white clover

3.00 kg/acre - £57.78 7.50 kg/ha - £144.45

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 DUBLIN white clover
- 5.80 kg certified SOLID **ORG** tet. hybrid ryegrass

9.00 kg/acre - £72.04 22.50 kg/ha - £180.10

Annual Beneficial Insect Mix

70% ORGANIC Code: MIXANBIORG

A short term mixture that will provide an array of flowering species to attract beneficial insects and pollinators. This mixture can be used in either arable or horticultural situations, across fields or in polytunnels when a temporary or short term resource is required.

- 2.20 kg commercial LILEJA **ORG** buckwheat
- 1.25 kg certified LOGUDORO **ORG** persian clover
- 1.20 kg certified ALBEROBELLO **ORG** crimson clover
- 0.75 kg certified AKENATON egyptian/berseem clover
- 0.50 kg commercial balansa clover
- 0.30 kg fenugreek
- 0.30 kg coriander
- 0.25 kg certified STALA **ORG** phacelia
- 0.10 kg cornflower
- 0.10 kg corn cockle
- 0.05 kg corn marigold

7.00 kg/acre - £68.00 17.50 kg/ha - £170.00

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.

- 70% certified ELEGO **ORG** rye
- 30% certified EARLY ENGLISH vetch

25.00-75.00 kg/acre **£2.02 per kg**

For Westerwold & Vetch see page 11

Longer term mixes

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 AVISTO red clover
- 0.50 kg certified PUNA / ENDURE chicory blend
- 3.00 kg certified DONATA **ORG** cocksfoot

7.50 kg/acre - £76.74 18.75 kg/ha - £191.85

Winter Cover Crop

Diverse Winter Mix **70% ORGANIC** Code: MIXCCLOG

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 ALBEROBELLO **ORG** crimson clover
- 1.00 kg certified CABRI **ORG** mustard
- 0.40 kg certified IRIS fodder radish
- 0.45 kg certified APOLL **ORG** fodder radish
- 0.25 kg certified LILLA phacelia
- 0.40 kg certified DIAKON tillage radish
- 0.25 kg certified AURORA alsike clover
- 0.20 kg certified PASAT persian clover

5.00 kg/acre - £31.69 12.50 kg/ha - £79.23

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/SFI Codes: OP2, AHL2

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% **ORG** buckwheat
- 20% **ORG** spring triticale
- 15% **ORG** mustard
- 15% **ORG** fodder radish
- 10% red millet
- 10% white millet
- 5% gold of pleasure
- 3% brown mustard
- 2% linseed

5.00 kg/acre 12.50 kg/ha **£4.31 per kg**

OP2 Two Year Wild Bird Seed

OELS/HLS/CSS/SFI Codes: OP2, AHL2

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

This mix includes cereal 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 triticale (supplied separately)
- 12% kale
- 8% red millet
- 2.5% linseed
- 2% hybrid rape/kale
- 2% mustard
- 2% fodder radish
- 1.5% fennel

20.00 kg/acre 50.00 kg/ha **£4.05 per kg**

Light Land Legume & Herb Rich Sward (OP4/SAM3)

70% ORGANIC

Code: MIXLITORG

A deep rooting herbal ley, designed to stay green on land that burns up in the summer, softer leaved cocksfoot and tall fescue varieties boosts palatability

- 1.50 kg certified DONATA **ORG** cocksfoot
- 1.25 kg certified COMER **ORG** timothy
- 1.00 kg certified DIWAN **ORG** tet. perennial ryegrass
- 0.50 kg certified FOJITAN **ORG** festulolium
- 0.50 kg certified TODDINGTON **ORG** perennial ryegrass
- 0.63 kg certified BARDOUX tall fescue
- 2.00 kg commercial **ORG** sainfoin
- 0.25 kg certified BONUS **ORG** red clover
- 0.20 kg certified AVISTO red clover
- 0.30 kg certified LEO birdsfoot trefoil
- 0.20 kg certified AURORA alsike clover
- 0.30 kg certified ABERDAI white clover
- 0.25 kg certified ETINCELLE lucerne - (rhizobium inoc.)
- 0.45 kg burnet
- 0.40 kg certified PUNA / ENDURE chicory blend
- 0.25 kg certified ENDURANCE ribgrass
- 0.02 kg yarrow

10.00 kg/acre - £92.47 25.00 kg/ha - £231.18

Heavy Land Legume & Herb Rich Sward (OP4/SAM3)

70% ORGANIC

Code: MIXHEAVORG

A mix specifically designed to include species that suit heavier, wetter land such as timothy, meadow fescue, ryegrass and alsike clover.

- 1.20 kg certified DIWAN **ORG** tet. perennial ryegrass
- 1.20 kg certified TODDINGTON **ORG** perennial ryegrass
- 1.00 kg certified SOLID **ORG** tet. hybrid ryegrass
- 1.40 kg certified COMER **ORG** timothy
- 1.30 kg certified TORED **ORG** meadow fescue
- 0.60 kg certified FOJITAN **ORG** festulolium
- 0.63 kg certified BARDOUX tall fescue
- 0.30 kg certified BONUS **ORG** red clover
- 0.30 kg certified AVISTO red clover
- 0.40 kg certified AURORA alsike clover
- 0.40 kg certified ABERDAI white clover
- 0.15 kg certified LEO birdsfoot trefoil
- 0.50 kg burnet
- 0.35 kg certified PUNA / ENDURE chicory blend
- 0.25 kg certified ENDURANCE ribgrass
- 0.02 kg yarrow

10.00 kg/acre - £99.77 25.00 kg/ha - £249.43

Grass

Legume

Herb

Cereal

C4 Plants

Wildflower

Others

Brassica

Pollen & Nectar

Legume and flower margins.

Mixes

Nectar Stewardship Mix (AB8/IPM2)

ELS/HLS/CSS/SFI Codes: EF1, HE10, AB8, IPM2

Long Term Pollen & Nectar **NON ORGANIC** Code: MIXECOAB8

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 crested dogtail
- 10% certified slender creeping red fescue
- 15% certified smooth stalked meadowgrass
- 30% certified red/chewings fescue
- 30% certified sheeps fescue
- 3% native sainfoin
- 2% certified birdsfoot trefoil
- 0.60% native red clover
- 0.60% wild carrot
- 0.60% salad burnet
- 0.60% ox-eye daisy
- 0.60% certified late flowering red clover
- 0.50% lesser knapweed
- 0.50% yarrow
- 0.20% cornflower
- 0.20% ladys bedstraw
- 0.20% musk mallow
- 0.10% self heal
- 0.10% red campion
- 0.10% ribwort plantain
- 0.10% white campion

8.00 kg/acre 20.00 kg/ha

£11.92 per kg

Floristically Enhanced Field Margin (AB8/IPM2)

ELS/HLS/CSS/SFI Codes: EF1, HE10, AB8, IPM2

Long Term Pollen & Nectar **NON ORGANIC** Code: MIXAB820

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 2kg per hectare wildflower component. **Needs derogation.**

- 5% certified common bentgrass
- 5% certified smaller catstail
- 10% certified crested dogtail
- 10% certified slender creeping red fescue
- 15% certified smooth stalked meadowgrass
- 20% certified sheeps fescue
- 25% certified red/chewings fescue
- 1.90% native sainfoin
- 1% wild carrot
- 1% salad burnet
- 1% ox-eye daisy
- 1% lesser knapweed
- 1% native red clover
- 0.60% self heal
- 0.60% musk mallow
- 0.60% white campion
- 0.50% ribwort plantain
- 0.25% hedge bedstraw
- 0.25% ladys bedstraw
- 0.20% red campion
- 0.10% yarrow

8.00 kg/acre 20.00 kg/ha

£19.97 per kg

Pollen & Nectar Flower

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

Grass & 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
- 7.50% commercial **ORG** sainfoin
- 6.25% certified late flowering red clover
- 5.25% certified **ORG** vetch
- 4.50% certified birdsfoot trefoil
- 2.50% certified alsike clover

8.00 kg/acre 20.00 kg/ha

£9.08 per kg

The Operation Pollinator

OELS/HLS/CSS/SFI Codes: OF4, AHL1

Just Legumes **70% ORGANIC** Code: MIXPNLORG

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
- 16% certified alsike clover
- 12.20% certified birdsfoot trefoil
- 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

£13.67 per kg

First Hand

Anne Miller



Farm Type	Solar Farm and Wildflower Meadow
Location	Charlbury, Oxfordshire
Size	40 acres
Soil Type	Cotswold Brash
Mixes Used	Bespoke Limestone Grassland mix, Tussocky grass margin and Cotswold Wild Flora meadow mix.

Southill Solar Farm is an innovative community project designed to make a small town carbon zero in terms of energy consumption and creating a wildflower meadow with a bespoke limestone grassland mix is a vital part of the environmentally-focused project.

Southill Solar Farm is a community owned solar farm on the Cornbury Estate on the outskirts of Charlbury, in Oxfordshire. In 2013, a group of passionate locals approached the Cornbury Estate who farm the area.

They were very supportive of their idea of creating the town's own solar farm. After two years of negotiations with the planners and Cotswold Living Landscapes, plans were approved to create a landscaped 4.5mw solar farm, enough to provide energy for the whole town.

Construction on the panels began in September 2016 and by November that same year they were generating power. The energy is sold to the grid to power the town. Anyone in Charlbury can own shares and the rest goes into a community fund which enables various projects under the banner, Sustainable Charlbury.

'You get waves of colours as the different flowers come out, meaning different pollinators are being supported throughout the season.'

One term of the planning permission was that a 25 acre field adjacent to the site, which had previously been sown each year with arable crops, had to be planted to enhance biodiversity. The first priority was maintaining the habitat for the six pairs of resident nesting Skylarks, while also improving the habitat for rare Roman Snails along with a variety of butterflies and other insects found within the site.

'We worked with Ian Wilkinson and Sam Lane from Cotswold Seeds, who offered guidance, expertise and suggestions of various seed mixes to enhance the habitat for pollinators, reptiles and amphibians,' says Anne Miller, an ecologist who oversees the site. 'We're not farmers, so we relied on support from local contractors, farmers and volunteers. Initially, we experimented with sowing plots and mixes of annual plant species like Sunflowers and Millet to produce seed for farmland birds over the winter. However, it did not prove practical because we had to resow each year. We were looking for a longer term solution.'

The classic Cotswold Wild Flora mix features a variety of wildflower species and traditional grasses that suit the soil type, including Field Scabious, Knapweed, Birdsfoot Trefoil, Oxeye Daisy, Wild Carrot, Ladys Bedstraw and Yellow Rattle. It also included adding some brush harvested seeds from an existing nearby old meadow in order to add some local provenance flora to the mix.

'The first year it was full of beautiful Cornflowers and Corn Cockle,' remembers Anne. 'We've lost most of the annuals now but perennials like Wild Carrot and Birdsfoot Trefoil, Knapweed and the Scabious have done really well. You get waves of colours as the different flowers come out, meaning different pollinators are being supported throughout the season. It's awash with butterflies - Meadow Browns, Marbled Whites and Peacocks. The meadow became a feast of Yellow Rattle in late spring and we are able to share these seeds with people to use in gardens and along the local roadside verges.'

Wildlife enhancement around the solar panels was a challenge. 'The land had obviously been very disturbed during the construction of the panels, leading to some weeds germinating which had laid dormant, deep in the soil for many years. It was difficult to get in and around the panels to sow the grass seed compared to the open field site' says Anne.

Ideally the panels would have been higher, spaced wider and angled to encourage more wildflowers and grass growth but planning consent constrained this. So Cotswold Seeds developed a special low growing, species rich, grass only mix to grow around and under the panels, to establish a dense sward on the brashy soil. This included traditional grasses like Smaller Catstail, Dogstail and Creeping Red Fescue.

'It took a while to get established and plants like Creeping Thistle and Ragwort took hold and brambles interfere with the solar panels in some areas,' says Anne.

After a while the grass became well established and there are plans to introduce grazing sheep around the panels to manage it in the future.

Meanwhile, the wildflower meadow is left to flower each year for insects and nesting Skylarks until the end of August, when a hay crop is taken. Six metre margins of a tussocky grassland mix have also been allowed to spread. This mix includes more upright species like Cocksfoot and Tall Fescue. More structural grass species allows a place to overwinter and resources for the local wildlife.

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 rough stalked meadowgrass
- 20% certified **ORG** creeping red fescue
- 20% certified smooth stalked meadowgrass
- 26% certified sheeps fescue

16.00 kg/acre 40.00 kg/ha **£10.62 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 **£9.07 per kg**

Buffer Strip Grass Margin

OELS/HLS/SFI Codes: OE1,OE2, OE3,OE9, O37,AHL3, AHL4

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 **£9.54 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.**

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 **£161.98 per kg +VAT**



Cornfield Annuals
15th June, Gloucestershire

Mixes

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.

- 42% corn cockle
- 18% cornflower
- 16% field poppy
- 12% corn marigold
- 6% birdsfoot trefoil
- 3% crimson clover
- 3% persian clover

6.00 kg/acre 15.00 kg/ha **£54.16 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
- 12% certified smaller catstail
- 13% commercial crested dogstail
- 15% certified sheeps fescue
- 15% certified smooth stalked meadowgrass
- 20% certified red/chewings fescue
- 1.5% salad burnet
- 1.5% native sainfoin
- 1.2% self heal
- 1.2% lesser knapweed
- 1% ribwort plantain
- 1% red campion
- 1% ladys bedstraw
- 1% field scabious
- 1% white campion
- 0.8% musk mallow
- 0.75% wild carrot
- 0.75% meadow buttercup
- 0.5% yarrow
- 0.5% ox-eye daisy
- 0.25% betony
- 0.25% kidney vetch
- 0.25% hedge bedstraw
- 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 **£46.58 per kg**

Mixes

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% commercial crested dogstail
- 15% certified wood meadowgrass
- 24% certified slender creeping red fescue
- 24% certified red/chewings fescue
- 2% red campion
- 2% white campion
- 2% self heal
- 1.5% hedge bedstraw
- 1.1% betony
- 1% meadow vetchling
- 1% wood avens
- 0.75% yarrow
- 0.65% common sorrel
- 0.6% meadow buttercup
- 0.6% greater knapweed
- 0.4% garlic mustard
- 0.35% perforate st john's wort
- 0.3% teasel
- 0.25% tufted vetch
- 0.2% bluebell
- 0.15% upright hedge parsley
- 0.15% autumn hawkbit

10.00 kg/acre 25.00 kg/ha **£70.65 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 hairgrass
- 5% commercial sweet vernal grass
- 10% commercial crested dogstail
- 10% certified smaller catstail
- 16% certified smooth stalked meadowgrass
- 20% certified sheeps fescue
- 20% certified red/chewings fescue
- 2.6% native sainfoin
- 2% field scabious
- 1.6% ladys bedstraw
- 1.5% salad burnet
- 1.2% small scabious
- 1% kidney vetch
- 1% meadow buttercup
- 1% wild carrot
- 1% self heal
- 1% agrimony
- 0.5% ox-eye daisy
- 0.5% yarrow
- 0.05% birdsfoot trefoil
- 0.05% rough hawkbit

10.00 kg/acre 25.00 kg/ha **£66.88 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.

- 3% wavy hairgrass
- 5% certified meadow foxtail
- 5% certified rough stalked meadowgrass
- 12% certified crested dogstail
- 20% certified common bentgrass
- 20% certified red/chewings fescue
- 20% certified sheeps fescue
- 2% self heal
- 2% ladys bedstraw
- 1.3% lesser knapweed
- 1% ox-eye daisy
- 1% betony
- 1% sheeps sorrel
- 1% yarrow
- 1% yellow rattle
- 1% hedge bedstraw
- 0.9% meadowsweet
- 0.8% meadow buttercup
- 0.8% meadow vetchling
- 0.5% native red clover
- 0.5% common sorrel
- 0.2% ribwort plantain

10.00 kg/acre 25.00 kg/ha **£64.84 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/chewings fescue
- 20% certified sheeps fescue
- 2% great burnet
- 1.8% self heal
- 1.75% yellow rattle
- 1.7% ladys bedstraw
- 1.5% lesser knapweed
- 1.3% common sorrel
- 1% ribwort plantain
- 0.75% ragged robin
- 0.6% meadowsweet
- 0.5% ox-eye daisy
- 0.5% betony
- 0.5% meadow vetchling
- 0.5% devil's-bit scabious
- 0.5% greater birdsfoot trefoil
- 0.1% native red clover

10.00 kg/acre 25.00 kg/ha **£66.41 per kg**

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



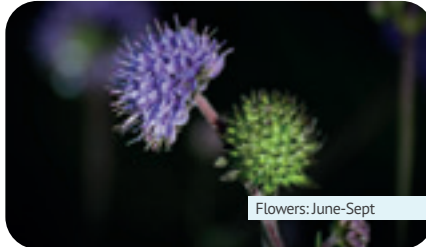
Flowers: June-Aug

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

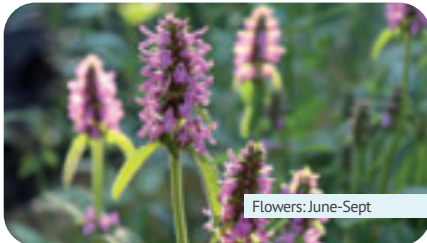


Flowers: Apr-Oct

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

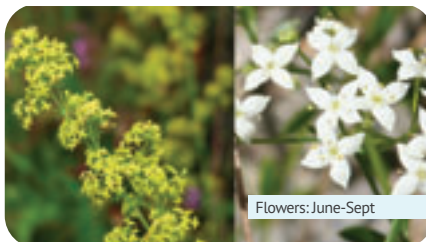


Flowers: Apr-June

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.



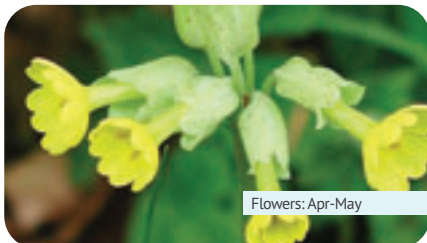
Flowers: June-Sept

Cowslip

Primula veris

Found on chalky grassland and open calcareous woodland.

Early

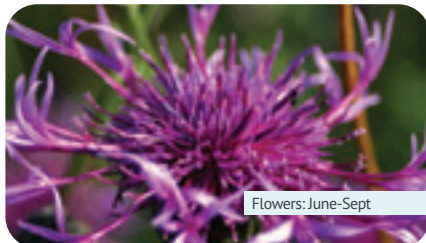


Flowers: Apr-May

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.



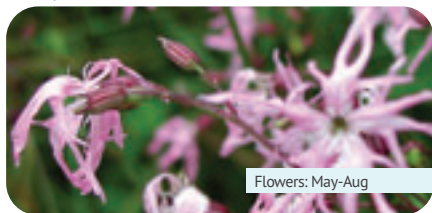
Flowers: May-Sept

Perennials continued

Ragged Robin*Lychnis flos-cuculi*

Delicate ragged flowers usually found in damp meadows.

Early

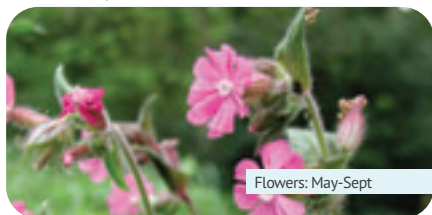


Flowers: May-Aug

Red Campion*Silene dioica*

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

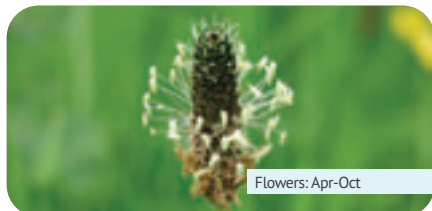
Early



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*

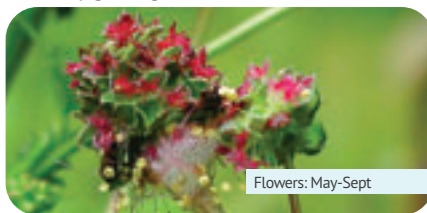
Likes free-draining calcareous soils with a sunny aspect. Has medicinal properties.



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*

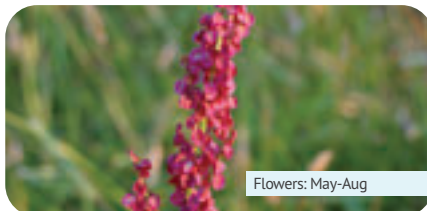
A low growing, creeping plant which is common in most grassland.



Flowers: June-Oct

Sorrel*Rumex acetosa*

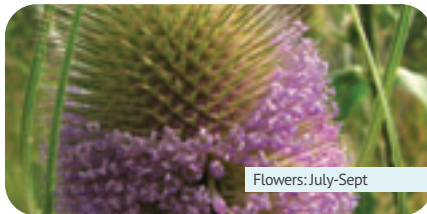
Grows well in loamy soils rich in nutrients.



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*

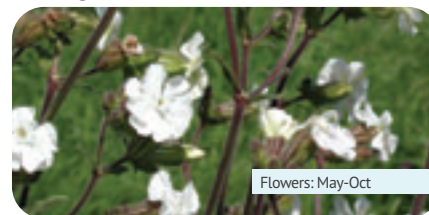
Creeping, sprawling growth habit. Found in hedgerows and climbing up vegetation.



Flowers: June-Aug

White Campion*Silene latifolia*

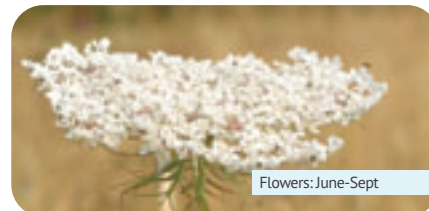
Frequent in roadside verges, hedgerows and waste ground.



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.

Late

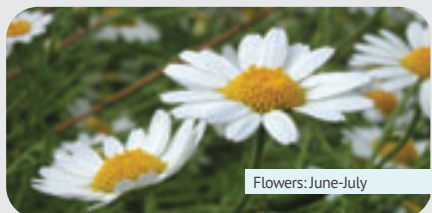


Flowers: June-Nov

Annuals

Corn Chamomile*Anthemis arvensis*

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



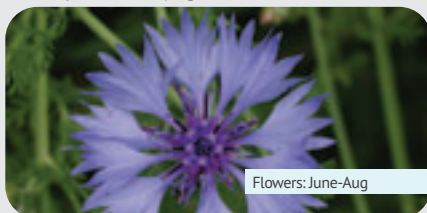
Flowers: June-July

Corn Cockle*Agrostemma githago*

A tall annual with an attractive vivid purple flower.

**Cornflower***Centaurea cyanus*

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



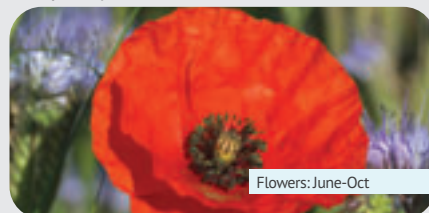
Flowers: June-Aug

Corn Marigold*Crysanthemum segetum*

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

**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.



*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

C4 Plants

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.

- 12.63 kg **ORG** triticale
- 3.00 kg grain sorghum
- 1.00 kg red millet
- 1.00 kg white millet
- 0.60 kg forage rape
- 0.32 kg hybrid rape/kale
- 0.32 kg **ORG** fodder radish
- 0.30 kg **ORG** mustard
- 0.08 kg gold of pleasure
- 0.50 kg **ORG** crimson clover
- 0.25 kg **ORG** persian clover

20.00 kg/acre - £59.48 50.00 kg/ha - £148.70

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.

- 2.40 kg **ORG** vetch
- 2.20 kg **ORG** triticale
- 1.75 kg **ORG** sunflower
- 0.80 kg grain sorghum
- 0.50 kg hybrid rape/kale
- 0.25 kg **ORG** mustard
- 0.25 kg mustard
- 0.25 kg fodder radish
- 0.40 kg red millet
- 0.40 kg white millet
- 0.40 kg **ORG** crimson clover
- 0.40 kg persian clover

10.00 kg/acre - £45.11 25.00 kg/ha - £112.78

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.

- 15.80 kg **ORG** spring triticale
- 2.85 kg grain sorghum
- 1.80 kg game kale
- 0.50 kg **ORG** fodder radish
- 0.20 kg gold of pleasure
- 0.15 kg hybrid rape/kale
- 0.80 kg red millet
- 0.80 kg white millet
- 0.50 kg **ORG** red clover
- 0.30 kg fennel
- 0.30 kg chicory blend

24.00 kg/acre - £98.20 60.00 kg/ha - £245.50

Cotswold Partridge Mix

Cover and Feed **70% ORGANIC** Code: MIXPARTORG

This mix contains species attractive to partridge, helping to keep them in the area of a partridge drive. The inclusion of fennel will last two years if left in place over the winter.

- 9.46 kg **ORG** triticale
- 1.15 kg **ORG** vetch
- 1.00 kg linseed
- 1.00 kg red millet
- 0.80 kg game kale
- 0.30 kg gold of pleasure
- 0.25 kg forage rape
- 0.15 kg leafy turnip
- 0.54 kg grain sorghum
- 0.30 kg **ORG** crimson clover
- 0.30 kg **ORG** persian clover
- 0.20 kg native red clover
- 0.30 kg fennel
- 0.25 kg chicory blend

16.00 kg/acre - £66.10 50.00 kg/ha - £165.25

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.

- 1.50 kg **ORG** buckwheat
- 1.25 kg **ORG** mustard
- 0.75 kg **ORG** fodder radish
- 0.50 kg forage rape
- 0.50 kg hybrid rape/kale
- 0.25 kg leafy turnip
- 0.25 kg brown mustard

5.00 kg/acre - £27.40 12.50 kg/ha - £68.50



Retrieve Mixture
15th September, Shropshire



Our informative **Beneficial Insects** guide provides an insight into common farmland pests and explores how to control them using natural predators and specialist seed mixtures.

It lists the top pest controlling beneficial insects that you need to encourage and suggests mixtures and ways to encourage these insects onto your farm!

Available to request or download at cotswoldseeds.com

COTSWOLD SEEDS

Cotswold Seeds was founded in 1974 and deals with over 20,000 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.

Cotswold Seeds Ltd
Cotswold Business Village
Moreton in Marsh
Gloucestershire, GL56 0JQ

Tel: 01608 652552
www.cotswoldseeds.com
info@cotswoldseeds.com

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