COTSWOLD Grass Seeds DIRECT

2020

ORGANIC CATALOGUE

47TH EDITION

Next day delivery

since 1974... call 01608 652552
or visit cotswoldseeds.com

Payment

Account customers receive 28 days credit.
Payment can also be made by card, cheque, BACs and PayPal.

Payable to: Cotswold Seeds Ltd
Barclays Bank
Acc. no. 80278661
Sort code 20-20-15

IBAN: GB92 BARC 2020 15802786 61
SWIFTBIC: BARCGB22

T&Cs apply - available on website/invoices.

Customers can now order online with clarification of farmers group membership.

VISA mastercard PayPal™

Free delivery on orders over £50

Orders placed by 2pm on the phone or online can normally be delivered next day to most parts of the UK (not weekends & stock permitting). We try and use our own vehicles for delivery where possible, and use third party carriers for all other areas. We always endeavour to mix your seed and dispatch on the day of ordering prior to 2pm.

We also deliver to the outlying areas of the UK and Europe; any additional cost will be advised at the time of ordering. Customers outside the UK, Northern Ireland & Eire should order by phone, rather than online.

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

ISBN: 978-1-8380163-1-9

Welcome from Ian & Paul

While Ian is still very much at the helm of Cotswold Seeds, I am delighted to have taken responsibility for the day-to-day running of the company. Having worked here with Ian for over twenty years, I have seen Cotswold Seeds change and expand but at the same time the fundamental ethos of the company has remained the same. Founder Robin Hill, with whom I was lucky enough to work alongside for several years prior to his retirement, believed that integrity was key. Although Robin is no longer with us he would have been delighted to see that hundreds of you kindly took part in our customer survey earlier last year. It was heartening to discover that so many of you value our friendly and helpful advice, fast delivery, and the quality of our seed mixtures, as well as our all-important catalogue. So with this in mind I bid you a very warm welcome to this latest 47th edition from myself and the rest of our dedicated team.

After another challenging year weather-wise at home and abroad, the lack of organic seed has resulted in DEFRA permitting the use of forage mixtures with a 50% organic inclusion rate without the need for derogation. (You will still need a derogation for mixtures with under 50%.) We have secured enough organic seed to see us through most of the year, but these stocks will run out. Perennial ryegrass is in particularly short supply so you are advised to order sooner rather than later to secure the seed. Our technical team are primed and ready for your enquiries. Sam, Lizzie and Abbi are only a phone call away and are always happy to provide the advice and support you need. We're looking forward to speaking with you soon.

Paul Totterdell
General Manager

I know that many of you are aware of FarmED and have been following the development of the new centre for farm and food education, which we've been creating at Honeydale Farm. The centre is due to officially open later this year and kept us busy during 2019. The aims of FarmED are to accelerate the transition towards regenerative agriculture and a sustainable food system, and the response we've had so far has been overwhelmingly positive.

FarmED underpins all the work we've been doing at Cotswold Seeds over the past decades. Through publications such as our popular Sort Out Your Soil and The Herbal Ley Farming System, we've been offering information on herbal leys, cover crops and green manures which are all designed to promote soil health, livestock health and ultimately human health. Increasingly these mixtures are being seen as important for carbon sequestration and to restore biodiversity. We're regularly asked to give talks and presentations on these subjects and when our technical advisors Sam, Lizzie and Abbi talk to you on the phone, they're often asked about using our seed mixtures to reduce costly inputs and find more self-sufficient methods of farming. In such rapidly changing and uncertain times, the need for this has never been greater. FarmED takes sustainability many steps further through inspirational education, innovative research, practitioner led knowledge exchange and personal development opportunities.

We want FarmED to grow into a thriving hub and community - demonstrating regenerative farming, sustainable food production & consumption, and rural enterprise. We'll be hosting a series of events to introduce FarmED, from farm walks & talks to demonstrations & presentations and we really hope to welcome you to some of them and show you around.

Ian Wilkinson
Managing Director

Reading the mixtures

As you flick through this catalogue you will notice coloured indicators alongside the mixture contents, as well as a coloured bar beneath.

■ 2.00 kg certified CANCAN perennial ryegrass.
The green block indicates that this is a grass.

This bar would indicate a mixture of 50% grass and 50% legume content - based on weight.

Grass | Legume | Herb

You will see a key on every page where there is a mixture, showing which colour represents which 'type' of plant.

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

How Long Do Ryegrass Leys Last?

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

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

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

1 Perennial Ryegrass (Lolium perenne)

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

2 Westerwolds Ryegrass (Lolium westerwoldicum)

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

3 Italian Ryegrass (Lolium multiflorum)

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

4 Hybrid Ryegrass (Lolium x boucheanum)

This form of ryegrass is perhaps one of the best grasses available to the intensive farmer. The hybrid is a cross between the Italian and perennial forms of ryegrass and shares characteristics of both. The dominant parent determines how the variety performs in the field. Most hybrid varieties have the Italian gene dominant and the best cultivars provide the same or similar high yields as Italian ryegrass. But, as they also contain some of the persistent genes of the perennial ryegrass parent, they last longer. The genes of the perennial ryegrass parent produce a plant with more tillers and more leaf which gives increased ground cover, making it better for grazing.

Tetraploid ryegrass

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

5 Cocksfoot (Dactylis glomerata)

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

6 Timothy (Phleum pratense)

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

7 Meadow Fescue (Festuca pratensis)

A long duration grass that is often sown with timothy to provide hay or grazing.

For longer term leys it is an alternative to perennial ryegrass, especially in upland areas. It will grow on nearly all soils ranging from light, brashy types to stiff clays. It has the same growth habit as perennial ryegrass and, although more persistent and drought tolerant, is slower to establish.

Festulolium

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

8 Common Bent (Agrostis capillaris)

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

9 Creeping Red Fescue (Festuca rubra rubra)

This common grass has creeping roots which enable it to remain green in dry times and give pasture a good bottom. Sometimes this can also be a disadvantage as it stifles some of the more delicate species and should therefore be used with caution. An alternative fescue, such as sheeps, red or slender creeping red will allow the development of finer species. However, creeping red fescue is an inexpensive seed and can be included in simple mixtures, particularly those for low grade amenity use.

10 Meadow Foxtail (Alopecurus pratensis)

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

11 Red Fescue (Festuca rubra commutata)

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

12 Sheeps Fescue (Festuca ovina)

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

13 Crested Dogstail (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)

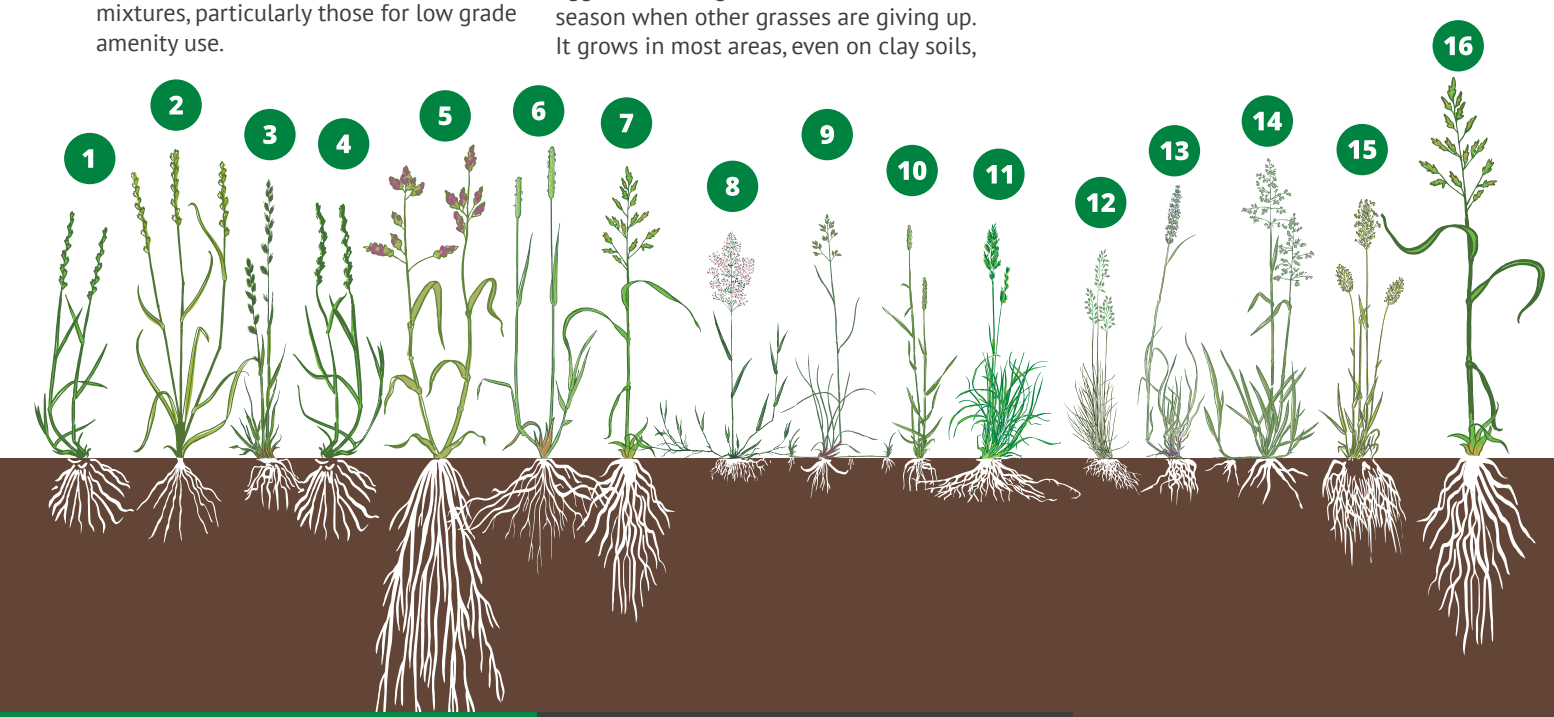
This perennial has creeping rhizomes and is very drought resistant. It is common throughout the UK, particularly on lighter soils. It should not be sown late in the autumn as it is slow to establish. Shallow sowing is also essential as the seed needs light to germinate. Early to grow in the spring, once 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, grown with grass or on their own, play an important role in providing highly nutritious forage and free nitrogen.

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

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

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

True Clovers

1 White Clover (Trifolium repens)

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

Increase livestock productivity

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

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

A leaf size for every purpose

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

2 Red Clover (Trifolium pratense)

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

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

Oestrogen and livestock fertility

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

Varieties

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

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

3 Alsike Clover (Trifolium hybridum)

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

4 Crimson Clover (Trifolium incarnatum)

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

5 Persian Clover (Trifolium resupinatum)

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

6 Berseem Clover (Trifolium alexandrium)

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

Other Key Legumes

7 Lucerne (Medicago sativa)

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

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

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

8 Sainfoin (Onobrychis viciifolia)

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

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

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

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

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

9 Sweet Clover (Melilotus spp.)

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

10 Yellow Trefoil (Medicago lupulina)

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

11 Birdsfoot Trefoil (Lotus corniculatus)

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

12 Vetches (Vicia sativa)

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

Herbs

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

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

13 Chicory (Chicorium intybus)

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

14 Ribgrass (Plantago lanceolata)

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

15 Yarrow (Achillea millefolium)

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

16 Burnet (Sanguisorba minor)

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

17 Sheeps Parsley (Petroselinium crispum)

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

Over-Seeding

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

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.

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

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

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

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

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

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

Over-seeding
15th March

Grass | Legume | Herb

Mixes: Ryegrass

Ryegrass Over-Seeding

Short Term 2-3 Years **50% ORGANIC** Code: MIXOSORG

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

- 5.00 kg certified HUNTER **ORG** tet. Italian ryegrass
- 5.00 kg certified ASTONCRUSADER tet. hybrid ryegrass

10.00 kg/acre - £47.50 25.00 kg/ha - £118.75

Ryegrass Over-Seeding

Longer Term 4-5 Years **50% 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.

- 5.00 kg certified ASTONCRUSADER **ORG** hybrid ryegrass
- 5.00 kg certified ABERBITE tet. perennial ryegrass

10.00 kg/acre - £56.75 25.00 kg/ha - £141.88

Ryegrass & Clover Over-Seeding

Longer Term 4-5 Years **50% ORGANIC** Code: MIXOSLCORG

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

- 5.00 kg certified ASTONCRUSADER **ORG** hybrid ryegrass
- 4.00 kg certified ABERBITE tet. perennial ryegrass
- 0.40 kg certified ABERHERALD white clover
- 0.40 kg certified ABERDAI white clover
- 0.20 kg certified ABERACE wild white clover

10.00 kg/acre - £62.09 25.00 kg/ha - £155.23

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 **50% ORG** per. ryegrass **£12.45 per acre**

Mixes: Clover and herbs

White Clover Over-Seeding

Long Term Grazing **50% ORGANIC** Code: MIXOSCORG

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

- 1.00 kg certified RIVENDEL **ORG** white clover
- 0.80 kg certified ABERDAI white clover
- 0.20 kg certified ABERACE wild white clover

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

White Clover Over-Seeding

Dairy Graze or Silage **50% ORGANIC** Code: MIXOSCDORG

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

- 1.00 kg certified RIVENDEL **ORG** white clover
- 1.00 kg certified ALICE white clover

2.00 kg/acre - £27.30 5.00 kg/ha - £68.25

Herbal Over-Seeding

Deep-Rooting Grazing **50% ORGANIC** Code: MIXHOSORG

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

- 0.30 kg certified HARMONIE **ORG** red clover
- 0.20 kg certified GLOBAL red clover
- 0.45 kg certified ABERHERALD white clover
- 0.25 kg certified LEO birdsfoot trefoil
- 2.70 kg commercial **ORG** sainfoin
- 0.60 kg commercial sweet clover
- 0.20 kg certified PUNA II chicory
- 0.65 kg burnet
- 0.20 kg yarrow
- 0.25 kg sheeps parsley
- 0.20 kg certified ENDURANCE ribgrass

6.00 kg/acre - £55.27 15.00 kg/ha - £138.18

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.

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.

Great Silage, Great Soil

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.

First Hand

Peter Cheek

Farm Type	**Mixed & dairy**
Location	**Somerset**
Size	**1100 acres**
Soil Type	**Clay to brash**
Mixes Used	**Special Fast and Vast, plus Herbal Grazing Ley**

Peter Cheek is Farm Manager at Godminster Farm, on the outskirts of Bruton in Somerset. The farm is owned by Richard Hollingsworth and milk is sold to make the well-known Wyke Cheddar, the largest independent cheesemaker in the country. The special Godminster Vintage Brand was established over 20 years ago.

The system consists of 300 dairy cows, with the breeding based on a 3 way cross including Scandianvian Red, British Fresian and Fleckvieh or Normande genetics. Around fifty per cent of the milk produced goes into the liquid market. There are 150 autumn calvers and 150 spring calvers on the farm.

The rotation is based around mixed cropping, usually starting with a winter wheat or winter oat crop. Oats are an important crop at Godminster and are usually sent to White's in Ireland for milling.

Once the cereal is harvested, an over-winter cover crop is sown behind the combine to protect and enhance the soil. In the spring a whole-crop mix of pea and barley is drilled for the clamp, undersown with a grass and clover grazing ley.

After 4 years the ley is ploughed in to make way for the arable side of the rotation, usually sown the following spring with a spring crop consisting of wheat, barley or oats.

In terms of feeding the cows, Peter describes the Fast and Vast mix of vetch, red or white clover, crimson clover and Italian ryegrass as 'our most versatile crop', giving a range of options. 'We need high quality silage and plenty of it, so the Fast and Vast is great,' says Peter. 'Even after the dry summer of 2018 it produced excellent silage, topping ten tons per acre.' It also provides aftermath grazing later in the season or later cuts, which may be slightly lower quality can be taken for dry cow silage.

"We need high quality silage and plenty of it, so the Fast and Vast is great."

The Fast and Vast gives a big first cut during the first week of May that helps fill the clamps to start with and it's then cut every six weeks. 'We try to get 4 cuts,' says Peter. After the last cut in the autumn, cultivation work begins to get ready for an entry into a winter cereal in September. 'We use minimal cultivation, the ground is disced over several times then drilled with a Vaderstad and rolled.'

Recently, diverse Herbal Leys have caught Peter's imagination, due to 'their ability to mine minerals, improve drought resilience and improve soil condition as well as feeding the cows.' He is working with Innovative Farmers and experimenting with the grazing management. 'We are still learning how to best use it in our rotational paddock grazing system.'

The cows are allowed to graze for thirty-three days before being moved on, with an ongoing farm trial looking at the impact of grazing each paddock for 2 or 3 days at a time, to work out the most reliable way to keep as many herbs and legumes in the sward as possible.

The farm converted to organic in 1999 and 20 years later has created a successful cheese brand, both under Wyke Cheddar and Godminster Vintage cheese.

Red Clover & Vetch Leys

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

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

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

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

With or without grass?

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

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

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

What you need to know about oestrogen

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

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

Sowing and Growing

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

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

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

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

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 **50% 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.

- 8.00 kg certified FOX Italian ryegrass
- 1.00 kg certified HUNTER **ORG** Italian ryegrass
- 2.00 kg certified GLOBAL red clover
- 1.00 kg certified HEUSERS OSTAAT crimson clover
- 10.00 kg certified EARLY ENGLISH **ORG** vetch

22.00 kg/acre - £75.70 55.00 kg/ha - £189.25

Short Term Red Clover Ley

One-Two Year Mix **50% ORGANIC** Code: MIXCGO3ORG

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

- 3.00 kg certified GLOBAL red clover
- 6.00 kg certified HUNTER **ORG** tet. Italian ryegrass
- 3.00 kg certified JAVARIO Italian ryegrass

12.00 kg/acre - £66.20 30.00 kg/ha - £165.50

Longer Term Red Clover Ley

Three-Four Year Mix **50% ORGANIC** Code: MIXCGO6ORG

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

- 3.00 kg certified MILVUS red clover
- 4.00 kg certified ASTONCRUSADER **ORG** hybrid ryegrass
- 2.00 kg certified HUNTER **ORG** tet. hybrid ryegrass
- 3.00 kg certified CALIBRA tet. perennial ryegrass

12.00 kg/acre - £75.30 30.00 kg/ha - £188.25

Westerwold and Vetch

Six Month Ley **50% 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

- 8.00 kg certified LIFLORIA dip. westerwolds ryegrass
- 13.50 kg certified EARLY ENGLISH **ORG** vetch
- 5.50 kg certified JOSE vetch

27.00 kg/acre - £68.70 67.50 kg/ha - £171.75

Additions

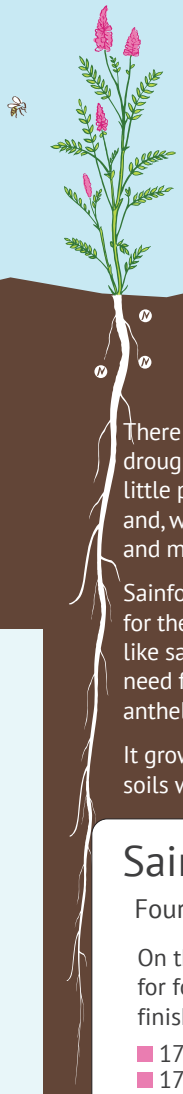
Vetch

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

Add 10kg of **50% ORG** vetch **£21.00 per acre**

Sainfoin

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



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.

Sowing and Growing

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

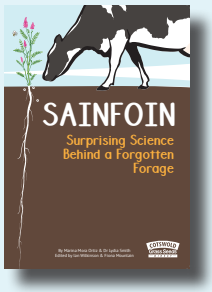
When to sow
Always sow sainfoin into warm soils in the spring.

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.



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

Four Year Cut or Graze **50% ORGANIC** Code: MIXSAIORG

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

- 17.50 kg commercial **ORG** sainfoin
- 17.50 kg commercial sainfoin

35.00 kg/acre - £133.00 87.50 kg/ha - £332.53

Companion Grass Option

Four Year Mixture **50% 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.

- 1.50 kg certified LAURA **ORG** meadow fescue
- 0.60 kg certified PARDUS meadow fescue
- 0.90 kg certified WINNETOU timothy

3.00 kg/acre - £22.50 7.50 kg/ha - £56.25

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. It is slower to establish than ryegrass and does require careful management but, if agronomic guidelines are followed, there is nothing complicated about it.

Wilting lucerne
Wiltshire
15th June

Lucerne

Four Year Cutting Crop **ORGANIC** Code: TIMBO

Lucerne should be sown as a four or five year temporary ley. It may also be made into hay for the equine market where it is known as alfalfa.
The use of culture to initiate N fixing nodulation is required. Mix with seed on the day of sowing. Sachet for 25kg of seed costs £8 +VAT.

- 8.00 kg certified TIMBALE **ORG** lucerne

8.00 kg/acre - £76.80 20.00 kg/ha - £192.00

Companion Grass Option

Four Year Mixture **50% ORGANIC** Code: MIXLUCORG

We recommend the use of a non-competitive grass mixture to be sown with lucerne. 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.

- 1.50 kg certified LAURA **ORG** meadow fescue
- 0.60 kg certified PARDUS meadow fescue
- 0.90 kg certified WINNETOU timothy

3.00 kg/acre - £22.50 7.50 kg/ha - £56.25

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.

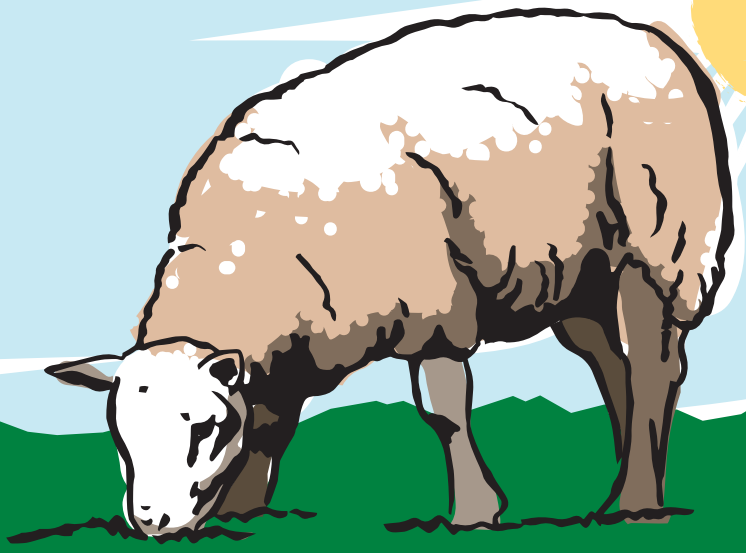
Nutrient requirements
Although lucerne requires no N once established it can be beneficial to apply FYM or slurry to the seedbed, especially for an autumn sowing to promote rapid plant development. P and K requirements are higher than for grass and should be maintained at ADAS Index 2 to maintain yields.

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 **£8.00 plus VAT**



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.

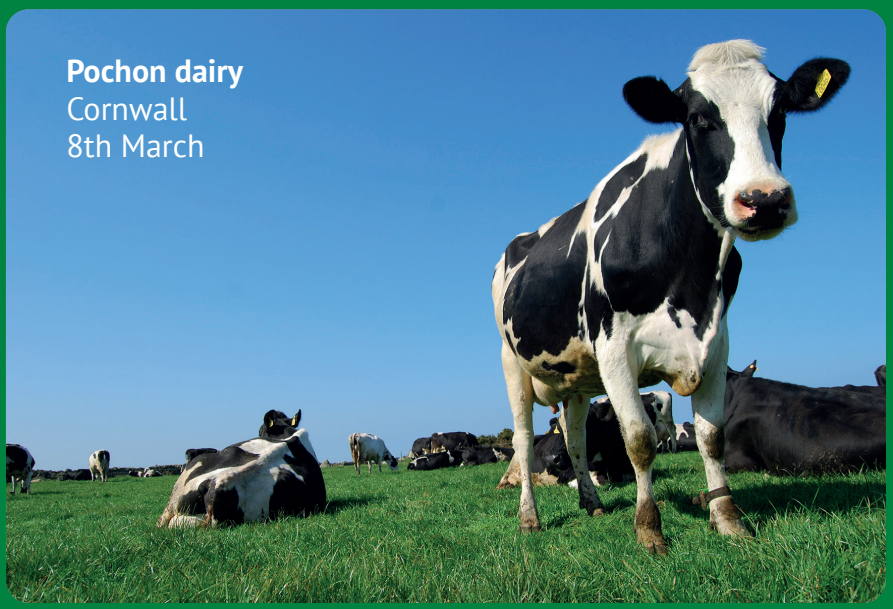
Herbal Leys: feeding health

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.



Pochon dairy
Cornwall
8th March

First Hand

Tim Peachey

Farm Type	**Arable**
Location	**Gloucestershire**
Size	**700 acres**
Soil Type	**Cotswold brash, heavy clay & loam**
Mixes Used	**Short Term Red Clover Ley, Special White Clover Pochon Ley**

Tim Peachey's father started farming at Donkeywell Farm in 1971, converting to organic in 1992, since then clover leys have played an important role in their farming system.

'I rely on the legumes to fix atmospheric nitrogen and build soil fertility, ready for the arable crops in the rotation,' Tim explains.

There are three years of crops - wheat, barley and oats - followed by a two year clover ley, with a third of the farm down to grass and clover mixtures at any one time. Since the clover leys alternate between white clover and red, it's essentially a ten year rotation with the eight year gap between the two clovers avoiding any disease build up, such as sclerotinia.

'Until about 10 years ago, we used to undersow the clover and grass mix into spring barley when the barley crop was at the 3-4 leaf stage,' Tim explains. 'However due to the barley canopy being quite short and open at this point, it let the weeds in and we had problems with thistles, couch and dock seedlings getting established.

'So I decided to try sowing the mix under oats which have a thicker canopy. The time of sowing is critical, I aim to sow when the oats are at the 3-4 leaf stage, if the crop moves past the 5 - 6 leaf stage the canopy begins to close becoming too competitive, reducing the light and space for the clover and grass seedlings and reducing the reliability of establishment .

We go in with a 6 metre shallow tine harrow and spinner, this has the advantage of ripping out any weed seedlings as we go. I will then go in with a flat roll to ensure maximum seed to soil contact and leave the seedbed nice and firm. When we get some rain the clover will germinate and begin to establish under the oats, which then sit there as small plants, kept in check by the cereal until harvest. At harvest the canopy is removed and the clover and grass mix gets away.'

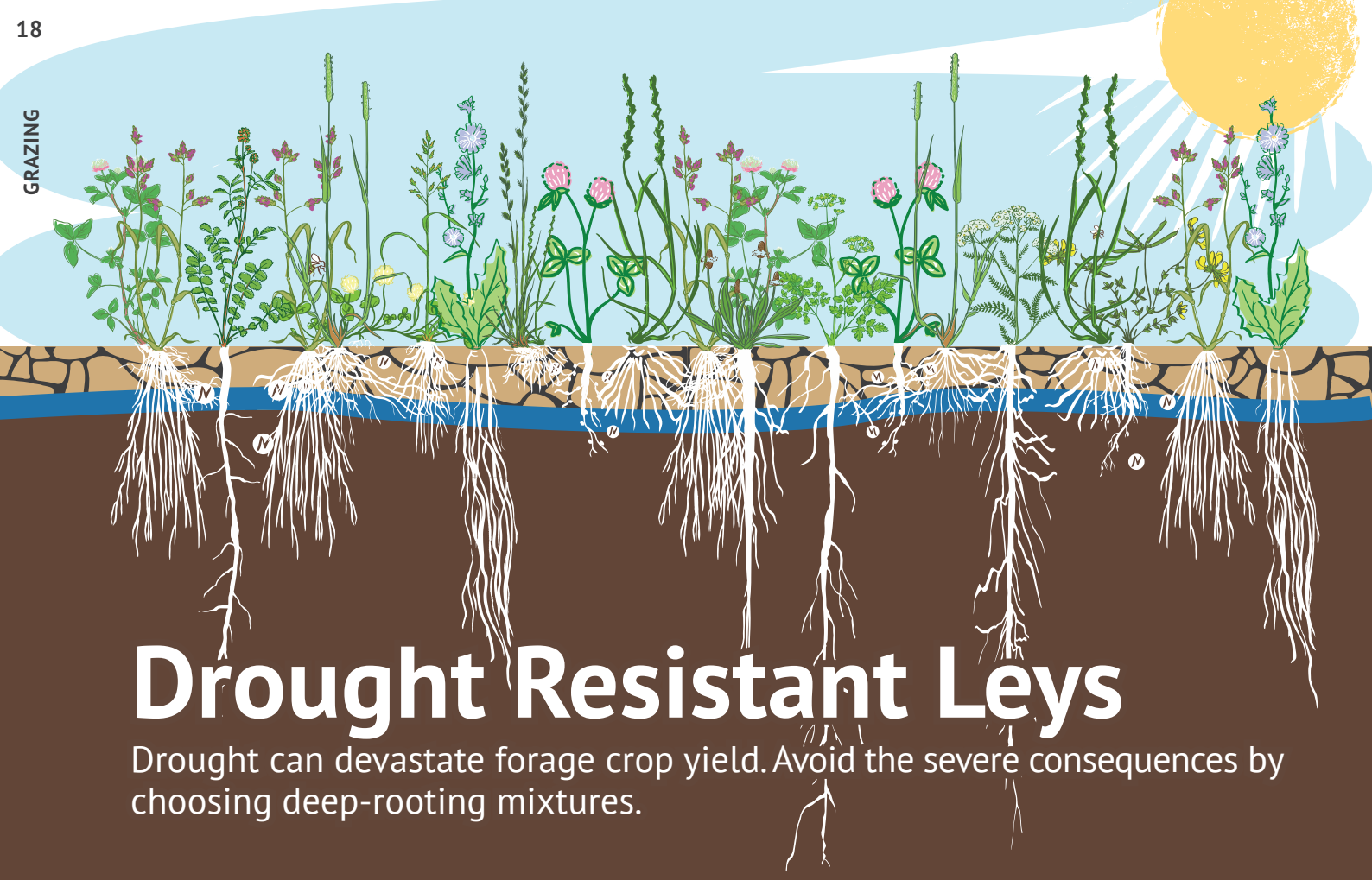
The straw is sold in exchange for mushroom compost or PAS100 (composted green waste) which goes on after the second year of clover ley and is ploughed in prior to the arable cropping.

" I rely on the legumes to fix atmospheric nitrogen and build soil fertility, ready for the arable crops in the rotation."

Livestock also plays a crucial role in the rotation as they utilise the forage and increase the distribution of manure, so Tim runs a flock of five hundred tack sheep for this reason. The ewes are put on white clover a month before they go into tup as oestrogen levels in red clover can cause problems with fertility. From a spring undersowing, by September/October the clover leys can be lightly grazed by the sheep to take the top off and encourage more growth. 'The grazing stresses the plants to encourage tillering and nitrogen fixation, and spreads manure over the field.'

Tim has been working with Cotswold Seeds for twenty years. 'The white clover mixtures are the best I've had and the technical advisors are always very helpful on the phone. I speak to Sam who gives brilliant advice about what we should and shouldn't do and we tweak the mixtures to fit. Their service is the very best and I like their bags too. They are very useful afterwards.'

Donkeywell Farm is on a standard AHA tenancy agreement, under the Ernest Cook Trust at Fairford who Tim says are very encouraging about keeping the generations going. 'I hope one of my children will take the farm on in a few years,' he says.



Drought Resistant Leys

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

Sowing and Growing

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

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

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

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

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

Yield potential
Cocksfoot-based leys: 12t DM/ha
Ryegrass-based leys on dry, light land: 7t DM/ha
Ryegrass-based leys with rainfall: 12t DM/ha

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

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

Growing grass on droughty land

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

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

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

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

Grass | Legume | Herb

Mixes

‘Lamins’ Drought Resistant

Four Year **50% ORGANIC** Code: MIXCGO4ORG

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

- 5.75 kg certified HUSAR **ORG** cocksfoot
- 1.30 kg certified PARDUS meadow fescue
- 0.25 kg certified DOLINA **ORG** timothy
- 1.85 kg certified WINNETOU timothy
- 1.00 kg certified MILVUS red clover
- 0.35 kg certified ABERDAI white clover
- 0.50 kg certified ABERHERALD white clover
- 0.50 kg certified PUNA II chicory
- 0.10 kg certified ENDURANCE ribgrass
- 0.25 kg burnet
- 0.05 kg yarrow
- 0.10 kg sheeps parsley

12.00 kg/acre - £94.74 30.00 kg/ha - £236.85

Long Lasting Upland

Dual Purpose Mix **50% 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

- 3.95 kg certified MINTO **ORG** meadow fescue
- 4.25 kg certified PARDUS meadow fescue
- 2.30 kg certified DOLINA **ORG** timothy
- 1.00 kg certified ALTASWEDE late red clover
- 0.40 kg certified ABERDAI white clover
- 0.40 kg certified ABERHERALD white clover
- 0.20 kg certified ABERACE wild white clover

12.50 kg/acre - £96.72 31.25 kg/ha - £241.81

Mixes

Cholderton

Four Year Plus **50% 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.

- 4.50 kg certified ASTONCRUSADER **ORG** tet. hybrid ryegrass
- 1.70 kg certified ABERGREEN perennial ryegrass
- 1.50 kg certified ABERBITE tet. perennial ryegrass
- 2.00 kg certified WINNETOU timothy
- 2.00 kg certified HUSAR **ORG** cocksfoot
- 0.50 kg certified GLOBAL red clover
- 0.40 kg certified ABERDAI white clover
- 0.30 kg certified ABERHERALD white clover
- 0.10 kg certified ABERACE wild white clover

13.00 kg/acre - £79.83 32.50 kg/ha - £199.58

Chicory Grazing Ley

Three - Four Years **50% 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.

- 1.75 kg certified PUNA II chicory
- 0.80 kg certified HARMONIE **ORG** red clover
- 0.70 kg certified GLOBAL red clover
- 0.60 kg certified ABERHERALD white clover
- 2.45 kg certified ASTONCRUSADER **ORG** tet. hybrid ryegrass
- 0.20 kg certified ENDURANCE ribgrass

6.50 kg/acre - £67.96 16.25 kg/ha - £169.90

Additions

Cover Crops:

3kg **50% ORG** westerwolds	**£11.56 per acre**
3kg **50% ORG** Italian ryegrass	**£12.00 per acre**
10kg **50% ORG** vetches	**£21.00 per acre**

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.

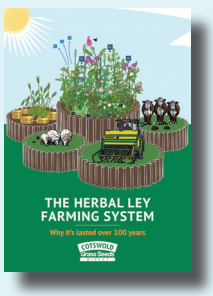
They have traditionally been used to build soil fertility and structure in an arable rotation, acting as a minimal input, four year break crop, but they bring significant benefits not only to the soil health, but also to the health and diet of livestock and the wider environment.

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'.



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**

Call us on 01608 652552 or visit cotswoldseeds.com to get your copy.

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 (eg about one acre for 100 cattle) but adjust this area to match growth and stock requirements. Over-grazing will damage chicory crowns. Surplus production from Herbal Leys can be made into silage.

Nutrient requirements
P and K should be maintained at ADAS Index 2.

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

Simple Herbal Ley

Four Year Grazing/Cutting **50% 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.

- 2.00 kg certified PERSEUS **ORG** festulolium
- 2.50 kg certified ASTONCRUSADER **ORG** tet. hybrid ryegrass
- 2.35 kg certified CALIBRA tet. perennial ryegrass
- 1.50 kg certified WINNETOU timothy
- 1.50 kg certified HUSAR **ORG** cocksfoot
- 0.80 kg certified LAURA meadow fescue
- 0.30 kg certified ABERDAI white clover
- 0.20 kg certified ABERHERALD white clover
- 0.25 kg certified GLOBAL red clover
- 0.15 kg certified LOMIAI alsike clover
- 0.30 kg certified PUNA II chicory
- 0.15 kg certified ENDURANCE ribgrass

12.00 kg/acre - £79.84 30.00 kg/ha - £199.60

Herbal Over-Seeding

Deep-Rooting Grazing **50% ORGANIC** Code: MIXHOSORG

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

- 0.30 kg certified HARMONIE **ORG** red clover
- 0.20 kg certified GLOBAL red clover
- 0.45 kg certified ABERHERALD white clover
- 0.25 kg certified LEO birdsfoot trefoil
- 2.70 kg commercial **ORG** sainfoin
- 0.60 kg commercial sweet clover
- 0.20 kg certified PUNA II chicory
- 0.65 kg burnet
- 0.20 kg yarrow
- 0.25 kg sheeps parsley
- 0.20 kg certified ENDURANCE ribgrass

6.00 kg/acre - £55.27 15.00 kg/ha - £138.18

Mob grazing herbal ley
Oxfordshire
26th April

Herbal Grazing Ley

Four Year Drought Resistant **50% ORGANIC**

Code: MIXHDORG

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

- 1.50 kg certified LAMPARD **ORG** hybrid ryegrass
- 1.50 kg certified HUSAR **ORG** cocksfoot
- 1.20 kg certified OAKPARK perennial ryegrass
- 0.60 kg certified WINNETOU timothy
- 0.50 kg certified LAURA **ORG** meadow fescue
- 0.50 kg certified KORA tall fescue
- 0.70 kg certified GLOBAL red clover
- 0.30 kg certified ABERHERALD white clover
- 0.20 kg certified ABERDAI white clover
- 0.20 kg certified LOMIAI alsike clover
- 0.20 kg certified LEO birdsfoot trefoil
- 0.30 kg certified LUZELLE lucerne
- 3.00 kg certified **ORG** sainfoin
- 0.50 kg commercial sweet clover
- 0.60 kg certified PUNA II chicory
- 0.20 kg certified ENDURANCE ribgrass
- 0.70 kg burnet
- 0.10 kg yarrow
- 0.20 kg sheeps parsley

13.00 kg/acre - £98.65 32.50 kg/ha - £246.63

Herbal Heavy Land Ley

For Medium and Clay Soils **50% ORGANIC**

Code: MIX22ORG

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

- 3.80 kg certified ASTONCRUSADER **ORG** hybrid ryegrass
- 2.20 kg certified DOLINA **ORG** timothy
- 0.50 kg certified LAURA **ORG** meadow fescue
- 0.75 kg certified PARDUS meadow fescue
- 1.15 kg certified ABERNICHE festulolium
- 1.00 kg certified ALTASWEDE late red clover
- 0.30 kg certified DAWN alsike clover
- 0.50 kg certified LUZELLE lucerne
- 0.60 kg commercial sweet clover
- 0.60 kg certified ABERHERALD white clover
- 0.50 kg certified PUNA II chicory
- 0.10 kg certified ENDURANCE ribgrass
- 1.00 kg burnet

13.00 kg/acre - £99.80 32.50 kg/ha - £249.50

First Hand

John Cherry

Farm Type	**Arable**
Location	**Hertfordshire**
Size	**2500 acres**
Soil Type	**Clay and chalk**
Mixes Used	**Herbal Grazing Ley**

John Cherry, a fourth generation farmer, is one of the founders of Groundswell - the no till and regenerative agriculture show, which advocates no tillage. This policy also governs how the Cherrys run their predominantly arable farm.

'We've been 100% no till since 2010,' says John. 'That's nearly ten years of continuous no till and it gets better all the time, with lovely, friable soil underneath.'

Five hundred acres of the Cherry's farm is down to permanent pasture, and the rest is arable - wheat, barley, oats, rye, beans, with 150 acres of herbal ley currently in the rotation, sown over the last few years. John was inspired to use herbal leys after reading older agricultural books by Newman Turner, and Robert Elliot's 'Clifton Park Farming System' and discovering more recently what arable farmers were doing in the USA. 'They were using herbal leys in arable rotations and the effects on the soil were amazing.'

The herbal ley is mob-grazed with a herd of about 400 Shorthorn cattle, which are moved once or twice a day and given about 0.5 ha at any one time. 'They love the mix of species and do very well on it and the ley responds well to mob-grazing. 'When the animals move onto a small patch they don't cherry pick but have to eat everything in front of them before their neighbours steal it.

You get better grazing, since they eat all the seed heads and still leave some stuff standing so the plants can still photosynthesize and promote strong regrowth, the rest of the ground is covered with trodden plant material, which breaks down, helping further improve soil fertility.'

John says that including livestock in an arable rotation is 'relatively easy.' He says the electric fencing took time, but was relatively cheap and the water was a bit complicated but overall worth the effort.

John talks with great enthusiasm about the variety of different plants and different root architecture in the mix - there are 19 species in the Cotswold Herbal Ley and as many reasons to use herbal leys. 'We used the herbal ley to help get rid of blackgrass as well as adding fertility by turning forage into dung. The deep roots break through the soil and bring minerals up from lower down. Different species grow at different times of year, improving the growing season and they cope well with drier weather conditions.'

John's farm is not certified organic but crops are treated as low input with no spraying or use of fertiliser. 'We don't need to because the herbal ley is full of fertility building legume plants.'

"The deep rooting herbal ley improves soil structure further down and hugely improves soil fertility."

John says the herbal ley farming system is a natural fit with the principles of no till. 'We love no till because it leaves the soil undisturbed and keeps living roots in the ground which is good for soil life. Meantime, the deep rooting herbal ley improves soil structure further down and hugely improves soil fertility thanks to the high legume content. All contributing to a healthy soil to support his no till system'.

Groundswell, now in its fourth year, offers farmer to farmer, peer to peer learning from all over the world, lots of chatting and sharing ideas. So what advice does John have for other farmers thinking of experimenting with no till.

'Take 10% of your land and give it a go. We played around with little patches and it made so much sense. Why spend all day sitting on a power harrow when you don't need to? It saves so much money - less machinery, less diesel. It's good for farmers and for the planet, locking in carbon, stopping floods and erosion. Not disturbing the soil, and keeping it well covered, is universally good practice.'

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 **50% 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.

- 3.50 kg certified ASTONCRUSADER **ORG** hybrid ryegrass
- 1.70 kg certified CANCAN perennial ryegrass
- 2.80 kg certified ABERGREEN perennial ryegrass
- 2.50 kg certified DIWAN **ORG** tet. perennial ryegrass
- 0.30 kg certified ABERHERALD white clover
- 0.60 kg certified ABERDAI white clover
- 0.60 kg certified ALICE white clover

12.00 kg/acre - £79.59 30.00 kg/ha - £198.98

Pochon Persistent

Long Term Grazing Ley **50% ORGANIC** Code: MIXCGO1ORG

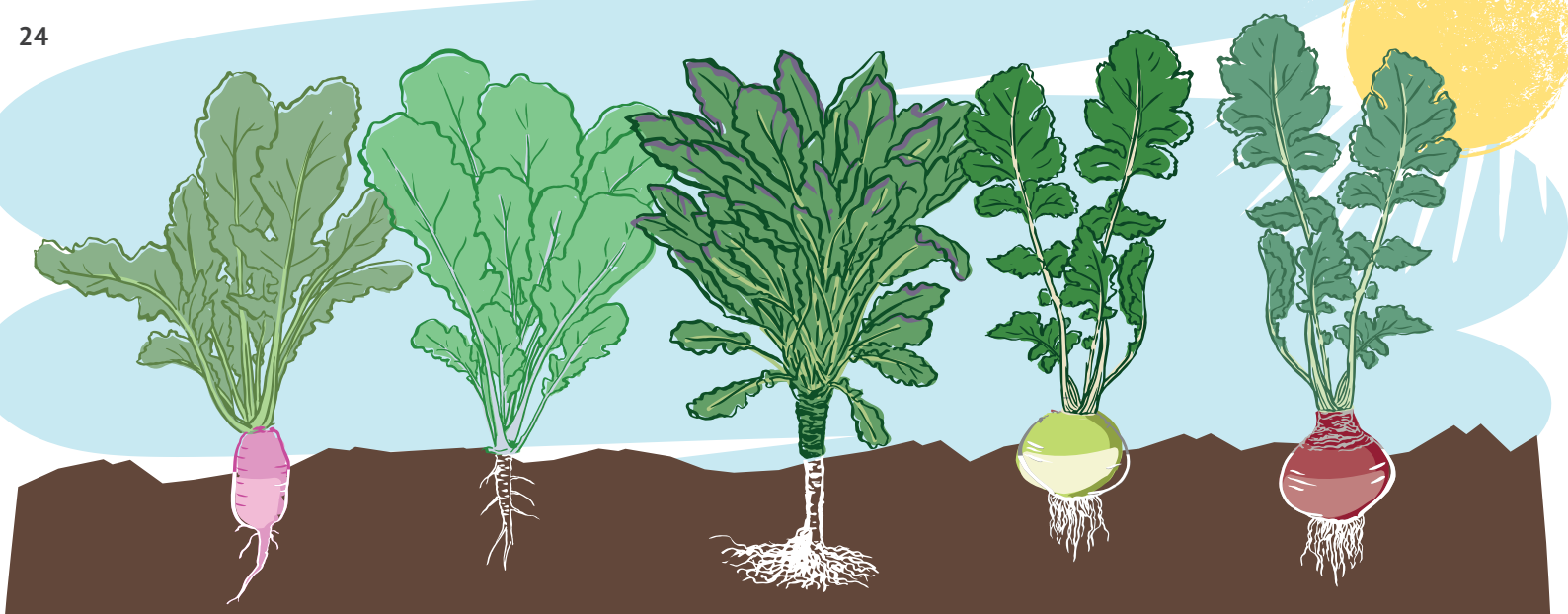
For over thirty years Pochon has proven very successful on a wide range of conventional and organic farms. This mix is suitable for taking a cut of silage, but is mainly for rotational grazing. Including the best strains of high yielding white clovers from Aberystwyth, it gives excellent mid-summer production.

- 2.00 kg certified OAKPARK perennial ryegrass
- 2.50 kg certified CANCAN perennial ryegrass
- 2.80 kg certified PREMIUM **ORG** perennial ryegrass
- 0.40 kg certified SW BERGER **ORG** perennial ryegrass
- 2.80 kg certified POLIM **ORG** tet. perennial ryegrass
- 0.80 kg certified ABERHERALD white clover
- 0.50 kg certified ABERDAI white clover
- 0.20 kg certified ABERACE wild white clover

12.00 kg/acre - £86.47 30.00 kg/ha - £216.18

Additions

Heavy Land:	
2kg **50% ORG** timothy	**£12.80 per acre**
Light land:	
2kg **50% ORG** cocksfoot	**£12.70 per acre**
Red clover:	
1kg **50% ORG** red clover	**£9.33 per acre**
Cover crop:	
3kg **50% ORG** westerwolds	**£11.56 per acre**
Anti bloat:	
5kg **50% ORG** sainfoin	**£19.00 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.**

- 1.50 kg certified SAMSON stubble turnips
- 0.50 kg certified HOBSON forage rape

2.00 kg/acre - £7.55 5.00 kg/ha - £18.88

Hardy Root Mix

Longer Term **NON ORGANIC** Code: MIXHR

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

- 0.60 kg certified PINFOLD kale
- 0.70 kg certified MASSIF hardy turnip
- 0.20 kg certified GOWRIE swede

1.50 kg/acre - £22.42 3.75 kg/ha - £56.05

Grazing hybrid rape/kale
Monmouth
25th December

Straights

Fodder Beet **NON ORGANIC**

This root crop provides a huge yield which is highly digestible and has a high energy content. It should be sown in April and, because the seed is pelleted, can only be sown with a precision drill. **Seed is only available in one acre packs (50,000 seed units).** Robbos variety is suitable for leaf lifting harvester and feldherr for hand harvesting or grazing in situ.

Robbos	**£86.00 per acre**
Feldherr	**£88.00 per acre**

Straights

Brassica

Forage Rape **NON ORGANIC**

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

Hobson (4.00 kg/acre)	**£3.70 per kg**

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. Samson for sheep and Rondo for cattle.

Samson (2.00 kg/acre)	**£3.80 per kg**
Rondo (2.00 kg/acre)	**£3.80 per kg**

Kale **NON ORGANIC**

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

Pinfold (2.00 kg/acre)	**£9.80 per kg**
Maris Kestrel (2.00 kg/acre)	**£13.50 per kg**

Hybrid Rape/Kale **NON ORGANIC**

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

Redstart (3.00 kg/acre)	**£8.00 per kg**
Interval (3.00 kg/acre)	**£4.45 per kg**

Maincrop Turnip **NON ORGANIC**

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

Massif (2.00 kg/acre)	**£11.40 per kg**

Swede **NON ORGANIC**

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

Gowrie (1.50 kg/acre)	**£42.80 per kg**

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

Green Manures

Protecting and enhancing our soils.

Summer Sown Mixes

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

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

Overwinter Mixes

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

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

Longer Term Leys

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

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

Summer green manure
Worcestershire
12th July

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.

Brassica | Legume | Herb | Cereal | Grass | Others

Short term mixes

Summer Quick Fix

Nitrogen Boost **50% 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.

- 1.80 kg certified ASTA **ORG** mustard
- 1.20 kg certified HEUSERS OSTSAAT **ORG** crimson clover
- 0.30 kg certified KARDINAL crimson clover
- 0.30 kg certified GLOBAL red clover
- 0.60 kg commercial sweet clover
- 0.90 kg certified VITTORIA persian clover
- 0.90 kg certified AKENATON berseem clover

6.00 kg/acre - £34.53 15.00 kg/ha - £86.33

Winter Cover Crop

Diverse Winter Mix **50% ORGANIC** Code: MIXCCLORG

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

- 1.10 kg certified POLLANUM **ORG** westerwolds ryegrass
- 0.95 kg certified HEUSERS OSTAAT crimson clover
- 1.00 kg certified RUMBA **ORG** mustard
- 0.40 kg certified APOLL **ORG** fodder radish
- 0.45 kg certified TORO fodder radish
- 0.25 kg certified ANABELA phacelia
- 0.10 kg certified GLOBAL red clover
- 0.40 kg certified DIAKON tillage radish
- 0.20 kg certified VITTORIA persian clover
- 0.15 kg certified LOMIAI alsike clover

5.00 kg/acre - £26.95 12.50 kg/ha - £67.38

Yellow Trefoil/White Clover

Intercrop Mixture **50% 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.

- 1.50 kg certified VIRGO PAJBERG yellow trefoil
- 1.50 kg certified RIVENDEL **ORG** white clover

3.00 kg/acre - £39.53 7.50 kg/ha - £98.83

Over winter mixes

Rye/Vetch

Overwinter Mix **70% ORGANIC** Code: MIXRYEVORG

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

- 52.50 kg certified ELEGO **ORG** rye
- 22.50 kg certified EARLY ENGLISH vetch

75.00 kg/acre - £89.70 187.50 kg/ha - £224.25

Ryegrass/Vetch

Overwinter Mix **50% ORGANIC** Code: MIXWWVORG

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

- 8.00 kg certified LIFLORIA dip. westerwolds ryegrass
- 13.50 kg certified EARLY ENGLISH **ORG** vetch
- 5.50 kg certified JOSE vetch

27.00 kg/acre - £68.70 67.50 kg/ha - £171.75

Longer term mixes

Fertility Builder

One - Two Year Mix **50% 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.

- 2.65 kg certified GLOBAL red clover
- 0.50 kg certified ABERDAI white clover
- 1.35 kg certified CALIBRA tet. perennial ryegrass
- 4.50 kg certified LAMPARD **ORG** hybrid ryegrass

9.00 kg/acre - £59.73 22.50 kg/ha - £149.33

Humus Builder

Two - Four Year Mix **50% 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.

- 3.25 kg certified GLOBAL red clover
- 0.75 kg certified CALLISTO **ORG** red clover
- 0.50 kg certified PUNA II chicory
- 3.00 kg certified SWANTE **ORG** cocksfoot

7.50 kg/acre - £66.62 18.75 kg/ha - £166.55

Environmental

Countryside 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 LHRSOP4.

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.

AB8 Flower Rich Margin

OELS/HLS/CSS Codes: AB8

Permanent Flower Margin **NON ORGANIC** Code: MIXAB8

A flower-rich grass margin providing habitats and food for invertebrates, butterflies, bees and birds.

- 34% certified sheeps fescue
- 20.50% certified slender creeping red fescue
- 18% certified red chewings fescue
- 14% commercial smooth stalked meadow grass
- 5% certified smaller catstail
- 4% certified common bentgrass
- 1% ox-eye daisy
- 1% wild carrot
- 0.70% lesser knapweed
- 0.50% yarrow
- 0.50% ribwort plantain
- 0.35% self heal
- 0.35% red campion
- 0.10% ladys bedstraw

8.00 kg/acre 20.00 kg/ha **£10.62 per kg**

The Operation Pollinator

OELS/HLS/CSS Codes: OF4

Just Legumes **50% ORGANIC** Code: MIXPNJLORG

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

- 25% certified ORG red clover
- 20% certified red clover
- 11% certified alsike clover
- 25% certified ORG sainfoin
- 16% certified birdsfoot trefoil
- 2% lesser knapweed
- 1% musk mallow

5.00 kg/acre 12.50 kg/ha **£14.06 per kg**

Mixes

Legume & Herb Rich Sward (OP4)

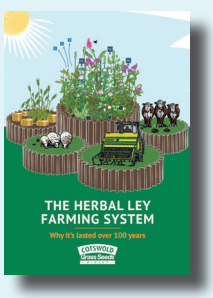
OELS/HLS/CSS Codes: OK21

Whole Field Option **50% ORGANIC** Code: MIXOP4ORG

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

- 12% certified ORG cocksfoot
- 11% certified ORG perennial ryegrass
- 7.2% certified ORG timothy
- 7.9% certified timothy
- 7% certified meadow fescue
- 4.6% certified tall fescue
- 4% certified red clover
- 1% certified alsike clover
- 5% commercial sweet clover
- 19.8% commercial ORG sainfoin
- 3% certified birdsfoot trefoil
- 4.5% certified chicory
- 1% certified ribgrass
- 7% burnet
- 1% yarrow
- 4% sheeps parsley

10.00 kg/acre 25.00 kg/ha **£7.97 per kg**



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**

Call us on 01608 652552 or visit cotswoldseeds.com to get your copy.

Grass | Legume | Herb | Cereal | Wildflower | Others | Brassica

Farmland Birds

Reducing the hungry gap.

Farmland bird mixes

One Year Winter Bird Food

OELS/HLS/CSS Codes: OP2

Survival Mixture **50% 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.

- 10% quinoa
- 15% ORG fodder radish
- 20% fodder radish
- 10% white millet
- 20% ORG spring barley
- 10% linseed
- 10% ORG mustard
- 5% ORG buckwheat

5.00 kg/acre 12.50 kg/ha **£4.38 per kg**

Two Year Wild Bird Seed

OELS/HLS/CSS Codes: OP2

Farmland Bird Feeder **50% ORGANIC** Code: MIXWBSSORG

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

- 50% ORG spring wheat (supplied separately)
- 20% spring triticale (supplied separately)
- 14% kale
- 10% quinoa
- 2% fodder radish
- 2.5% white millet
- 1.5% mustard

20.00 kg/acre 50.00 kg/ha **£3.98 per kg**

Retrieve Mix

Fast and Economical **50% ORGANIC** Code: MIXRET

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

- 20% fodder radish
- 20% forage rape
- 10% hybrid rape/kale
- 50% ORG mustard

6.00 kg/acre 15.00 kg/ha **£3.48 per kg**

Sowing and Growing

Suitable soils
These mixes are suitable for most soil types with a pH above 5.5.

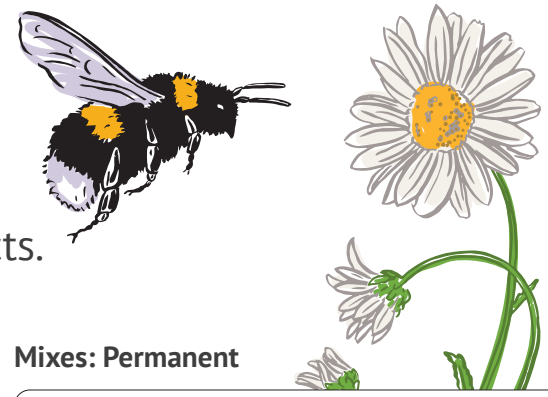
When to sow
The one year mix is sown from late April until June and should be avoided on land where spring seedbeds cannot be reliably obtained. Sow the two year mixture in April or May.

How to sow
Sow into a warm, well-prepared seedbed which is free of weeds. Preparation should start early to flush weeds using a stale seed bed. Seed should be sown at around 20mm and rolled in. For the two year mix, drill the triticale first at 35mm before surface sowing the rest.

Management
As these mixes are often grown on awkward, problematic areas of land, weed control is very important. As they contain many species they will not tolerate mowing. This is why a weed-free seedbed is so key, especially for the two year option.

Nutrient requirements
The seed yield of these crops is dependant on a satisfactory soil status. Ensure P and K levels are around ADAS Index 2.

Pollen & Nectar



Helping bees & other beneficial insects.

Mixes: 3-5 years

Pollen & Nectar Flower

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

Grass and Legume Margin **50% 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.

- 4% certified common bentgrass
- 4% certified crested dogstail
- 3% certified sheeps fescue
- 20% certified **ORG** meadow fescue
- 16% certified **ORG** creeping red fescue
- 20% certified creeping red fescue
- 4% certified smaller catstail
- 4% certified smooth meadowgrass
- 5% certified late flowering red clover
- 2% certified alsike clover
- 2% certified birdsfoot trefoil
- 10% common **ORG** sainfoin
- 4% certified **ORG** common vetch
- 2% certified black medic

8.00 kg/acre 20.00 kg/ha **£8.85 per kg**

Field Corner

OELS/HLS Codes: OF1, OE12

Long Term **NON ORGANIC** Code: MIXNEC

This straightforward, low cost mixture is ideal for awkward areas in arable fields. Relatively slow to establish, after the first year there are flowers for insects, seeds for birds and cover for mammals.

- 5% certified common bentgrass
- 1% certified crested dogstail
- 5% certified smaller catstail
- 37% certified sheeps fescue
- 27% certified red fescue
- 20% certified smooth meadowgrass
- 1.25% lesser knapweed
- 0.25% field scabious
- 1% self heal
- 1.25% ladys bedstraw
- 1% ox-eye daisy
- 0.25% small scabious

10.00 kg/acre 25.00 kg/ha **£16.81 per kg**

Mixes: Permanent

Floristically Enhanced

OELS/HLS Codes: EC24, OE1, OE2, OE3, OE9, OF1, HE10

Permanent Pollen & Nectar **NON ORGANIC** Code: MIXFEM

This is a longer term pollen and nectar mix for bees and butterflies. It is more expensive than legume-based mixtures but lasts for many years and is good for wildlife. It contains non-aggressive grasses and ten native wild flower species which are commonly found on most soils.

- 5% certified common bentgrass
- 1% certified crested dogstail
- 5% certified smaller catstail
- 30% certified sheeps fescue
- 25% certified red fescue
- 25% certified smooth meadowgrass
- 0.90% small scabious
- 1.25% lesser knapweed
- 1% self heal
- 1% yarrow
- 1.25% ox-eye daisy
- 1% ladys bedstraw
- 0.50% meadow buttercup
- 1% musk mallow
- 1% wild carrot
- 0.10% field scabious

8.00 kg/acre 20.00 kg/ha **£22.15 per kg**

Floristically enhanced mix
Gloucestershire
2nd June

Grass | Legume | Wildflower

Resource Protection

Grassy areas to shield water courses and provide wildlife habitats.

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.**

- 5% certified common bentgrass
- 5% certified crested dogstail
- 2% commercial sweet vernal grass
- 3% commercial meadow foxtail
- 20% certified smaller catstail
- 25% certified sheeps fescue
- 20% certified **ORG** creeping red fescue
- 20% certified smooth stalked meadowgrass

16.00 kg/acre 40.00 kg/ha **£12.28 per kg**

Recreating Grassland

OELS/HLS Codes: HK7, OD2

Long Term **50% 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 common bentgrass
- 10% certified sheeps fescue
- 30% certified **ORG** meadow fescue
- 20% certified creeping red fescue
- 15% certified smooth meadowgrass
- 20% certified **ORG** timothy

10.00 kg/acre 25.00 kg/ha **£7.07 per kg**

Sowing and Growing - Environmental Mixes

Suitable Soils

Heavy, wetter soils can cause a dominance of strong grasses, consider the grass free Operation Pollinator where this is an issue, to maximise flowering species.

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.

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.

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.

Buffer Strip Grass Margin

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

Two, Four or Six Plus Metre **50% 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
- 20% certified **ORG** timothy
- 20% certified **ORG** meadow fescue
- 30% certified creeping red fescue
- 10% certified **ORG** cocksfoot
- 15% certified smooth meadowgrass

10.00 kg/acre 25.00 kg/ha **£6.80 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.**

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. Sow in autumn when existing plant growth is slower.

- 2% agrimony
- 5% ladys bedstraw
- 8% lesser knapweed
- 2% meadow buttercup
- 5% meadowsweet
- 6% ox-eye daisy
- 6% red campion
- 6.50% red clover
- 7% sainfoin
- 6% ribwort plantain
- 14% salad burnet
- 13.50% self heal
- 2% small scabious
- 5% white campion
- 5% wild carrot
- 5% yarrow
- 2% yellow rattle

2.00 kg/acre 5.00 kg/ha **£118.85 per kg +VAT**

Image: Julian Kronfli Photography

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.

- 45% corn cockle
- 15% cornflower
- 15% corn marigold
- 15% field poppy
- 10% alsike clover

6.00 kg/acre 15.00 kg/ha **£44.58 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. Species included may vary occasionally.

- 5% certified common bentgrass
- 24% certified red fescue
- 20% certified sheeps fescue
- 10% certified smaller catstail
- 15% certified smooth meadowgrass
- 1% commercial sweet vernal grass
- 0.10% birdsfoot trefoil
- 1% common sorrel
- 0.05% cowslip
- 1.60% ladys bedstraw
- 1.40% lesser knapweed
- 0.50% meadow buttercup
- 0.75% meadowsweet
- 1% ox-eye daisy
- 1.65% red campion
- 1% ribwort plantain
- 2.50% sainfoin
- 1.25% self heal
- 0.50% small scabious
- 2% salad burnet
- 1.70% white campion
- 1% wild carrot
- 1% yarrow
- 2% corn cockle
- 1% corn marigold
- 1% cornflower
- 1% field poppy
- 1% yellow rattle

10.00 kg/acre 25.00 kg/ha **£39.90 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.

- 5% certified common bentgrass
- 5% commercial crested dogstail
- 2% commercial quaking grass
- 29% certified red fescue
- 30% certified slender creeping red fescue
- 2% commercial sweet vernal grass
- 1% commercial tufted hairgrass
- 11% certified wood meadowgrass
- 1% autumn hawkbit
- 0.50% betony
- 1% bluebell
- 0.25% garlic mustard
- 2% hedge bedstraw
- 0.50% meadowsweet
- 2.50% red campion
- 3% self heal
- 0.50% teasel
- 1% tufted vetch
- 1% white campion
- 1.50% wood avens
- 0.25% yarrow

10.00 kg/acre 25.00 kg/ha **£42.64 per kg**

Chalk & Limestone Soil

Long Term **NON ORGANIC** Code: MIXCHA

This mixture is designed for chalk and limestone soil types. Chalk and Limestone soils are known for their ability to support a large selection of wild flower species which is why we have been able to create such a diverse mixture.

- 5% certified common bentgrass
- 5% certified crested dogstail
- 19.30% certified red fescue
- 10% certified smaller catstail
- 20% certified sheeps fescue
- 15% certified smooth meadowgrass
- 1.5% certified yellow oatgrass
- 2% agrimony
- 1% birdsfoot trefoil
- 0.40% field scabious
- 2% ladys bedstraw
- 2% lesser knapweed
- 1% meadow buttercup
- 2% ox-eye daisy
- 1% ribwort plantain
- 4% sainfoin
- 3.50% salad burnet
- 1% self heal
- 1% small scabious
- 1.50% wild carrot
- 1.80% yarrow

10.00 kg/acre 25.00 kg/ha **£44.92 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.

- 20% certified common bentgrass
- 5% commercial crested dogstail
- 15% certified meadow foxtail
- 1% commercial quaking grass
- 18% certified red fescue
- 10% certified sheeps fescue
- 15% certified smaller catstail
- 2% commercial sweet vernal grass
- 0.40% betony
- 1% ladys bedstraw
- 2.60% lesser knapweed
- 1.50% meadow buttercup
- 1.50% meadow vetchling
- 1% ox-eye daisy
- 1% ribwort plantain
- 2% self heal
- 1% sheeps sorrel
- 1% yarrow
- 1% yellow rattle

10.00 kg/acre 25.00 kg/ha **£44.74 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.

- 5% certified common bentgrass
- 1% commercial crested dogstail
- 2.50% certified meadow foxtail
- 26% certified red fescue
- 5% certified smaller catstail
- 29.80% certified sheeps fescue
- 20% certified smooth meadowgrass
- 1.10% common sorrel
- 0.10% devil's-bit scabious
- 0.30% great burnet
- 1% ladys bedstraw
- 1.80% lesser knapweed
- 0.50% meadow buttercup
- 0.60% meadowsweet
- 1.50% ox-eye daisy
- 0.50% ragged robin
- 1.30% self heal
- 1% ribwort plantain
- 1% yellow rattle

10.00 kg/acre 25.00 kg/ha **£30.97 per kg**

Wild Flower Directory

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

Perennials

Agrimony
Late

Agrimonia

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

Betony

Stachys officinalis

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

Birdsfoot Trefoil

Lotus corniculatus

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

Bluebell
Early

Hyacinthoides non-scripta

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

Cowslip
Early

Primula veris

Found on chalky grassland and open calcareous woodland.

Devil's Bit Scabious
Late

Succisa pratensis

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

Field Scabious
Late

Knautia arvensis

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

Great Burnet

Sanguisorba officinalis

Oblong burgundy flower heads, found on wetter meadow ground.

Ladys/Hedge Bedstraw

Galium verum/Galium mollugo

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

Lesser Knapweed

Centaurea nigra

Also known as common or black knapweed. Good nectar source

Meadow Buttercup
Early

Ranunculus acris

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

Meadowsweet
Late

Filipendula ulmaria

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

Meadow Vetchling

Lathyrus pratensis

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

Musk Mallow

Malva moschata

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

Ox-Eye Daisy

Leucanthemum vulgare

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

Perennials continued

Ragged Robin
Early
Lychnis flos-cuculi
Delicate ragged flowers usually found in damp meadows.

Salad Burnet
Sanguisorba minor
Found on dry, lime rich, calcareous soils. Liked by grazing animals.

Tufted Vetch
Vicia cracca
Creeping, sprawling growth habit. Found in hedgerows and climbing up vegetation.

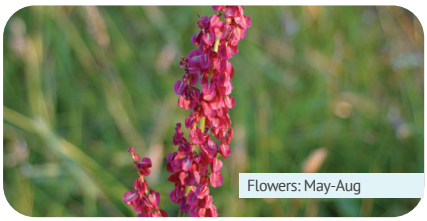
Red Campion
Early
Silene dioica
Often found in woodland and shady areas. Likes damp soils.

Self Heal
Prunella vulgaris
A low growing, creeping plant which is common in most grassland.

White Campion
Silene latifolia
Frequent in roadside verges, hedgerows and waste ground.

Ribwort Plantain
Plantago lanceolata
Established in most older grassland. Source of vitamins and minerals for grazing animals.

Sorrel
Rumex acetosa
Grows well in loamy soils rich in nutrients.



Wild Carrot
Daucus carota
Found in grassy places, field margins and roadsides. Prefers calcareous soils.

St Johns Wort
Hypericum perforatum
Likes free-draining calcareous soils with a sunny aspect. Has medicinal properties.

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

Yarrow
Late
Achillea millefolium
Found in grassland and grass margins, hedgerows and open spaces.

Annuals

Corn Chamomile
Anthemis arvensis
Corn field annual which thrives in loamy soils rich in nutrients.

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

Field Poppy
Papaver rhoeas
Found in arable fields and disturbed ground. Silky, deep scarlet flowers.

Corn Cockle
Agrostemma githago
A tall annual with an attractive vivid purple flower.

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

Yellow Rattle
Rhinathus 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 has been updated for 2020, it provides a wider choice of mixtures that have been in development for the last 3 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	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 | Cereal | Others | Brassica

Mixes

FlexiCover One Year Game Mix

Cover and Feed **50% 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.

- 4.31 kg certified **ORG** spring barley
- 3.04 kg certified spring barley
- 7.00 kg certified **ORG** spring wheat
- 3.35 kg commercial grain sorghum
- 1.00 kg red millet
- 1.00 kg white millet
- 0.25 kg reed millet (Japanese)
- 0.50 kg certified forage rape
- 0.50 kg certified hybrid rape/kale
- 0.30 kg certified fodder radish
- 0.35 kg certified mustard
- 0.15 kg commercial gold of pleasure
- 0.75 kg certified **ORG** crimson clover

22.50 kg/acre - £56.26 56.25 kg/ha - £140.65

NEW

FlexiCover Two Year Game Mix

Cover and Feed **50% ORGANIC** Code: MIXFLE2ORG

The inclusion of Kale can ensure this mixture lasts for two full years. During establishment protect against flea beetle and consider fertiliser to push the brassicas past the most susceptible stage of pest damage.

- 3.70 kg certified **ORG** spring barley
- 4.20 kg certified spring barley
- 7.80 kg certified **ORG** spring wheat
- 2.80 kg commercial grain sorghum
- 0.80 kg red millet
- 0.80 kg white millet
- 2.15 kg certified kale
- 0.50 kg certified **ORG** fodder radish
- 0.20 kg certified rape/kale hybrid
- 0.10 kg commercial gold of pleasure
- 0.35 kg fennel
- 0.60 kg certified red clover

24.00 kg/acre - £78.05 60.00 kg/ha - £195.13

Retrieve Mix

Fast and Economical **50% ORGANIC** Code: MIXRETORG

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

- 1.20 kg fodder radish
- 1.20 kg forage rape
- 0.60 kg hybrid rape/kale
- 3.00 kg **ORG** mustard

6.00 kg/acre - £20.85 15.00 kg/ha - £52.13

Mixes

NEW

General Purpose Game Mix

Cover and Feed **50% 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.

- 1.15 kg white millet
- 1.20 kg red millet
- 1.00 kg sweet clover
- 2.00 kg **ORG** sunflower
- 2.00 kg **ORG** buckwheat
- 0.15 kg kale
- 0.25 kg kale
- 0.25 kg fodder radish
- 1.00 kg **ORG** mustard
- 0.65 kg hybrid rape/kale
- 0.35 kg reed millet (Japanese)

10.00 kg/acre - £47.87 25.00 kg/ha - £119.68

NEW

Cotswold Partridge Mix

Cover and Feed **50% ORGANIC** Code: MIXPART

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

- 7.25 kg certified **ORG** spring wheat
- 2.75 kg certified **ORG** spring barley
- 3.25 kg certified spring wheat
- 1.00 kg white millet
- 1.00 kg red millet
- 0.30 kg reed millet (Japanese)
- 1.15 kg certified linseed
- 0.45 kg fennel
- 0.40 kg certified forage rape
- 0.10 kg certified stubble turnip
- 0.25 kg certified hybrid rape/kale
- 1.00 kg certified forage pea
- 0.35 kg commercial gold of pleasure
- 0.75 kg certified crimson clover

20.00 kg/acre - £46.95 50.00 kg/ha - £117.38

Cotswold partridge mix
Wiltshire
1st September

Grass | Others | Brassica

Mixes

Quinoa/Kale Mix

Cover and Feed **NON ORGANIC** Code: MIXQUI

This simple combination supplies the two key requirements of birds: cover and feed. The kale provides excellent winter cover and supports the quinoa plants. Quinoa provides 1-2t per acre of high protein feed from late autumn. **Needs derogation.**

- 1.50 kg quinoa
- 1.50 kg kale

3.00 kg/acre - £33.30 7.50 kg/ha - £83.25

NEW

Short & Sturdy Game Cover Mix

Cover and Feed **31% ORGANIC** Code: MIXSHORT

This mix is ideal for growing with maize to act as a windbreak on exposed sites or to create a flushing point in front of the gun line. The seed bearing grain sorghum, sunflower and millet also provide for farmland birds. **Needs derogation.**

- 4.65 kg commercial grain sorghum
- 2.50 kg certified **ORG** sunflower
- 0.55 kg white millet
- 0.30 reed millet (Japanese)

8.00 kg/acre - £41.71 20.00 kg/ha - £104.28

Seed & Shelter Millet Mix

Cover and Feed **NON ORGANIC** Code: MIXMIL

Combining Red and White Millet for a wider window of seed production and reed millet to provide cover. Broadcast or shallow drill in maize strips for a denser cover. **Needs derogation.**

- 2.80 kg red millet
- 3.20 kg white millet
- 2.00 kg reed millet (Japanese)

8.00 kg/acre - £28.00 20.00 kg/ha - £70.00

NEW

Cotswold Game Cover Kale Mix

Cover and Feed **NON ORGANIC** Code: MIXKALE

The Kale mix combines the red stemmed, leafy Polycaul Kale with the medium to short variety Keeper Kale. The combination of two leafy varieties and good lodging resistance allows birds access and movement through the cover. **Needs derogation.**

- 1.65 kg game kale
- 1.35 kg game kale

3.00 kg/acre - £34.40 7.50 kg/ha - £86.00

FlexiCover one year mix
Suffolk
15th October

Sowing and Growing

Whether you run a small local syndicate or a large estate shoot it is important to produce good, reliable crops that provide plenty of shelter, cover and seed.

When to sow

Most game crops are spring sown after frost risk has passed to provide cover and feed from late summer. Start planting the mixes of brassicas, millet, sunflowers and canary grass in mid April, with dwarf sorghum better if drilled in May or June. The only exception is the quick-growing Retrieve Mixture which can be drilled anytime from April to early September if there is sufficient soil moisture.

How to sow

A well worked weed-free seedbed is required, try to achieve a stale seed bed with several cultivation passes to stimulate weed germination before sowing. Seeds such as sunflower and sorghum are usually drilled but small seeded species such as kale and mustard may be broadcast and well rolled after sowing.

If sowing a mix with a range of seed sizes, prioritise the smaller seeds, try to ensure the smaller seeds are not sown too deeply, as this can reduce the reliability of establishment, most larger seeds will cope with being sown slightly shallower.

Bespoke Autumn sown mixtures are available for cover in the following year.

Nutrient requirements

Game crops require P & K levels to be ADAS Index 2. Farmyard manure can be a very beneficial fertility source which will break down over several years.

Seed & shelter millet mix
Dorset
28th September

Straights

Canary Grass NON ORGANIC

This perennial grass is drilled in wide rows (60-90cm) and takes a year or so to become established. From the second year the seed heads will reach two metres and the crop can usually be relied upon for 10 years. Good for pheasants and partridges as well as linnets and wrens.

3.00 kg/acre - £55.05 7.50 kg/ha - £137.63

Reed Canary Grass NON ORGANIC

Grows taller than Canary grass and is more suitable to northern climates because it tolerates extreme cold weather. Reed canary grass can be slow to establish, sometimes taking up to two years but it will tolerate a wide range of soil types.

3.00 kg/acre - £88.05 7.50 kg/ha - £220.13

Sunflower ORGANIC

Large amounts of food supplied through the winter. Please specify dwarf (1-2 metres) or standard type (2 metres+).

10.00 kg/acre - £61.50 25.00 kg/ha - £153.75

Dwarf Sorghum NON ORGANIC

An excellent windbreak around other crops, it is an annual crop with similar properties to maize. **Only available in one acre packs.**

8.00 kg/acre - £34.85 20.00 kg/ha - £87.13

FarmED
FARM & FOOD EDUCATION

FarmED is the new Centre for Farming and Food Education in the Cotswolds. Our mission is to accelerate the transition towards regenerative farming and sustainable food systems by providing space and opportunity for inspirational education, innovative research, practitioner led knowledge exchange events and personal development.

Get in touch to learn more about our events and venue including:

- The FarmED Programme in Regenerative Agriculture and Sustainable Food
- Oxford Real Farming Conference in the Field 2020
- Open days and farm walks
- Venue hire – conferences, workshops and unique meeting spaces

If you'd like to keep in touch and hear more about our work and events, visit **farm-ed.co.uk** and subscribe to our newsletter or follow us on social media **@RealFarmED**.

COTSWOLD SEEDS

Cotswold Seeds was founded in 1974 and deals with over 15,000 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 projects.

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

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

ISBN 978-1-8380163-1-9
DEFRA Reg. No. 165
BSPB Licence No. 1476
Soil Association Licence No. P5985
Registered in England 1163604
VAT No. 195 5792 09

Follow us on:

twitter.com/cotswoldseeds
facebook.com/cotswoldseeds
youtube.com/cotswoldseeds
instagram.com/cotswoldseeds

COTSWOLD Grass Seeds DIRECT