



**COTSWOLD**  
*Grass Seeds*  
— DIRECT —

**2018**

# ORGANIC CATALOGUE

45<sup>TH</sup> EDITION

## Dear Customer

No farm is exactly the same, which is why we've always been proud to offer a truly personal service, from start to finish. Our small team of highly trained and experienced technical advisors are on hand to share their specialist knowledge with you on a one-to-one basis and enjoy talking to customers on the phone on a daily basis. Once we've discussed your requirements, and helped you decide what seed mixtures will best meet them, we can then make up a bespoke mix which is specifically tailored to these individual requirements. And our next day delivery service means you can then sow it within a few hours of talking to us.

It seems that this tailored service has never been more relevant. With so many changes afoot affecting agriculture, many farmers are looking to explore new options and try something different, whether its changing the rotation, introducing livestock onto arable, or taking measures to improve soil fertility and reduce

the need for costly inputs by using green manures, cover crops, or herbal leys. Or perhaps you are looking for a reliable, dual purpose long term ley, a fast growing short term silage ley, or to meet countryside stewardship requirements. The particular needs of your farm will of course depend on variables such as location and soil type, as well as whether you want to maximise milk yields, improve permanent pasture with over-seeding, or boost drought resistance, for instance.

If you can't find exactly what you are looking for in this catalogue, or are not sure quite what it is that you need, we are always happy to help, and since we always mix to order it's no trouble to create the best mixture of seeds for your field.



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### Reading the mixtures

For 2018 we have introduced a new way of looking at mixtures throughout the catalogue. As you flick through you will notice coloured indicators alongside the mixture contents, as well as a coloured bar beneath the contents.

■ 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.



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

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Orders placed by 2pm on the phone or online can normally be delivered next day to most parts of the UK (not weekends).

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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.

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# Grasses for Farmers

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 grow better on nitrogen-rich soils than any other grass species. This quality has made it the most popular grass for silage over the last seventy years (since the Plough Up policy of WW2 and the advent of cheap nitrogen fertiliser).

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

## How Long Do Ryegrass Leys Last?

Perennial ryegrass based leys last reliably for between three and five years. 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 Foxtrot 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).

## 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.

## 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.

## 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.

## 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.



## Other Key Grasses

### 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.

### 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.

### 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.

### 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.

### Creeping Red Fescue (*Festuca rubra rubra*)

This common grass, as its name implies, 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.

### 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.

### 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.

### 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.

### 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.

### 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.

### 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 low levels in seed mixtures.

### 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 for Farmers

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

### 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 AberPearl, 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.

### 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 Merula.

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.

### 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.

### 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.

### 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.

### Berseem Clover (*Trifolium alexandrinum*)

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

## Other Key Legumes

### 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.

### 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.

#### **Sweet Clover (*Melilotus* spp.)**

Also known as yellow blossom, this biennial which has a feed value similar to lucerne and 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.

#### **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.

#### **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.

#### **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.

#### **Chicory (*Chicorium intybus*)**

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

#### **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).

#### **Yarrow (*Achillea millefolium*)**

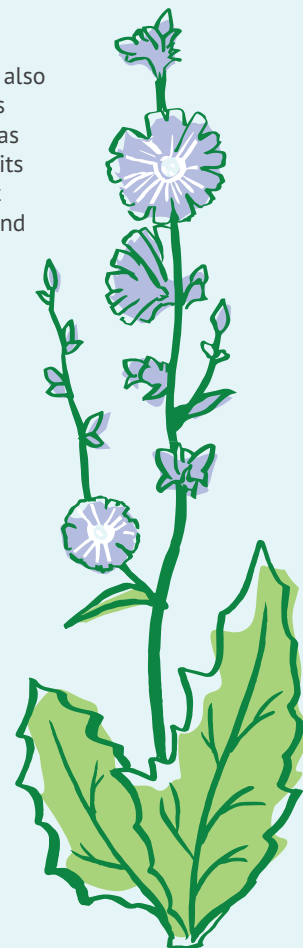
Yarrow is a deep-rooting perennial and a rich source of vitamin A.

#### **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.

#### **Sheeps Parsley (*Petroselinium crispum*)**

A short lived but useful herb which 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 and re-seeding.



## 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

Any FYM and slurry applications should be delayed until the new grass or clover seedlings are well established and able to tolerate the competitive growth that fertiliser brings. 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. Of these, the Italian and hybrid forms are the quickest and best for cutting, with perennials being ideal for grazing leys.

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

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



## Mixes: Ryegrass

## Ryegrass Over-Seeding

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

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

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

**10.00 kg/acre** 25.00 kg/ha **£43.30** £108.25

## Ryegrass Over-Seeding

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

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

- 7.00 kg certified SOLID **ORG** tet. hybrid ryegrass
- 3.00 kg certified ASTONENERGY tet. per. ryegrass

**10.00 kg/acre** 25.00 kg/ha **£56.15** £140.38

## Ryegrass &amp; Clover Over-Seeding

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

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

- 7.00 kg certified SOLID **ORG** tet. hybrid ryegrass
- 2.00 kg certified ASTONENERGY tet. per. ryegrass
- 0.40 kg certified ABERPEARL white clover
- 0.40 kg certified ABERHERALD white clover
- 0.20 kg certified ABERACE wild white clover

**10.00 kg/acre** 25.00 kg/ha **£59.89** £149.73

## Additions

**Bottom grass**

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

Add 2kg of **70% ORG** per. ryegrass **£11.04 per acre**

## Mixes: Clover and herbs

## White Clover Over-Seeding

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

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

- 1.40 kg certified ABERCREST **ORG** white clover
- 0.40 kg certified ABERPEARL white clover
- 0.20 kg certified ABERACE wild white clover

**2.00 kg/acre** 5.00 kg/ha **£25.88** £64.70

## White Clover Over-Seeding

Dairy Graze or Silage **70% 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.

- 1.40 kg certified ABERCREST **ORG** white clover
- 0.60 kg certified ALICE white clover

**2.00 kg/acre** 5.00 kg/ha **£25.74** £64.35

## Herbal Over-Seeding

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

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

- 0.50 kg certified MILVUS **ORG** red clover
- 0.45 kg certified ABERCREST **ORG** white clover
- 0.25 kg certified LEO birdsfoot trefoil
- 2.70 kg certified ZEUS **ORG** sainfoin
- 0.60 kg commercial **ORG** 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** 15.00 kg/ha **£54.85** £137.13

Grass

Legume

Herb

# 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, especially now nitrogen prices are so high.

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 needs very little phosphate. It 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 for improving soil while increasing fertility.

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

## Huw Jones



<b>Farm Type</b>	Mixed
<b>Location</b>	West Wales
<b>Size</b>	250 acres
<b>Soil Type</b>	Light to loamy sand
<b>Mixes Used</b>	Specialist hay ley

**“Cotswold Seeds immediately understood the problems I was facing and what I wanted to achieve from a grass ley.”**

A coastal farm that suffers from damp atmospheric conditions is not ideal for making hay, but Huw Jones, a fourth generation farmer in Cardigan, West Wales, has developed a successful pet bedding brand.

His 250 acre farm is mixed, with half the land given to suckler cows and half to various arable crops. It's difficult land to farm as its location close to the sea means there's a lot of moisture in the air, but thirty acres are given over to a specialist hay ley sold as meadow or timothy hay, under the Huwbryn brand.

Cotswold Seeds supply a bespoke non ryegrass mix of timothy and other traditional, meadowgrass species, which makes it sweeter smelling and softer than regular hay, so it's more suitable for small animals. Timothy also gives an element of high digestibility and is good for gut health, with a high fibre content.

The field has been down for four years, with minimal inputs. Sheep and cattle are grazed here over winter. Being in a wet location making hay here is a fine art, it needs to be cut early before it has chance to go stemmy and become difficult to dry out.

Huw has been using Cotswold Seeds for fifteen years. 'Before that I couldn't find anyone to supply me with what I needed, but Cotswold Seeds immediately understood the problems I was facing and what I wanted to achieve from a grass ley.'

Huw is also interested in following the developments at Honeydale Farm, particularly the system of direct drilling, with no ploughing or harrowing. 'This is running parallel to what we are doing,' he says.

He's always been interested in different ways of establishing crops. Ploughing is problematic for him because at 400 feet above sea level, part of the farm is blow away sand. 'We struggled for years with ploughing in spring giving a lovely crop of spring barley which then dried up in April and blew away like snowdrifts into the hedges,' he says. So when he came across direct drilling he bought a drill and for the past six harvests he too has been using this method. 'Having a no till system which keeps organic matter near the surface is definitely the way to go.'



# Red Clover & Vetch Leys

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

## 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.

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.

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

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

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

### What you need to know about oestrogen

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

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



Cutting red clover for silage  
Gloucestershire  
29th May

## Mixes

## Fast and Vast

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

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

- 3.60 kg certified DANERGO Italian ryegrass
- 5.40 kg certified DORIKE **ORG** Italian ryegrass
- 2.00 kg certified GLOBAL red clover
- 1.00 kg certified CONTEA crimson clover
- 10.00 kg certified EARLY ENGLISH **ORG** vetch



**22.00 kg/acre** 55.00 kg/ha **£84.03** £210.08

## Short Term Red Clover Ley

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

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

- 3.00 kg certified MERULA red clover
- 8.40 kg certified DORIKE **ORG** tet. Italian ryegrass
- 0.60 kg certified MERIBEL Italian ryegrass



**12.00 kg/acre** 30.00 kg/ha **£68.05** £170.13

## Longer Term Red Clover Ley

Three-Four Year Mix **70% ORGANIC** Code: MIXCG06ORG

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

- 3.00 kg certified MILVUS red clover
- 4.20 kg certified DORIKE **ORG** Italian ryegrass
- 0.60 kg certified ABEREVE tet. hybrid ryegrass
- 4.20 kg certified SOLID **ORG** tet. hybrid ryegrass



**12.00 kg/acre** 30.00 kg/ha **£75.33** £188.33

## Westerwold and Vetch

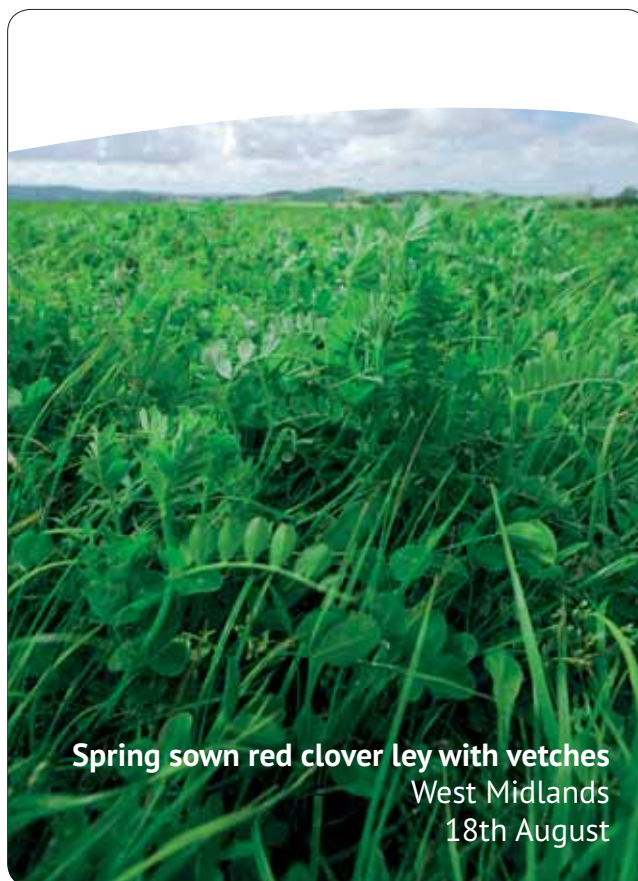
Six Month Ley **70% ORGANIC** Code: MIXWWVORG

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

- 8.00 kg certified AUBADE westerwolds ryegrass
- 19.00 kg certified EARLY ENGLISH **ORG** vetch



**27.00 kg/acre** 67.50 kg/ha **£67.20** £168.00



**Spring sown red clover ley with vetches**  
West Midlands  
18th August

## Additions



## Vetch

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

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

**£21.60 per acre**

Grass

Legume

For orders & advice call 01608 652552 or visit [cotswoldseeds.com](http://cotswoldseeds.com)

# Lucerne

A yield of around 14t DM/ha plus nitrogen fixation.

## Mixes

### Lucerne

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

Lucerne should be sown as a four or five year temporary ley. For specialist use it may 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 EUGENIA **ORG** lucerne

**8.00 kg/acre** 20.00 kg/ha **£65.20** £163.00

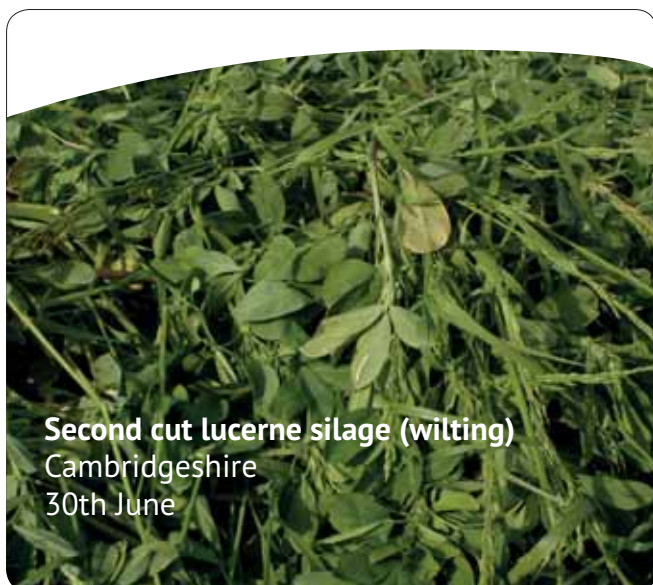
### Companion Grass Option

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

Whilst lucerne can be grown on its own, we recommend the use of a non-competitive grass mixture to be sown with it. The grasses increase the total forage yield, especially in the first cut as the grasses start growing in advance of the lucerne.

■ 2.10 kg certified LAURA **ORG** meadow fescue  
■ 0.90 kg certified PROMESSE timothy

**3.00 kg/acre** 7.50 kg/ha **£22.36** £55.90



**Second cut lucerne silage (wilting)**  
Cambridgeshire  
30th June

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.

## 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.



# Sainfoin

A silage or hay crop for dry, alkaline soils which is bloat free and a natural anthelmintic.

There are few crops quite like sainfoin. It is a high-yielding, drought-resistant plant which fixes its own nitrogen. 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 these times of fluctuating feed and veterinary drug prices, alongside increased demands for sustainability, there are few crops that tick as many boxes.

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.

## Mixes

### Sainfoin

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

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

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

**35.00 kg/acre** 87.50 kg/ha **£149.11** £372.78

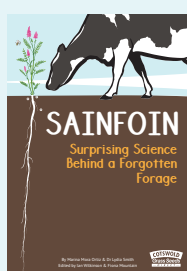
### Companion Grass Option

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

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

- 2.10 kg certified LAURA **ORG** meadow fescue
- 0.90 kg certified PROMESE timothy

**3.00 kg/acre** 7.50 kg/ha **£22.36** £55.90



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

Call us on 01608 652552 or visit [cotswoldseeds.com](http://cotswoldseeds.com) to get your copy.

Grass

Legume

For orders & advice call 01608 652552 or visit [cotswoldseeds.com](http://cotswoldseeds.com)

# Grazing & Forage

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 Pastour) have greater persistence, so reducing the need to reseed frequently.

First Hand

## David Renner



<b>Farm Type</b>	<b>Arable</b>
<b>Location</b>	<b>Northumberland</b>
<b>Size</b>	<b>450 acres</b>
<b>Soil Type</b>	<b>Clay</b>
<b>Mixes Used</b>	<b>Lamins with added vetch</b>

**“Chicory is good for worm control and the sheep and cattle love the plantain.”**

David Renner is a third generation farmer who also has a degree in biological sciences from Oxford University. What particularly interested him during his studies was a module on plants, productivity and the environment and he went on to do an MA in organic farming at Aberdeen SAC SRUC. This developed his interest in the soil and resulted in him encouraging his father to go organic in 2002.

As part of his MA, David Renner completed a project on intercropping with vetch and spring barley and he rang the founder of Cotswold Seeds, the late Robin Hill, for advice. ‘He went out of his way to help me,’ David remembers and he was so impressed with Robin’s knowledge that Cotswold Seeds were the first port of call when David was looking round for a grazing mixture; three hundred and eighty ewes are calved on the farm, and there’s a herd of 42 suckler cows. The ley was to be put into a long seven year rotation, with the five year grass ley, followed by winter oats, spring barley and then back to grass.

Cotswold Seeds recommend a Lamins humus builder mix with added vetch. Because of the relatively short time between sowing and silaging, it’s necessary to have a crop that bulks up quickly. It also needs to include forge herbs, particularly plantain and chicory, which is good for sheep health, has anthelmintic properties and is high in protein. The strong rooting, Lamins also suits the location of the farm, which at 125m above sea level, is relatively high for mid Northumberland, and the clayey soil can be fairly heavy to work.

The ground is ploughed and power-harrowed before sowing in May and silaging in autumn. The first year silage is given to cattle over winter, with succeeding years given to sheep. After silaging, the aftermath is used for grazing weaned lambs, which do very well on it.

One of the things David was taught at Aberdeen was how plants that are deep rooted, like chicory, will bring trace elements up through the soil profile and make them available to the animals that eat these plants. This is particularly important in Northumberland where soils are naturally deficient in copper, cobalt and selenium.

‘We’ve not noticed any particular trace element deficiencies in our animals, so it’s clearly doing them good,’ says David.

The component of forage herbs is also beneficial. ‘Chicory is good for worm control and the sheep and cattle love the plantain. Burnet and sheep’s parsley do die out after the first few years, but the sheep and cattle like eating them.

‘We do get some weeds like redshank with the spring sown crops, particularly as the grass goes back in after spring barley and there’s a build up from the previous crop. But it’s not an ongoing issue as far as the grass is concerned because it’s silaged the following year. Even after five years when the forage herb components have declined, there’s still lots of beneficial red clover because the ley is used for silage rather than grazing.’

The results have been so good that this mix has been used on the farm ever since. Twenty hectares are sown per year now, so there are 100 hectares of the ley on the farm at any given time.

‘I am very happy with it,’ says David.



# 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 demonstrate 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 grass from dry soils.

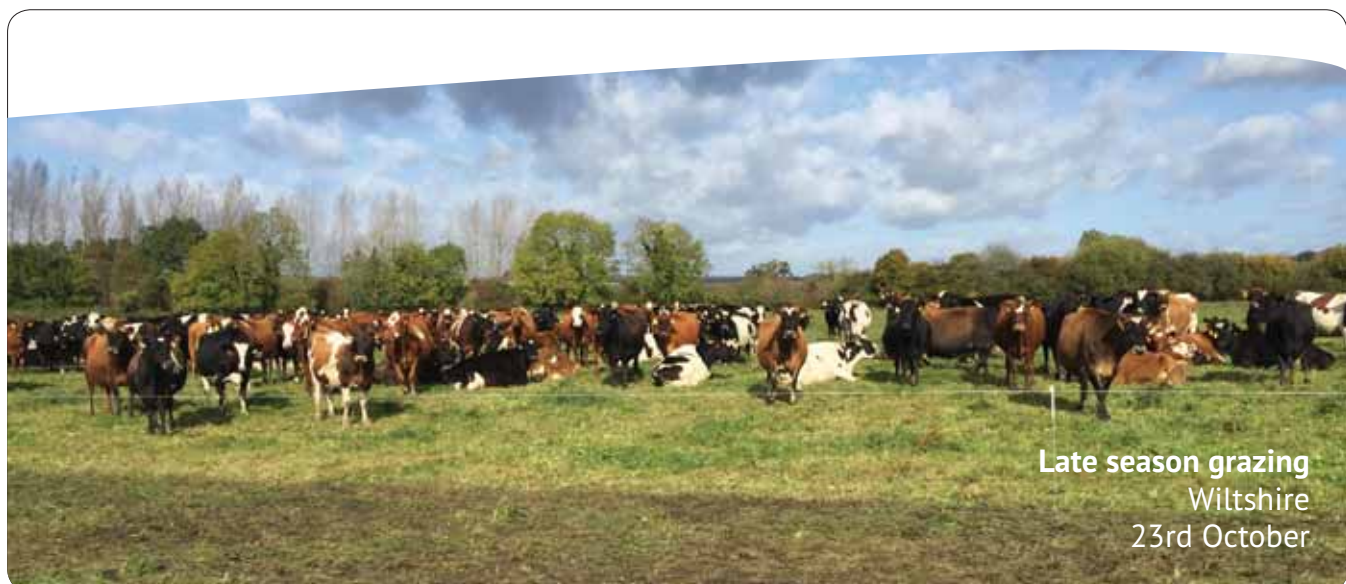
Recent years have shown that ryegrass does not thrive in dry conditions. However there are other grasses, such as meadow fescue, timothy and cocksfoot, which can be relied upon. These species can offer great benefits over ryegrass to those in challenging conditions. If you farm on dry land then these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



Late season grazing  
Wiltshire  
23rd October

## Mixes

## 'Lamins' Drought Resistant

Four Year **70% ORGANIC**

Code: MIXCG04ORG

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.

- 4.50 kg certified LUXOR **ORG** cocksfoot
- 1.25 kg certified SPARTA cocksfoot
- 1.30 kg certified LAURA **ORG** meadow fescue
- 2.10 kg certified DOLINA **ORG** timothy
- 1.00 kg certified ALTASWEDE red clover
- 0.35 kg certified ABERHERALD white clover
- 0.50 kg certified ABERCREST **ORG** 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** 30.00 kg/ha **£98.80** £247.00

## Long Lasting Upland

Dual Purpose Mix **70% ORGANIC**

Code: MIXCG05ORG

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

- 6.05 kg certified LAURA **ORG** meadow fescue
- 2.15 kg certified COSMOLIT meadow fescue
- 2.30 kg certified DOLINA **ORG** timothy
- 1.00 kg certified ALTASWEDE late red clover\*
- 0.40 kg certified ABERHERALD white clover
- 0.40 kg certified ABERCREST **ORG** white clover
- 0.20 kg certified ABERACE wild white clover

**12.50 kg/acre** 31.25 kg/ha **£98.71** £246.78

## Mixes

## Cholderton

Four Year Plus **70% ORGANIC**

Code: MIXCMORG

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

- 1.50 kg certified SOLID **ORG** tet. hybrid ryegrass
- 2.00 kg certified PREMIUM **ORG** perennial ryegrass
- 3.60 kg certified MAURICE **ORG** tet. per. ryegrass
- 2.00 kg certified DOLINA **ORG** timothy
- 2.60 kg certified SPARTA cocksfoot
- 0.50 kg certified GLOBAL red clover
- 0.40 kg certified ALICE white clover
- 0.30 kg certified ABERHERALD white clover
- 0.10 kg certified ABERACE wild white clover

**13.00 kg/acre** 32.50 kg/ha **£83.22** £208.05

## Chicory Grazing Ley

Three - Four Years **70% ORGANIC**

Code: MIXLFORG

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

- 1.75 kg certified PUNA II chicory
- 1.50 kg certified MILVUS **ORG** red clover
- 0.60 kg certified ABERCREST **ORG** white clover
- 2.45 kg certified PREMIUM **ORG** tet. per. ryegrass
- 0.20 kg certified ENDURANCE ribgrass

**6.50 kg/acre** 16.25 kg/ha **£69.33** £173.33

## Additions



Cover Crops:

- 3kg **70% ORGANIC** westerwolds **£12.09 per acre**
- 3kg **70% ORGANIC** Italian ryegrass **£12.14 per acre**
- 10kg **70% ORGANIC** vetches **£21.60 per acre**

Grass

Legume

Herb

For orders & advice call 01608 652552 or visit [cotswoldseeds.com](http://cotswoldseeds.com)

# Herbal Grazing Leys

Deep rooting, species rich, nutritionally balanced grazing leys.

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

In mixes, grasses provide carbohydrates and clovers contribute protein. However, adding forage herbs such as chicory, ribgrass and burnet improves the quantities of vital minerals in the forage which helps increase daily liveweight gains and milk production. Just as vital is their ability to build soil fertility, withstand drought and promote biodiversity across whole fields.

## 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 of these leys fixes ample nitrogen, feeding the other grasses and herbs in the mixture.

Finally growing a complex mixture of species can increase the overall yield of the forage. This is known as the 'overyielding' effect, created by different species growing in different spaces both above and below ground, throughout the growing season. Trials have proven that complex mixtures can outyield monocultures or simple mixtures even when they have received a nitrogen application.

## 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

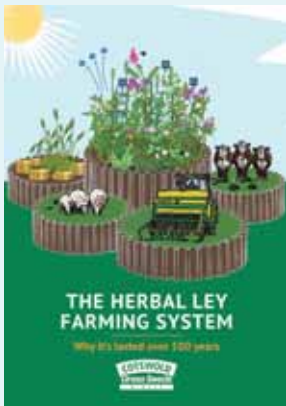
Graze lightly while the crop is establishing. Once growing well, rotationally graze allowing at least 28 days or more for recovery and regrowth. Using electric fencing, ration an area per day (eg about one acre for 100 cattle) but adjust this area to match growth and stock requirements. Over-grazing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

### Nutrient requirements

No N is required, P and K should be maintained at ADAS Index 2.

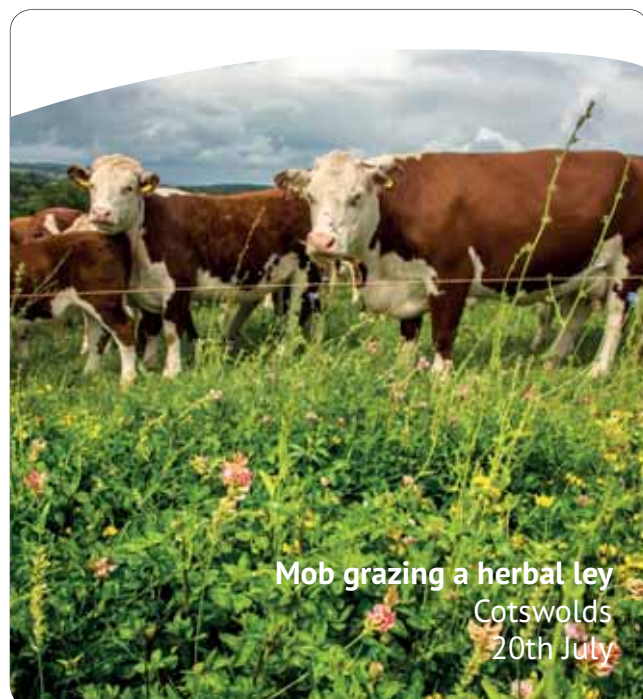
### Yield potential

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



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

Call us on 01608 652552 or visit [cotswoldseeds.com](http://cotswoldseeds.com) to get your copy.



Mob grazing a herbal ley  
Cotswolds  
20th July



## Mixes

## Simple Herbal Ley

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

Code: MIX23ORG

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

- 1.55 kg certified ABERNICHE festulolium
- 5.80 kg certified MAGICIAN **ORG** perennial ryegrass
- 1.50 kg certified DOLINA **ORG** timothy
- 0.30 kg certified SPARTA cocksfoot
- 0.70 kg certified LUXOR **ORG** cocksfoot
- 0.80 kg certified LAURA **ORG** meadow fescue
- 0.40 kg certified ABERPEARL white clover
- 0.10 kg certified ABERACE wild white clover
- 0.40 kg certified GLOBAL red clover
- 0.30 kg certified PUNA II chicory
- 0.15 kg certified ENDURANCE ribgrass



**12.00 kg/acre** 30.00 kg/ha **£77.98** £194.95

## Herbal Grazing Ley

Four Year Drought Resistant Ley **70% ORGANIC**

Code: MIXHDORG

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

- 1.00 kg certified SOLID **ORG** tet. hybrid ryegrass
- 1.20 kg certified SPARTA cocksfoot
- 1.70 kg certified MAGICIAN **ORG** tet. per. ryegrass
- 0.70 kg certified DOLINA **ORG** timothy
- 0.60 kg certified LAURA **ORG** meadow fescue
- 0.50 kg certified HYKOR tall fescue
- 0.70 kg certified MERVIOT **ORG** red clover
- 0.50 kg certified ABERCREST **ORG** white clover
- 0.40 kg certified DAWN alsike clover
- 0.20 kg certified GABRIELLE **ORG** birdsfoot trefoil
- 2.70 kg certified ZEUS **ORG** sainfoin
- 1.00 kg commercial **ORG** sweet clover
- 0.50 kg certified PUNA II chicory
- 0.20 kg certified ENDURANCE ribgrass
- 0.80 kg burnet
- 0.10 kg yarrow
- 0.20 kg sheeps parsley



**13.00 kg/acre** 32.50 kg/ha **£98.70** £246.75

## Herbal Over-Seeding

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

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

- 0.50 kg certified MILVUS **ORG** red clover
- 0.45 kg certified ABERCREST **ORG** white clover
- 0.25 kg certified LEO birdsfoot trefoil
- 2.70 kg certified ZEUS **ORG** sainfoin
- 0.60 kg commercial **ORG** 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** 15.00 kg/ha **£54.85** £137.13

## Herbal Heavy Land Ley

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

Code: MIX22ORG

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

- 2.00 kg certified SOLID **ORG** tet. hybrid ryegrass
- 1.50 kg certified MAGICIAN **ORG** tet. per. ryegrass
- 2.30 kg certified DOLINA **ORG** timothy
- 1.30 kg certified LAURA **ORG** meadow fescue
- 1.00 kg certified ABERNICHE festulolium
- 0.90 kg certified ALTASWEDE late red clover
- 0.40 kg certified DAWN alsike clover
- 0.50 kg certified EUGINA **ORG** lucerne
- 0.90 kg commercial **ORG** sweet clover
- 0.60 kg certified ABERCREST **ORG** white clover
- 0.50 kg certified PUNA II chicory
- 0.10 kg certified ENDURANCE ribgrass
- 1.00 kg burnet



**13.00 kg/acre** 32.50 kg/ha **£97.40** £243.50

Grass

Legume

Herb

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First Hand

## John Farquharson



<b>Farm Type</b>	<b>Arable</b>
<b>Location</b>	<b>West Midlands</b>
<b>Size</b>	<b>550 acres</b>
<b>Soil Type</b>	<b>Sandy loam</b>
<b>Mixes Used</b>	<b>Four year humus builder</b>

**“We have come to rely on green manures...if we don’t look after the soil it won’t grow anything.”**

‘Without soil, the arable farmer is nothing’, says John Farquharson, who farms Wolmore Farm, halfway between Bridgnorth and Wolverhampton in the West Midlands, in partnership with his sister, and parents. The farm was rented by the family from the 1930s and bought in the 1950s.

Spinach and lettuce is grown, together with barley, but the main crop is potatoes which are sold wholesale and for use in chip shops.

‘We have come to rely on green manures,’ says John. ‘Our aim is of course to grow the best crops we can and we don’t believe in intensively farming every field every year, especially on sandy loam which needs feeding. It takes five minutes to ruin the soil and ten years to fix it. And If we don’t look after the soil it won’t grow anything. We need to keep potash and magnesium levels up and it’s hard to get manure as we have no livestock. So we use the grass leys to rest the soil and give them a break with no sprays or fertiliser, and to build the humus and make the soil structure better.’

He uses the four year humus builder but leaves it down for two years as part of a six or seven year rotation, with two years of grass ley followed by potatoes, winter wheat, then spring barley or winter barley, then lettuce, spinach, wheat, and finally grass again.

‘One field is ploughed up every spring for the potatoes,’ says John. ‘We have a two year ley on sixty acres now, and another fifty acre field will be ready for next year’s potatoes. A forty acre field will be ploughed the year after that.’

John has been using the mixture for over ten years, and has had better crops as a result. He’s sampled the soils and seen that minerals are brought up to the surface by the deep rooting chicory, ‘I’m a big fan of that,’ he says. Meanwhile the red clover is fixing nitrogen in the soil, giving 50 units of nitrogen after two years of the grass leys, which can go straight back into the potato crop. ‘It gives a slow release and is there for the whole season, with the crop taking it as it needs it,’ says John. ‘The crop is so thick it keeps weeds at bay and the root fibres keep all the soil knitted together with more wormholes.’

John praises the ley for providing resilience in both drought and wet seasons. 2012 was a wet year with little sunshine, not good weather for potatoes, but John still managed to get a good yield.

‘We were able to get the harvesters on and lift when a lot of people couldn’t harvest. So we were able to get more money from the potatoes.’

John chose Cotswold Seeds because the mix is particularly good for sandy loam and produces the best results, he says. ‘And the service is good too.’

‘I’m amazed that many more farmers don’t adopt this system because it works so brilliantly,’ John said. ‘Our potatoes are spot on.’

# Pochon White Clover Leys

Self-sufficient leys that provide high protein grazing and fix their own N

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.

## Mixes

### Pochon Dairy

Two-Four Year Ley **70% ORGANIC** Code: MIXCG02ORG

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

- 2.80 kg certified SOLID **ORG** tet. hybrid ryegrass
- 2.10 kg certified ABERSTAR perennial ryegrass
- 2.80 kg certified MAGICIAN **ORG** tet. per. ryegrass
- 2.80 kg certified PASTOUR **ORG** perennial ryegrass
- 0.60 kg certified ABERHERALD white clover
- 0.60 kg certified ABERPEARL white clover
- 0.30 kg certified ALICE white clover

**12.00 kg/acre** 30.00 kg/ha **£74.37** £185.93

### Pochon Persistent

Long Term Grazing Ley **70% ORGANIC** Code: MIXCG01ORG

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.

- 2.80 kg certified PREMIUM **ORG** perennial ryegrass
- 2.80 kg certified PASTOUR **ORG** perennial ryegrass
- 2.80 kg certified MAURICE **ORG** tet. per. ryegrass
- 2.10 kg certified TWYMAX tet. perennial ryegrass
- 0.70 kg certified ABERPEARL white clover
- 0.60 kg certified ABERHERALD white clover
- 0.20 kg certified ABERACE wild white clover

**12.00 kg/acre** 30.00 kg/ha **£73.74** £184.35

Grass

Legume

## 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.



## Additions

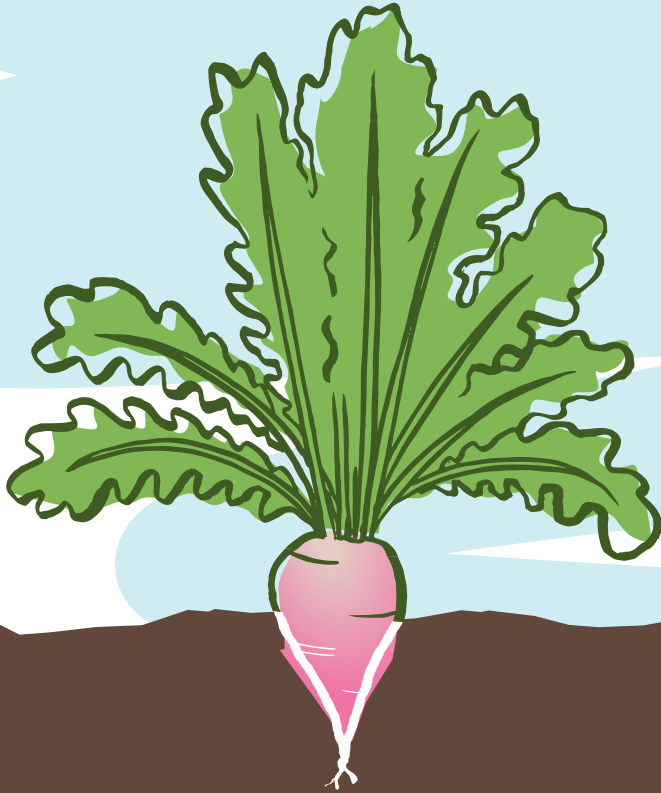
+	Heavy Land:	
	2kg <b>70% ORGANIC</b> timothy	<b>£13.22 per acre</b>
	Light land:	
	2kg <b>70% ORGANIC</b> cocksfoot	<b>£13.34 per acre</b>
	Red clover:	
	1kg <b>70% ORGANIC</b> red clover	<b>£9.96 per acre</b>
	Cover crop:	
	3kg <b>70% ORGANIC</b> westerwolds	<b>£12.09 per acre</b>
	Anti bloat:	
	5kg <b>70% ORGANIC</b> sainfoin	<b>£21.31 per acre</b>

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# 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 pH6.2.

### 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

Stubble turnips: 4.5t DM/ha, DM 10%, CP17%, D-value 69, ME 11MJ

Forage rape: 4.5t DM/ha, DM 13%, CP19%, D-value 65, ME 11MJ

Kale: 9.0t DM/ha, DM 15%, CP17%, D-value 68, ME 10.5MJ

Maincrop turnips: 6.0t DM/ha, DM 9%, CP16%, D-value 80, ME 11MJ

Swedes: 8.5t DM/ha, DM 11.5%, CP11%, D-value 82, ME 13MJ

## Mixes

## Early Fold Root Mix

Fast Growing **NON ORGANIC**

Code: MIXEFORG

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

- 2.10 kg certified SAMSON stubble turnips
- 0.90 kg certified HOBSON forage rape

**3.00 kg/acre** 7.50 kg/ha**£10.77** £26.93

## Hardy Root Mix

Longer Term **13% ORGANIC**

Code: MIXHRORG

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 LOMOND **ORG** swede

**1.50 kg/acre** 3.75 kg/ha**£25.86** £64.65

Pure stand of kale  
Oxfordshire  
17th August

Brassica

## Straights

## Stubble Turnip

- Turnips are grown in most areas of the UK as a highly digestible catch crop, ready within 10-12 weeks from sowing. Unfortunately not available organically for 2018 due to crop failure.

**Samson NON ORGANIC****£3.80 per kg**

2.00 kg/acre 5.00 kg/ha

## Forage Rape

- Forage rape is a quick growing, protein-rich green forage, with similar yields to stubble turnips, ready in 12 weeks. It makes an excellent feed for lambs and tolerates poor soils.

**Hobson NON ORGANIC****£3.10 per kg**

4.00 kg/acre 10.00 kg/ha

## Kale

- 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 NON ORGANIC****£9.80 per kg**

2.00 kg/acre 5.00 kg/ha

## Hybrid Rape/Kale

- Introduced to capitalise on the benefits of both rape and kale, this new fodder crop is ready in 12 weeks from drilling. Many farmers favour this crop as it can offer good regrowth.

**Redstart NON ORGANIC****£8.00 per kg**

3.00 kg/acre 7.50 kg/ha

## Maincrop Turnip

- 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 NON ORGANIC****£11.40 per kg**

2.00 kg/acre 5.00 kg/ha

## Swede

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

**Lomond ORGANIC****£60.00 per kg**

1.50 kg/acre 3.75 kg/ha

# Environmental

Protect our soil, wildlife and natural resources



Around seventy percent of farmland in England is in an agri-environment scheme which equates to an annual value of £400m, with many more in the parallel Scottish, Welsh and Northern Irish agreements. These schemes aim to conserve wildlife, maintain and enhance the landscape and protect our environmental and natural resources.

Wildlife 'crops' are now part of the modern farming business. Lately the emphasis has been shifting towards excellence in the delivery of the right habitats in the right place. Greater stress is also being placed on ecosystem services such as carbon capture and the protection of soil, air and water. In the future farmers who deliver the best value for money in terms of wildlife are likely to be favoured.

Of the many options offered under Stewardship, the right seed mix is crucial in creating wildlife habitats. From providing pollen and nectar for bees, to winter food for vulnerable birds, choosing the correct plants really is a matter of life or death. The field margin is the ideal place to create a visible habitat for insects, birds and mammals.

Grasses and legumes are also crucial when creating buffer strips to protect natural resources and when recreating traditional meadows. As many thousands of acres of meadows have been lost since the advent of intensive agriculture, recreating them is a key part of many Higher Level schemes.

## Pollen and nectar

When it comes to providing bumblebees and other beneficial insects with pollen and nectar it is best to grow a wide range of flowering species. An increase in the number of plant species grown results in an increase in the number and type of insects.

## Farmland birds

One of the biggest killers of farmland birds is winter starvation. Our 'bird friendly' seed mixtures provide food for both small and large seed-eating birds, such as Linnets and Tree Sparrows. Seeds produced by different plants decline at varying rates throughout the winter and it is therefore crucial to balance any mix carefully to reduce the 'hungry gap'.

Over the last 10 years we have modified and improved our bird seed mixes. There are two key types: the annual mix which provides seed in the first winter and is quick to establish from a May sowing. The second is a two year mixture which contains annuals and biennials to provide seed over two winters. This has the great advantage of only needing to be planted every two years. Some of these mixtures can provide insects for chicks in the summer, but their main purpose is to provide seed-rich habitats for farmland birds.

## Resource protection

Although a good deal of attention is given to producing pollen, nectar and wild bird seed, there are a wealth of other options to choose from under Stewardship.

For example, 'Buffer Strips', which protect our natural resources, already cover 30,000 hectares with nearly half this area again covering awkward nooks and crannies being managed under the 'Field Corner Management' option.

## Recreating grassland

Within HLS schemes arable land that contains an archeological site may be sown to grass to protect the remains. In these cases a carefully chosen mixture of relatively low production grasses is recommended.

Many people also have a requirement for a complex seed mixture where the aim is to create species-rich grassland. This mixture is also useful for those with areas which need little management, just the occasional topping or light grazing.

## Sort Out Your Soil

The dilemma for many farmers is affording the time and money to invest in soil health and improvement, but simply put, if we don't, soils will rapidly become so poor they will adversely affect yield, crop quality and ultimately profitability.

It is the small remains of plant life that ultimately produce vital fertility and structure in the soil. Though this organic matter makes up only a small percentage of the soil content, it is vital, since nothing will grow on clay, silt or sand alone. Doing nothing to replace it is, therefore, not an option.

Without grass leys in the rotation, the best and cheapest way of adding organic matter to the soil is to grow green manures between cash crops. The cost of the seed and having no income from a field given over to green manures can appear prohibitive but should be seen as an investment that will produce higher and better yields of nutrient rich food in the future.



First Hand

## Paul Carre & Glyn Mitchell



<b>Farm Type</b>	<b>Potato grower</b>
<b>Location</b>	<b>Jersey</b>
<b>Size</b>	<b>280 acres</b>
<b>Soil Type</b>	<b>Sandy loam</b>
<b>Mixes Used</b>	<b>Cover crop mixes</b>

**“The texture and the taste of the potatoes was amazing, completely different to our conventional ones.”**

Jersey suffers from high levels of pollution from intensive agriculture. Last year, in peak times of potato growing, nitrate levels reached double the EU limit of 50 mg per litre of water and high levels of farming chemicals forced the closure of Val de la Mare reservoir.

Deputy Environment Minister Steve Luce is keen to move ‘towards a system of farming that is less chemical-dependent,’ and leading the way in this, is Paul Carre, an intensive grower of Jersey Royal potatoes at Le Fosse au Bosse Farm. He sought advice from his neighbour, Glyn Mitchell, who has been trained by US soil microbiologist Dr Elaine Ingham and was keen to trial a system of microbe enhanced regenerative soil (MERS).

MERS involves the use of diverse cover crops together with carefully produced compost to boost soil microbiology and facilitate the exchange of carbon and minerals by microbe and plant interactions during the growing season. This allows farmers to manage the C:N and fungal/bacterial ratios to suit the needs of future crops and the water holding capacity of the soil.

A no-till policy is also employed, since heavy machinery compacts soil which contributes to the destruction of the microbiology. When the soil is alive with microbiology, ploughing becomes unnecessary anyway, as it turns to a carbon-rich cottage-cheese-like texture.

‘Together, these soil regenerative practices increase carbon-rich soil organic matter,’ explains Glyn Mitchell. ‘The results are that vital microbes proliferate, roots go deeper, nutrient uptake improves, water retention increases, plants become more pest resistant, and soil fertility increases.’

When Paul Carre looked over his hedge into neighbouring fields, he was amazed to see how healthy Glyn’s potatoes looked compared to his own. ‘It was a dry period and our potatoes were struggling,’ says Paul. ‘They were from the same seeds, but Glyn’s spuds were standing up and the size of the leaves was phenomenal.’

This was enough to convince Paul to hand over a 1 hectare field for trial using a three-way cover crop (rye, vetch and radish) from Cotswold Seeds, for 1100 verges of Jersey Royals.

Paul explains the process:

‘Before planting, the conventional crop of potatoes was dug up and the soil injected with a compost tea, using a subsoiler. The cover crop was put in, left, and swiped in October/November, which was a little too early. This year it was left in situ, until a week before we planted and then pulverised it. We didn’t plough which was a first for us. We just rotavated the field. My brother used a three metre power harrow to ridge the field up for planting by hand. The tractor pulled so easily which was a real eye opener. Last year the field had been waterlogged but this time there was no water anywhere and the soil was a mass of roots. We used no chemicals and the crop we had out of it this year hit three tonnes of OG which was unbelievable, and the texture and the taste of the potatoes was amazing, completely different to our conventional ones.’

Prior to harvest, a mobile refractometer application (BRIX) was used to measure taste, nutritional value and goodness. The BRIX levels of conventional grown Jersey Royals comes in poor, organic grown potatoes fair better but potatoes planted in MERS came in much higher.

The trial was so successful that Paul immediately increased the area covered from one hectare to five, using a seven-way cover crop, adding peas, buckwheat, turnip and cocksfoot to the original mix of rye, vetch and radish. He has plans to turn the whole farm over to cover crops + microbes within five to six years.

‘Putting cover crop in is two thirds more expensive initially but saves money because no chemicals are needed,’ says Paul. ‘Plus, the potatoes are superior, and there’s no contamination of the water supply. It means there can be a future in farming on Jersey.’

# Green Manures

## Soil fertility and humus building

### 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 understorey to a main crop and last between two and six months. As legumes will only fix nitrogen when the soil is above 8°C they are effective between April and August.

### Overwinter Mixes

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

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

### Longer Term Leys

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

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

### Sowing and Growing

#### Suitable soils and optimum pH

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

#### When to sow

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

#### How to sow

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

#### Management

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

#### Yield potential

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

### Long term mixes

#### Fertility Builder

One - Two Year Mix **70% ORGANIC** Code: MIXFBORG

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

- 2.20 kg certified GLOBAL red clover
- 0.50 kg certified MILVUS **ORG** red clover
- 0.50 kg certified ABERHERALD white clover
- 5.80 kg certified MAURICE **ORG** tet. per. ryegrass

**9.00 kg/acre** 22.50 kg/ha

**£64.24** 160.60

#### Humus Builder

Two - Four Year Mix **70% ORGANIC** Code: MIXHBORG

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

- 4.00 kg certified MILVUS **ORG** red clover
- 0.50 kg certified PUNA II chicory
- 1.25 kg certified LUXOR **ORG** cocksfoot
- 1.75 kg certified SPARTA cocksfoot

**7.50 kg/acre** 18.75 kg/ha

**£67.53** 168.83

## Summer mixes

### Summer Quick Fix

Nitrogen Boost **70% ORGANIC** Code: MIXSQFORG

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

- 1.80 kg certified ZLATA **ORG** mustard
- 1.50 kg certified ROSA **ORG** crimson clover
- 0.30 kg certified MILVUS **ORG** red clover
- 0.60 kg commercial **ORG** sweet clover
- 0.90 kg certified LASER persian clover
- 0.90 kg certified AKENATON berseem clover

**6.00 kg/acre** 15.00 kg/ha **£35.56** £88.90

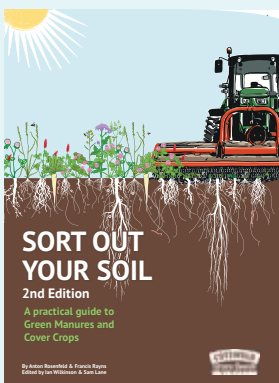
### Yellow Trefoil/White Clover

Intercrop Mixture **70% ORGANIC** Code: MIXICORG

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

- 0.90 kg certified VIRGO PAJBERG yellow trefoil
- 2.10 kg certified ABERCREST **ORG** white clover

**3.00 kg/acre** 7.50 kg/ha **£40.15** £100.38



Discover a whole lot more on cover crops and green manures in our updated practical guide - **Sort Out Your Soil 2nd Edition**

Call us on 01608 652552 or visit [cotswoldseeds.com](http://cotswoldseeds.com) to get your copy.

## Overwinter 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 CONDUCT **ORG** rye
- 22.50 kg certified EARLY ENGLISH vetch

**75.00 kg/acre** 187.50 kg/ha **£87.45** £218.63

### Ryegrass/Vetch

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

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

- 8.00 kg certified AUBADE westerwolds ryegrass
- 19.00 kg certified EARLY ENGLISH **ORG** vetch

**27.00 kg/acre** 67.50 kg/ha **£67.20** £168.00

### Winter Cover Crop

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

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

- 1.10 kg certified ANDREA **ORG** westerwolds ryegrass
- 0.60 kg certified TARDIVO **ORG** crimson clover
- 0.40 kg certified CONTEA crimson clover
- 1.00 kg certified SIGNAL **ORG** mustard
- 0.80 kg certified REGO **ORG** fodder radish
- 0.25 kg certified BALO phacelia
- 0.25 kg certified MERULA red clover
- 0.25 kg certified STRUCTURATOR tillage radish
- 0.20 kg certified LASER persian clover
- 0.15 kg certified DAWN alsike clover

**5.00 kg/acre** 12.50 kg/ha **£30.64** £76.60

## Sowing Rates Are Flexible

We understand that budget can be an issue, particularly when choosing a green manure mixture. The printed sowing rates are guidelines for best practice but can be varied to suit your budget. For example the rye/vetch mixture above can be reduced to 50kg per acre, and still achieve good soil improvement, whilst saving on overall cost of seed.

Brassica Legume Herb Cereal Grass Others

For orders & advice call 01608 652552 or visit [cotswoldseeds.com](http://cotswoldseeds.com)



# Countryside Stewardship

Building on the Countryside Stewardship Scheme first implemented in 2016/2017, a simplified version of the various options was introduced at the start of 2018. The idea behind these recent additions is to continue protecting farmland while making the application process easier for farmers and landowners, involving less paperwork and time-consuming form-filling. The four new options - Online Arable Offer, Lowland Grazing Offer, Upland Offer and a Mixed Farming Offer - are designed to cover a wide range of farming systems.

We offer a wide range of mixtures (below) tailored specifically to the Countryside Stewardship Scheme, many of which feature in the updated options from 2018.

## Sowing and Growing

### Suitable soils

These mixes are suitable for most soil types where the pH is 5.5 or above. Mixtures with sainfoin will grow best on soils with a pH of 6.2 and above.

### When to sow

Sow between mid-April and May - this mixture benefits from warm spring soils so don't be tempted to sow too early. Autumn sowings can take place from August to early September. Later sowings are slower to establish and can be vulnerable to slugs.

### How to sow

Many of the species included have small seeds and should therefore be surface sown onto a fine, firm seedbed at not more than 1-2cm. If broadcasting it is best to lightly harrow and roll after sowing. Loose, puffy seedbeds should be rolled before sowing to encourage even depth and good seed-soil contact.

### Management

While slower to establish than pure ryegrass swards, this mixture can quickly catch up in late spring as soils warm up in the spring. It can be lightly grazed or encouraged to tiller by topping 6 to 8 weeks after sowing. Graze lightly in the year of establishment. Over-grazing will damage chicory crowns and some of the legumes.

## Mixes

### Legume & Herb Rich Sward (OP4)

OELS/HLS Codes: OK21

Whole Field Option **70% ORGANIC** Code: MIXOK21ORG

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
- 9% certified **ORG** timothy
- 6% certified **ORG** meadow fescue
- 4.6% certified tall fescue
- 4% certified **ORG** red clover
- 3% certified alsike clover
- 8% commercial **ORG** sweet clover
- 20% commercial **ORG** sainfoin
- 2% certified birdsfoot trefoil
- 5% certified chicory
- 1% certified ribgrass
- 9% burnet
- 1% yarrow
- 4% sheeps parsley
- 0.2% lesser knapweed
- 0.2% common sorrel

10.00 kg/acre 25.00 kg/ha

£8.48 per kg



Legume and herb rich sward  
Gloucestershire  
15th August

Grass

Legume

Herb

Cereal

Wildflower

Others

Brassica

# Farmland Birds

Prevent birds starving over the winter

Farmland birds can literally starve to death during the hungry gap from January to March. To ensure the maximum amount of feed is provided for the longest possible period, growing more than one mixture in close proximity is advised. The ideal is to grow at least two different types of mixture covering approximately 2% of a farm's arable area.

Bird seed mixes are usually sown as strips on field margins or as blocks within arable areas. Plots next to woods or hedges offer shelter, but mid-field sites suit other bird types, so a combination of both is most beneficial.

## Mixes

### One Year Winter Bird Food

OELS/HLS Codes: OP2

Survival Mixture **70% ORGANIC** Code: MIXSMORG

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

- 10% quinoa
- 35% **ORG** fodder radish
- 5% white millet
- 5% red millet
- 20% **ORG** triticale
- 10% linseed
- 10% **ORG** mustard
- 5% **ORG** buckwheat

**5.00 kg/acre** 12.50 kg/ha **£4.97 per kg**

### Two Year Wild Bird Seed

OELS/HLS Codes: OP2

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

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

- 70% **ORG** spring triticale (supplied separately)
- 14% kale
- 11% quinoa
- 2% fodder radish
- 3% white millet

**20.00 kg/acre** 50.00 kg/ha **£3.93 per kg**

## Rotations

Annual sowings of bird seed mixtures that are left in the same place will result in falling yields. One solution is to swap bird seed areas with pollen and nectar clover areas on a three year rotation. Where these areas are in ELS/HLS agreements it is best to discuss this with Natural England.



## 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

These seed mixtures deliver habitats rich in pollen and nectar ideal for bees and insects.

Both legumes and wildflowers have a role to play in providing pollen and nectar-rich habitats. The legume mix, based on clover, is quick to establish and flower. Usefully, it can be rotated with wild bird seed mixes but only lasts for around three years. The wild flower mixes are more expensive per hectare but are permanent and are better value for money in the long run.

Mixtures with grasses included are beneficial as they help suppress weeds. However, grass-free mixtures have become more popular as grasses can become too dominant, especially on better soils.

Ideally some of each type of mixture should be sown as this will increase diversity and offer a longer flowering period so supporting greater numbers of bees and other invertebrates.

## Mixes: 3-5 years

### The Operation Pollinator

OELS/HLS Codes: OF4

Just Legumes **70% ORGANIC**

Code: MIXPNLORG

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

- 45% certified **ORG** 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

**£12.17 per kg**

### Pollen & Nectar Flower

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

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

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

- 4% certified common bentgrass
- 4% certified crested dogtail
- 3% certified sheeps fescue
- 20% certified **ORG** meadow fescue
- 36% certified **ORG** 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

**£7.52 per kg**

## Mixes: Permanent

### Floristically Enhanced

OELS/HLS Codes: HE10, OC24, OE1, OE2, OE3, OE9, OC1

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 nine native wild flower species which are commonly found on most soils.

- 5% certified common bentgrass
- 10% certified crested dogtail
- 5% certified smaller catstail
- 21% certified sheeps fescue
- 25% certified red fescue
- 25% certified smooth meadowgrass
- 1% field scabious
- 1% lesser knapweed
- 1% self heal
- 1% yarrow
- 1% ox-eye daisy
- 1% lady's bedstraw
- 1% meadow buttercup
- 1% musk mallow
- 1% wild carrot

**8.00 kg/acre** 20.00 kg/ha

**£16.78 per kg**

### Field Corner

OELS/HLS Codes: OD2, HK7

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
- 15% certified crested dogtail
- 5% certified smaller catstail
- 30% certified sheeps fescue
- 20% certified red fescue
- 20% certified smooth meadowgrass
- 1% lesser knapweed
- 1% field scabious
- 1% self heal
- 1% lady's bedstraw
- 1% ox-eye daisy

**10.00 kg/acre** 25.00 kg/ha

**£12.14 per kg**

Grass

Legume

Wildflower



# Resource Protection

Grassy areas to shield valuable natural resources and provide wildlife habitats.

## Stop at the buffers

Grass strips around the edge of many fields have become a distinguishing feature of our arable landscape. They are used most notably to protect water courses, hedges and ditches against nitrate run-offs, soil erosion and pesticides. They also provide habitats for invertebrates and mammals.

## Unproductive field corners

Environmental schemes provide the ideal opportunity to take out awkward corners. One of the most obvious practical advantages of this option is the squaring of irregularly shaped fields, meaning less overlap and input wastage and easier work for machinery operators.

To achieve maximum wildlife benefit these options are best distributed widely around the farm so habitats are spread evenly across the landscape.

## Arable reversion and species-rich grassland

If you enter Countryside Stewardship and opt to recreate grassland on land previously used for arable, your Natural England advisor will prescribe a list of species native to your area. Our mixtures can be easily adapted to meet these specific requirements.

## Sowing and Growing

### Suitable soils

These mixes are suitable for most soil types where the pH is 5.5 or above. Field Corner mix (left) is best on free-draining and south-facing sites.

### When to sow

Sow between March and early May, or August and late September. Later sowings are slower to establish and can be vulnerable to slugs.

### How to sow

Many of the species included have small seeds and should therefore be surface sown onto a fine, firm seedbed at not more than 1-2cm. If broadcasting it is best to lightly harrow and roll after sowing.

### Management

Once established, Buffer Strips only need to be cut once a year after mid July. If sowing a six metre margin we recommend leaving the outer two or three metres uncut to provide tussocky cover for insects and wildlife.

The Field Corner mix will require mowing in the first year to control annual weeds but, once established, this mix is low maintenance needing a cut once in every five years.

Grassland mixes may be mown for hay (or silage) in late June and can also be grazed or topped if needed.

## 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 meadowgrass

**16.00 kg/acre** 40.00 kg/ha

**£8.86 per kg**

### Recreating Grassland

OELS/HLS Codes: HK7, OD2

Long Term **70% ORGANIC**

Code: MIXRGORG

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

- 5% certified common bentgrass
- 10% certified sheeps fescue
- 30% certified **ORG** meadow fescue
- 20% certified **ORG** creeping red fescue
- 15% certified smooth meadowgrass
- 20% certified **ORG** timothy

**10.00 kg/acre** 25.00 kg/ha

**£7.20 per kg**

### Buffer Strip Grass Margin

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

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

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

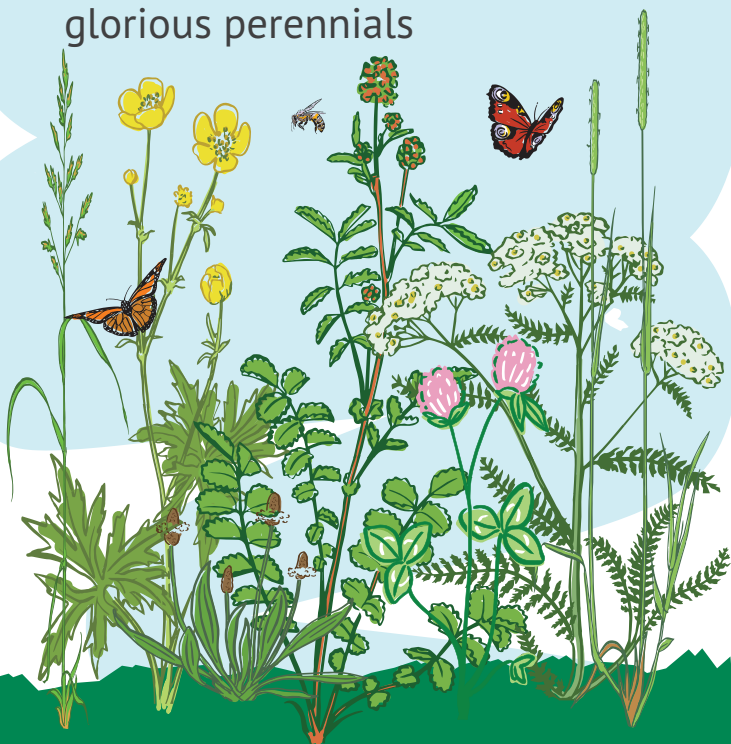
- 5% certified common bent
- 20% certified **ORG** timothy
- 20% certified **ORG** meadow fescue
- 30% certified **ORG** creeping red fescue
- 10% certified cocksfoot
- 15% certified smooth meadowgrass

**10.00 kg/acre** 25.00 kg/ha

**£7.21 per kg**

# Wild Flowers

Recreate traditional wildflower meadows using vivid annuals and glorious perennials



The decline of wild flowers across the UK is well documented. Yet, during the last decade, we have seen an increasing demand for wild flower seeds which are being sown to recreate traditional meadows.

## Managing a meadow

Wild flower meadows take many years to evolve naturally and cannot be instantly created just by sowing seeds. Nevertheless, with proper preparation and subsequent management, excellent results can be achieved in a relatively short time.

Mowing during establishment will help control annual weeds, with annual mowing thereafter, usually in August, removing cuttings (unless you have very poor growth on thin soil where they may be left in situ). Wild flower meadows are usually quite tall and bulky when mown, so an 'Allen' scythe works better than a lawnmower.

These days, 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, as is often the case, for aesthetic purposes alone.

An established wild flower meadow requires no fertilisers or chemical inputs, but it still needs managing. If it is treated as a maintenance-free area it quickly reverts to scrub with a dominance of strong-growing species. See our website for case studies and management advice.

## Choose a mix to match your soil

Location and soil type will determine the suitability of a particular grass or wild flower mixture. To obtain the best results it is important to choose a seed mixture that suits the site. We have created mixtures for most circumstances.

## Mixes

### 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
- 5% certified crested dogtail
- 5% commercial sweet vernal grass
- 10% certified smaller catstail
- 20% certified sheeps fescue
- 15% certified red fescue
- 15% certified smooth meadowgrass
- 1% birdsfoot trefoil
- 0.5% cowslip
- 1% field scabious
- 2% lady's bedstraw
- 2.5% lesser knapweed
- 1% meadow buttercup
- 1% meadowsweet
- 1% ox-eye daisy
- 1% red campion
- 1% ribwort plantain
- 1% self heal
- 2% salad burnet
- 1% sorrel
- 1% white campion
- 1% wild carrot
- 1% yarrow
- 1% yellow rattle
- 2% corn cockle
- 1% corn marigold
- 1% cornflower
- 1% field poppy

10.00 kg/acre 25.00 kg/ha

£36.62 per kg

### 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

10.00 kg/acre 25.00 kg/ha

£62.81 per kg +VAT

Grass

Wildflower

Legume

## 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.

- 10% certified common bentgrass
- 5% commercial sweet vernal grass
- 20% certified crested dogstail
- 25% certified red fescue
- 15% certified slender creeping red fescue
- 10% certified wood meadowgrass
- 1% tufted hairgrass
- 1% autumn hawkbit
- 1% bluebell
- 1% hedge bedstraw
- 1% meadowsweet
- 1% perforate st johns wort
- 2% red campion
- 3% self heal
- 1% teasel
- 1% tufted vetch
- 1% upright hedge parsley
- 1% wood avens

**10.00 kg/acre** 25.00 kg/ha**£35.13 per kg**

## Acid &amp; 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 sweet vernal grass
- 10% certified crested dogstail
- 20% certified red fescue
- 15% certified meadow foxtail
- 15% certified smaller catstail
- 1% commercial quaking grass
- 1% ladys bedstraw
- 2% lesser knapweed
- 3% meadow buttercup
- 1% ox-eye daisy
- 1% ribwort plantain
- 1% self heal
- 3% sheeps sorrel
- 1% yarrow
- 1% yellow rattle

**10.00 kg/acre** 25.00 kg/ha**£32.67 per kg**

## 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% birdsfoot trefoil
- 3% field scabious
- 4% ladys bedstraw
- 15% lesser knapweed
- 7% meadow buttercup
- 7% meadowsweet
- 5% ox-eye daisy
- 4% red campion
- 5% red clover
- 6% ribwort plantain
- 14% self heal
- 12% salad burnet
- 4% white campion
- 5% wild carrot
- 5% yarrow
- 2% yellow rattle

**2.00 kg/acre** 5.00 kg/ha**£99.40 per kg +VAT**

## 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
- 10% certified crested dogstail
- 5% certified smaller catstail
- 30% certified sheeps fescue
- 20% certified red fescue
- 20% certified smooth meadowgrass
- 1% ladys bedstraw
- 2% meadow buttercup
- 1% meadowsweet
- 1% ox-eye daisy
- 1% ragged robin
- 1% ribwort plantain
- 1% self heal
- 1% sorrel
- 1% yellow rattle

**10.00 kg/acre** 25.00 kg/ha**£21.36 per kg**



# Wild Flower Directory

## Perennials

### Birdsfoot Trefoil

£295 per kg

*Lotus corniculatus*

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



Flowers: June-Sept

### Lesser Knapweed

£76 per kg

*Centaurea nigra*

Also known as common or black knapweed. Good nectar source



Flowers: June-Sept

### Ragged Robin

£486 per kg

*Lychnis flos-cuculi*

Delicate ragged flowers usually found in damp meadows.



Flowers: May-Aug

### Bluebell

£324 per kg

*Hyacinthoides non-scripta*

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



Flowers: Apr-June

### Meadow Buttercup

£105 per kg

*Ranunculus acris*

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



Flowers: Apr-Oct

### Red Campion

£77 per kg

*Silene dioica*

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



Flowers: May-Sept

### Cowslip

£895 per kg

*Primula veris*

Found on chalky grassland and open calcareous woodland.



Flowers: Apr-May

### Meadowsweet

£181 per kg

*Filipendula ulmaria*

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



Flowers: June-Sept

### Ribwort Plantain

£64 per kg

*Plantago lanceolata*

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



Flowers: Apr-Oct

### Field Scabious

£245 per kg

*Knautia arvensis*

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



Flowers: June-Oct

### Musk Mallow

£171 per kg

*Malva moschata*

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



Flowers: June-Sept

### St Johns Wort

£327 per kg

*Hypericum perforatum*

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



Flowers: June-Sept

### Ladys Bedstraw

£96 per kg

*Galium verum*

Grows on clay and chalk in grass and woodland. Sweet smelling yellow flowers.



Flowers: June-Sept

### Ox-Eye Daisy

£95 per kg

*Leucanthemum vulgare*

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



Flowers: May-Sept

### Salad Burnet

£71 per kg

*Sanguisorba minor*

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



Flowers: May-Sept

## Perennials continued

### Self Heal

£96 per kg

*Prunella vulgaris*

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



Flowers: June-Oct

### Teasel

£159 per kg

*Dipsacus fullonum*

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



Flowers: July-Sept

### Wild Carrot

£119 per kg

*Daucus carota*

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



Flowers: June-Sept

### Sorrel

£166 per kg

*Rumex acetosa*

Grows well in loamy soils rich in nutrients.



Flowers: May-Aug

### White Campion

£125 per kg

*Silene latifolia*

Frequent in roadside verges, hedgerows and waste ground.



Flowers: May-Oct

### Yarrow

£96 per kg

*Achillea millefolium*

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



Flowers: June-Nov

## Annuals

### Corn Chamomile

£75 per kg

*Anthemis arvensis*

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



Flowers: June-July

### Cornflower

£131 per kg

*Centaurea cyanus*

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



Flowers: June-Aug

### Field Poppy

£92 per kg

*Papaver rhoeas*

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



Flowers: June-Oct

### Corn Cockle

£36 per kg

*Agrostemma githago*

A tall annual with an attractive vivid purple flower.



Flowers: May-Aug

### Corn Marigold

£82 per kg

*Crysanthemum segetum*

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



Flowers: June-Oct

### Yellow Rattle

£174 per kg

*Rhinanthus minor*

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



Flowers: May-Sept

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

\*\*No availability of organic wild flower seeds, so please seek derogation prior to purchase.



# Game

Cover and feed crops for pheasants and partridges.

## 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 millet, maize, kale, 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 September if there is sufficient soil moisture.

### How to sow

A well worked weed-free seedbed is required and a stale seed bed is useful. Large seeds such as maize, sunflower and sorghum are usually drilled but small seeded species such as kale and mustard may be broadcast.

### Management

Game crops require little management once established.

### Nutrient requirements

Game crops require P and K levels to be ADAS Index 2.



## Game and Bird Food Crop Overview

Annuals	Suitable for	Sowing time	Optimum pH	Sowing depth	Row width	Full height	Provides feed
Game Maize	Game	Late Apr-May	6-7	7.5-10cm	50-75cm	180cm	Sept-Jan
Millet	Partridge and song birds	Apr-May	6-7	2.5cm	37-45cm	120cm	Oct-Jan
Sunflower	Game, song birds, insects	Mid Apr onwards	6-8	5cm	30-45cm	90-180cm	Sept-Jan
Dwarf Sorghum	Game	May-Jun	6.5-7.0	5cm	20-30cm	120cm	Oct-Jan
Giant Sorghum	Game	May-Jun	6.5-7.0	5cm	20-30cm	180cm	Oct-Jan
Buckwheat	Game and songbirds	May	5-8	3.75cm	10-15cm	90cm	Jul-Nov
Rape	Game, songbirds, insects	May	6-7	1cm	25-45cm	90cm	Cover crop only
Linseed	Partridges	Mar-Jul	5.5-6.5	2.5cm	10-20cm	60cm	Oct-Jan
Triticale	Game and songbirds	Mar-Apr	5.5-6.5	2.5cm	20-45cm	90cm	Aug-Jan
Fodder Radish	Game and songbirds	May	6.0-6.5	1cm	20-45cm	120cm	Oct-Jan
Quinoa	Game and songbirds	May	6.0-6.5	1cm	10-30cm	90cm	Oct-Jan
Mustard	Game and insects	May	6.0-6.5	1cm	10-30cm	120cm	Oct-Dec
Carbon	Game and songbirds	Jun-Jul	6.0-6.5	1cm	10-30cm	60-100cm	Oct-Dec
<b>Persistent crops</b>							
Kale	Game and songbirds	Apr-Jun	6.5	1cm	45-60cm	60cm	Cover then seed Oct-Jan in 2nd year
Canary Grass	Game	May-Jun	5.5-8.0	1cm	60-90cm	180cm	Cover crop only
Reed Canary Grass	Game and songbirds	May-Jun	5.4-8.0	1cm	60-90cm	200cm	Cover crop only
Sweet Clover	Game and insects	Mar-May	6.5	1cm	20-30cm	120cm	Cover crop only
Chicory	Game, songbirds, insects	Apr-Sept	6	1cm	20-30cm	90cm	Cover crop only
Fodder Beet	Game and songbirds	May	6.0-6.5	2.5cm	45-60cm	120cm	Cover then seed Oct-Jan in 2nd year



## Mixes

## General Purpose Game Mix

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

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

- 1.10 kg white millet
- 1.00 kg **ORG** sweet clover
- 2.00 kg **ORG** sunflower
- 2.50 kg **ORG** buckwheat
- 0.25 kg kale
- 0.25 kg fodder radish
- 1.50 kg **ORG** mustard
- 1.05 kg red millet
- 0.35 kg reed millet

**10.00 kg/acre** 25.00 kg/ha **£46.91** £117.28

## 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 can provide 1-2t per acre of high protein feed from late autumn.

- 1.50 kg quinoa
- 1.50 kg kale

**3.00 kg/acre** 7.50 kg/ha **£30.23** £75.58

## Retrieve Mix

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

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

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

**6.00 kg/acre** 15.00 kg/ha **£26.88** £67.20

## Straights

Buckwheat **ORGANIC**

■ Buckwheat grows vigorously from a sowing in late spring. It can reach 80cm and harbours insects in summer and provides seed into the autumn.

**20.00 kg/acre** 50.00 kg/ha **£83.00** £207.50

Kale **NON ORGANIC**

■ A pure stand of kale provides excellent cover. It has a good top cover and an open floor and is an ideal habitat for pheasants. Left to set seed it also provides for finches, sparrows and buntings.

**3.00 kg/acre** 7.50 kg/ha **£29.40** £73.50

Millet **NON ORGANIC**

■ Highly recommended for its feed attributes. Millet is seldom sown on its own, however sown with kale, results can be excellent. Red or white millet available.

**10.00 kg/acre** 25.00 kg/ha **£27.50** £68.75

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** 7.50 kg/ha **£55.05** £137.63

Sunflower **ORGANIC**

■ Large amounts of food supplied through the winter.

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

Mustard **ORGANIC**

■ A fast growing annual crop which can be sown in the summer in emergency situations.

**8.00 kg/acre** 20.00 kg/ha **£27.20** £68.00



Game maize and kale  
Somerset  
Boxing day

Grass Others Brassica



## COTSWOLD SEEDS

Cotswold Seeds was founded in 1974 and deals with over 14,000 farmers throughout the UK. The company has a specialist interest in grass and legumes and offers advice on growing and managing these crops to farmers and growers in the livestock, arable and horticultural sectors. The company in conjunction with Honeydale Farm is also involved in a wide range of research projects.

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