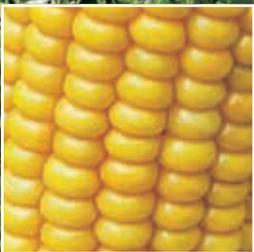




Grass, Clover & Forage Crop Guide 2020





Improving farm productivity since 2004

Address: Unit 3, Broadaxe Business Park, Presteigne LD8 2UH

Telephone: 01544 262 500

Fax: 01544 262 739

Email: info@field-options.co.uk

Website: www.field-options.co.uk

Field Options is a trading division of ProCam CP Ltd.

Registered Office: 2020 Cambourne Business Park, Cambourne, Cambridge CB23 6DW

Your local contact is:

Contents

About Field Options	3
Product Development = Proven Performance	4
Grass and Clover Mixture Selection	5
Catch Crop Grass and Clover Mixtures (6–18 months)	6
Short Term Grass and Clover Mixtures (1–2 years)	7
Short–Medium Term Grass and Clover Mixtures (3 years)	8
Medium Term Grass and Clover Mixtures (4–6 years)	9
Grazing Mixtures	10–11
Long Term Mixtures (6 years+)	12–13
High Performance Stewardship and Greening Mixtures	14
Equine Grass Mixtures	15
Key Herbs and Herbal Mixtures	16
The Benefits of Clover	17
Lucerne	18
Sowing Grass and Clover	19–23
Soil Structure and Health	19
Soil Nutrition and pH	20
Cultivation and Seedbeds	20
Sowing Grass and Clover	21
Over-seeding and Direct Drilling	21
Pest Control	22
Weed Control	23
Maize	24
Wholecrop Silage	25
Forage Crops – Comparative Performance	26
Fodder Beet	27–28
Swedes and Kale	29
Maincrop Turnips	30
Kale x Rape Hybrids and Fodder Rapes	30
Stubble Turnips and Fodder Mustard	31
Fodder Radish and Winter to Spring Catch Crops	31
Fodder Crop Mixtures	32
Cover Crops and Green Manures	33–38
Abridged Terms and Conditions	39
Other Products and Information	39

Your Field Options Contacts



Francis Dunne (Director)

Technical support & sales

Telephone: 07815 209 521

Email: fd@field-options.co.uk



Adam Glyn-Jones

Technical support, sales & operations

Telephone: 07557 111 707

Email: agj@field-options.co.uk



Nick Duggan

Technical support & sales

Telephone: 07557 988 858

Email: nd@field-options.co.uk



Suzanne Bowen

Customer Support

Telephone: 01544 262 500

Email: sb@field-options.co.uk



Rhys Owen

North Wales, Cheshire & North Shropshire

Telephone: 07929 040 623

Email: rhysoven@procam.co.uk



Gareth Williams

South and West Wales

Telephone: 07581 750 173

Email: garethwilliams@procam.co.uk



Graham Singleton

North and North West England

Telephone: 07850 866 225

Email: grahamsingleton@procam.co.uk



Catherine Lovatt

Customer Support

Telephone: 01544 262 500

Email: cl@field-options.co.uk

About Field Options

Set up in 2004, we are a specialist seed business supplying seeds, associated products and technical support throughout the UK. We focus primarily on grass and forage, plus seed for environmental schemes and cover crops. With continuing market pressures on farming, growing and utilising more grass and forage is key to the profitability of all ruminant livestock enterprises. We use trials to select high performance varieties and mixtures, aiming to produce crops with the potential to increase efficiency and lower production costs for farmers. Field Options is a division of the ProCam group of companies.



“More efficient grass and forage is the great opportunity for UK dairy, beef and sheep farming”

Field Options – What We Can Do for Our Clients

Supply

We market a comprehensive range of seeds and associated products, primarily for use by livestock farmers. This includes grass mixtures, maize, fodder beet, wholecrop mixtures and forage crops as well as seeds for environmental schemes, cover crops, game cover, lawns and sports turf. We are involved in specialist fertilisers and ensiling technology, silage inoculants, clamp covers and silage sheets. We can also organise the sampling, analysis and interpretation of soils and forages, as well as testing for the purity and germination of seed. Many of our staff and distributors are also BASIS and FACTS qualified agronomists who can advise on and supply a comprehensive range of agrochemicals, where required.

Service

The products listed in our Grass and Forage Seeds Guide can be ordered through our main office in Presteigne, ProCam agronomists and through distributors at locations throughout England, Scotland and Wales. Products are delivered direct to farm from contracted production centres or from our warehouse. Our most popular products are kept in stock for immediate delivery, while some mixtures are blended to order. Standard delivery is three days, next day service is available and collection from our warehouse is also an option.

Advice and Technical Support

We supply farmers throughout the United Kingdom with seeds in combination with agronomic and, where necessary, forage planning advice. We can be contacted for technical advice by phone, email or through farm visits. We have detailed grower's guidelines and costs for many crops. These are designed to help farmers make informed decisions, provide an insight into the management of each crop and identify whether a crop is suited to a particular field or management system.



What's new for 2020?

AstonVision *Int. Tetraploid Perennial Ryegrass* DSV
Combines high grazing yield with quality, good early growth and excellent Rust resistance.

Oakpark *Late Diploid Perennial Ryegrass* TEAGASC
First of a new generation of Irish grasses. High yield, particularly in mid and late season.

AberBann *Late Diploid Perennial Ryegrass* IBERS
Highest yielding grass in its class. Full season production. Very strong summer growth and good quality.

AberSwan *Medium Leaf White Clover* IBERS
Very high yielding competitive variety with good persistence. First new White Clover from Aberystwyth since 2001.

Magellan *Tetraploid Red Clover* DSV
Impressive variety with strong early season growth and very good persistence.

Gahan *High Dry Matter Fodder Beet* Strube
Benefitting from the best Sugar Beet genetics, this is potentially the highest yielding Fodder Beet in the UK.



Product Development = Proven Performance

Key to the development of high performance grass and forage crops are trials identifying the true potential of products. We need information on how grass and forage species behave, especially in the more marginal areas associated with UK livestock farming.

Data from both the UK and neighbouring European countries' recommended lists are used as a primary source of information, this is supported by breeders' trials, but often more evidence is required to confirm performance. Some crops, like beet and fodder brassicas have no UK recommended lists, so Field Options invest in independent trials allowing us to market more 'PROVEN' products, giving greater performance assurance to farmers.

Unique Grass Mixture Trials

By combining the best varieties from the recommended list will we get the best mixtures?

In 2006 we started to test mixtures in trials at Harper Adams University, alongside and under the same management as the UK Recommended List. The results have helped us verify our mix selection process and in some cases we have identified where we need to reformulate for better performance. The trials re-sown in 2013 generated 5 years of data. The data is presented alongside key mixture descriptions in this guide.

A larger set of trials was sown in 2018, this is already generating useful data. Addition of White Clover to a mixture has increased dry matter yield by >2 tonnes of dry matter/hectare. Red Clover by more than 3.0 tonnes of dry matter. Adding the latest **Plantain** and **Chicory** varieties has also produce an extra 2 tonnes. On the challenging low organic matter arable soils, treating the clover with appropriate Rhizobium inoculant has added an extra tonne of dry matter/hectare and use of a mycorrhizal treatment at establishment has given a 0.75 tonne/hectare in the first five months of growth. Most extraordinary is the performance of a diverse stewardship mixture, **Eco-Pasture**, which is out-performing one our main long term mixtures.

Maize Trials

In 2019 Field Options commissioned two, fully replicated, maize variety trials and a series of farm strip trials including some under the Samco film system. Each trial generates greater knowledge of variety performance and how hybrids respond to local conditions. 2019 was a more normal year than the hot and dry 2018 season. Trials highlighted the consistency of yield and very high feed quality of varieties like **Sergio**, **Rodriguez**, **P7034** and **LG30.179**. The exceptionally high yielding later variety **AgaGold** continues to impress and appears to be adapted to more of the maize growing areas of the UK than originally expected. The new early variety **Arvid** continues to produce impressive yields and high ME. Not all varieties perform well under Samco film, **P8201**, **Isanto** and **Mopolka** did very well as did the earlier **P7326**. **LG30.179**, **Prixdor** and **Sergio** show early indications of responding well.

Fodder Beet Trials

Field Options are UK agents for three beet breeders. As with maize we commission independent, replicated trials, screening new material for UK conditions. This is backed up with breeders trials and regional strip trials. In our most recent trials **Geronimo** and **Gahan** have performed exceptionally well alongside some new varieties, not available in the UK until 2021. Over two seasons primed **Geronimo** produced 5.5t/hectare more roots over the standard control, **Jamon**. **Gahan** has yielded more than 8t/hectare over high DM control, **KWS Gerty**. The favourable start to 2019 led to less response to Active Boost priming of the seed, except in challenging locations where the response was impressive.

Fodder Crop Trials

There is limited UK data on fodder crops. Field Options have tested a range of fodder rapes at locations around the UK. 2018 trials confirmed the performance of **Gorilla** and **Greenland** and identified some very interesting new genetics from New Zealand which have been retested in 2019. This proved to be a challenging season for testing Rape, but we have generated useful data on establishment vigour.

Cover Crop Trials

With the increasing awareness of the importance of healthy soil biology and the introduction of Environmental Focus Areas, there has been a plethora of information on cover crops and mixes qualifying for greening.

For the last three years we've been testing a range of options to ascertain what works and what doesn't, what is really beneficial and what is cost effective. We are happy to share our experience and plan to continue to test and demonstrate the options.



Grass and Clover Mixture Selection

Mixture Formulation

Our philosophy is to get the optimum performance in any particular field. What are the best ingredients to include in a blend of grasses and clovers? We will use the best varieties available. In the case of our key products, these blends and our methods of formulation are tested in unique mixture trials. These quantify the benefits compared to top industry controls. The result, one of the UK's most comprehensive ranges of grass and clover, backed up by proof of performance. From the selector below, identify appropriate mixtures from the basic duration and field use options.

Which Mixtures should you consider?

How long do you want the field of grass to last? What are the chances of it needing to last longer? If in doubt, select for greater duration not less.

What will the field be used for?

Grazing mixtures can always be cut, but cutting mixtures are not always easy to graze. Consider all the mixtures in the relevant boxes below:

Grass and Clover Mixture Selector

		What will the field be used for?			
Duration?	Cutting	Cutting + Legumes	Dual Purpose	Cattle Grazing	Sheep Grazing
< 9 months (pages 31, 32, 35 + 38)	Forage Rye	Forage Rye + Vetches	Forage Rye	Forage Rye Clampsaver Summer Grazer Plus Whirlwind	Forage Rye Clampsaver Summer Grazer Plus Whirlwind
9–18 months (pages 6 + 10)	Hurricane III	Hurricane Pro-Nitro	Hurricane III	Easy-Graze Easy-Graze Herbal	Easy-Graze Easy-Graze Herbal
1–2 years (pages 7, 8, 10 + 4)	Tomahawk Spitfire	Tomahawk Pro-Nitro Spitfire Pro-Nitro Eco-Legume Break	Spitfire Eco-Pasture	Easy-Graze Easy-Graze Herbal Hybrid 3x3	Easy-Graze Herbal Ultra-Lamb Ultra-Lamb Herbal
2–3 years (pages 8–11 + 14)	Hybrid 3x3	Hybrid 3x3 Hybrid 3x3 Pro-Nitro Hy-Red Clover EFA	Hybrid 3x3 Eco-Pasture Grassmaster HS	Easy-Graze Ultra-Bite II Moore-Graze	Ultra-Lamb Ultra-Lamb Herbal
4–6 years (pages 9–12 + 17)	Grassmaster HS	Grassmaster Pro-Nitro Preference Pro-Nitro	Grassmaster HS Preference Clover Overseeding	Ultra-Bite II Moore-Graze Preference	Ultra-Lamb Preference Clover Overseeding
> 6 years (pages 12–13)	Preference Invincible	Preference Pro-Nitro	Preference Endurance II Invincible	Preference Endurance II Highlander Invincible	Preference Endurance II Highlander Invincible
Herbal (pages 10–13 + 16)			Preference Herbal Endurance II Herbal Eco-Pasture	Ultra-Bite Herbal Preference Herbal Endurance II Herbal White Herbal	Ultra-Lamb Herbal Preference Herbal Endurance II Herbal Red or White Herbal
	Cutting		Dual Purpose	Equine Grazing	
Equine (page 15)	Tomahawk Derby Haylage, Hay Paddock (for Hay and Haylage)		Hay Paddock Top Paddock	Top Paddock Herbal Boost	

Special Mixtures

As well as the extensive range of mixtures in this catalogue, we are happy to formulate special mixtures to meet specific requirements. We are not limited to just the varieties used in the main mixtures. Contact the office with any enquiries, for availability of varieties or advice in the formulation of bespoke mixtures. If we can help, we will.

Seeds for Organic Farmers



Although the area of the UK under organic management has declined by 30% since 2008, the area of organic land is increasing once again. Field Options have a particular interest in this sector. In 2019 when 6–7% of temporary grassland was in organic production, 22% of Field Options' direct grass and clover sales were for organic farmers. **We have a wealth of experience in both the supply side and practical organic grass and forage management.** We encourage maintenance of good soil nutrition, soil structure and rotational practices on conventional as well as organic units.

There are organic versions of most of our mixtures for which we use the same variety selection criteria as their conventional counterparts. For 2020 the main mixtures will conform to the minimum 50% organic seed content. Look for the '**Organic Available**' icon by each product.



Field Options' **Hurricane** Catch Crop Mixtures have massive yield potential and are designed to last for up to 18 months. The species used are more suited to cutting than grazing, but can be grazed successfully if appropriate controlled grazing techniques are employed. There are two main situations where Catch Crop Mixtures are used:

1) Spring Planting for maximum yield in the year of sowing, potentially a more flexible alternative to wholecrop or maize. Hurricane III mixtures are widely used for accumulated summer silage cuts, plus standing haylage for out-wintering.

2) Summer-Autumn Planting for impressive growth for autumn grazing or cutting followed by massive spring yield potential. Big 1st cut with the potential to produce silage or hay through until the following autumn.

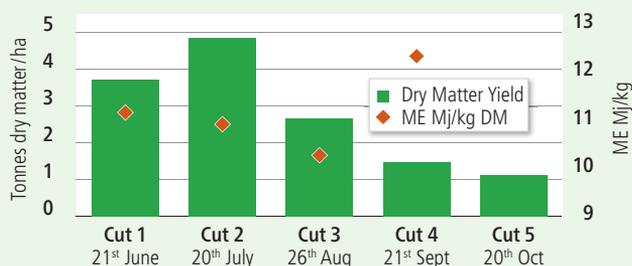
Spring Sown Trial

sow from March to June

Sow March: 1st summer cut c20th June at 70'D' or 30th June at 67'D'

Harper Adams Grass Mixture Trials

Hurricane III tonnes DM/ha (+ ME) from a spring sowing



2016 trials: total 14 tonnes DM/hectare from an early April sowing
Average ME across all cuts 11.5 Mj/kg DM

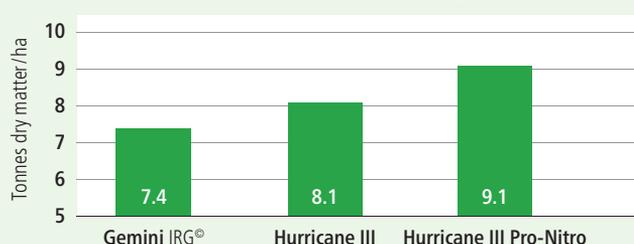
Autumn Sown Trial

sow from July to early October

Sow late July: available for cutting late September
Sow Aug-Sept: 1st spring cut 5th May at 70'D' or 15th May at 67'D'.

Field Options Mixture Trials Harper Adams

1st Year Yield to 1st Cut Silage



Performance over control Gemini Italian Ryegrass
Hurricane III +2.3 tonnes/hectare 30% DM silage
Hurricane III Pro-Nitro +5.7 tonnes/hectare 30% DM silage

Hurricane III

T^{ESTED} MIXTURE

High performance catch crop ryegrass

12.5 kg pack

10–12.5 kg/acre (25–31 kg/ha)

Ideal when you need grass in a hurry or for optimum performance for 6–18 months. It is for heavy cuts of silage plus spring and autumn grazing where required. It is based on a new high performance, persistent and hardy diploid Westerwold Ryegrass. All varieties are selected for combined high yield in the year of sowing plus huge early 1st cut the following season. **Hurricane III** can last through to the end of that season, if required.

More than 40,000 acres sown!

- ✓ Responds well to high fertility
- ✓ Potential to produce more than 10 tonnes of dry matter/ha from a spring sowing
- ✓ Holds 'D' value between cuts much better than straight Westerwold Ryegrass plus better sward density
- ✓ High vigour small seed for economic sowing rate

Minimum Cutting Height: 4 inches (10 cm)

Hurricane III Pro-Nitro

ORGANIC AVAILABLE

There is a range of vigorous annual and biennial legumes which compete well with the **Hurricane III** grass blend. A range of formulae are available depending on the month of sowing and the number of months of production that are required. The options include Common and Hairy Vetch, Berseem, Crimson and Red Clovers.

- ✓ Higher yield potential than Hurricane III, especially in dry seasons
- ✓ Improved protein content of the silage
- ✓ Boosts fertility and enhances soil structure
- ✓ Excellent aftermath grazing potential



Hurricane III



Hurricane III Pro-Nitro

For optimum energy yield these mixtures are dominated by either Italian or Hybrid Ryegrasses. The more Italian Ryegrass, the higher the potential yield, the more Hybrid Ryegrass, the greater the feed quality and persistence of the sward, especially following cold winters or hot dry summers. Annual energy yield can be higher from mixtures dominated by hybrids and cutting intervals can be longer leading to fewer cuts per season.

Tomahawk

T TESTED MIXTURE

1–2 year cutting ley

4.0	Gemini/Kigezi I	Italian Ryegrass (Tet.)
3.0	Alamo	Italian Ryegrass
4.0	Fox/Muriello	Italian Ryegrass
3.0	Kirial/Aston Crusader	Hybrid Ryegrass (Tet.)

14.0 kg/acre pack 34.6 kg/ha

Conservation mixture with massive yield potential. It is based on high merit Italian Ryegrasses with the best combination of yield and persistence through to a second season. A version including Timothy is available for quality equine haylage production.

- ✓ Unrivalled yield for up to two full seasons of production
- ✓ Very good spring growth and high yield at 1st cut
- ✓ Maintains better 2nd cut 'D' value than most Italian based mixtures
- ✓ Good sward density for a short term ley
- ✓ Good all round disease resistance

Cutting Dates: 70'D' 17th May 67'D' 23rd May
Minimum Cutting Height: 4" (10 cm)

Spitfire



Tomahawk Pro-Nitro

O ORGANIC AVAILABLE

1–2 year cutting ley with Red Clover

2.5	Gemini/Kigezi I	Italian Ryegrass (Tet.)
2.5	Alamo	Italian Ryegrass
2.0	Fox/Muriello	Italian Ryegrass
2.0	Kirial/Aston Crusader	Hybrid Ryegrass (Tet.)
1.5	Merviot	Red Clover
1.5	Atlantis/Magellan	Red Clover (Tet.)

12.0 kg/acre pack 29.7 kg/ha

A version of the standard **Tomahawk** containing Red Clover for extra protein content, drought tolerance and much less dependence on artificial fertiliser.

- ✓ Very high silage yield for up to two full seasons of production
- ✓ Very good spring growth and yield at 1st cut
- ✓ Maintains high 'D' value for 2nd cut better than most Italian Ryegrass mixtures
- ✓ High protein silage, especially at 2nd and 3rd cut
- ✓ Excellent late summer/autumn grazing, especially for lambs

Cutting Dates: 70'D' 17th May 67'D' 23rd May
Minimum Cutting Height: 4" (10 cm)

Spitfire

T TESTED MIXTURE

2–3 year cutting ley

3.5	Alamo	Italian Ryegrass
4.0	Noviel/AberEcho	Hybrid Ryegrass (Tet.)
3.0	Kirial/Cordial	Hybrid Ryegrass (Tet.)
2.0	Seagoe	Int. Perennial Ryegrass (Tet.)
1.5	Moira/Nifty	Int. Perennial Ryegrass

14.0 kg/acre pack 34.6 kg/ha

Slightly lower yield than pure Italian based mixtures, but potentially higher energy yield because it holds 'D' value for longer due to inclusion of Hybrid and Perennial Ryegrasses. It also has a much denser sward and the ability to last up to three years.

3 Year Trials Results: Spitfire averaged 5.3 tonnes/year more 30% DM silage than the control Hybrid Ryegrass

- ✓ Very good spring growth with excellent yield at both 1st and 2nd cut
- ✓ Much improved 2nd cut digestibility optimises silage quality
- ✓ Good grazing potential in spring and autumn
- ✓ Very good resistance to Mildew, Rust and Rhynchosporium

Cutting Dates: 70'D' 18th May 67'D' 24th May
Minimum Cutting Height: 4" (10 cm)

Harper Adams Grass Mixture Trials
 Spitfire Mixtures v Hybrid Ryegrass Controls



Spitfire Pro-Nitro

O ORGANIC AVAILABLE

T TESTED MIXTURE

2–3 year cutting ley with Red Clover

2.0	Alamo	Italian Ryegrass
2.0	AberEcho/AberEdge	Hybrid Ryegrass (Tet.)
2.0	Cordial/Kirial	Hybrid Ryegrass (Tet.)
1.5	Seagoe	Int. Perennial Ryegrass (Tet.)
1.5	Nifty	Int. Perennial Ryegrass
1.5	AberClaret/AberChianti	Red Clover
1.5	Atlantis/Magellan	Red Clover (Tet.)

12.0 kg/acre pack 29.7 kg/ha

A version of the standard **Spitfire** including persistent Red Clover varieties for extra protein content, drought tolerance and much lower dependence on artificial fertiliser.

3 Year Trials Results: Spitfire Pro Nitro averaged 11.6 tonnes/year more 30% DM silage than the control Hybrid Ryegrass

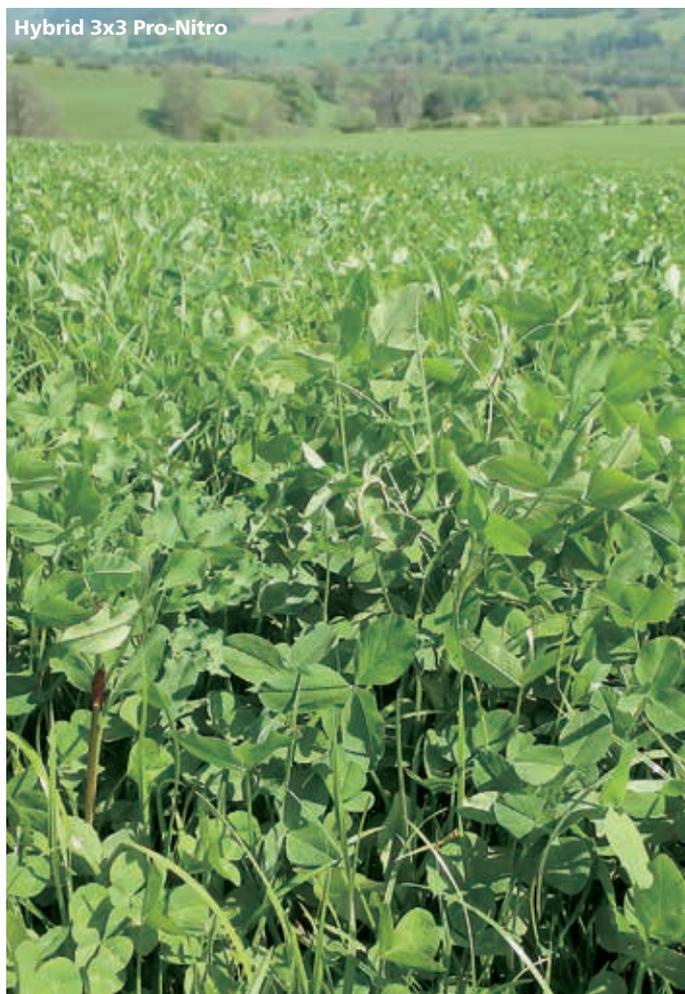
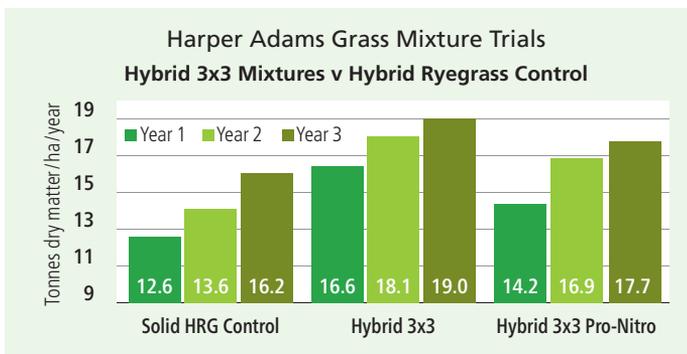
- ✓ Very good spring growth and yield at 1st cut
- ✓ High protein silage, especially at 2nd and 3rd cut
- ✓ Good 2nd cut and late season digestibility optimises forage quality
- ✓ Excellent grazing in the autumn, especially for lamb finishing

Cutting Dates: 70'D' 18th May 67'D' 24th May
Minimum Cutting Height: 4" (10 cm)

The Hybrid Ryegrasses we use combine high yield, high ME and persistence with good resistance to key diseases. In these mixtures they are combined with some of the best performing Perennial Ryegrasses which can also compete with the aggressive hybrids. In mixture trials they have out-yielded Italian Ryegrasses and produced >1.0 Mj/kg dry matter higher quality in mid-season cuts. These mixtures can also produce excellent grazing, especially spring and autumn.

Hybrid 3x3		O ORGANIC AVAILABLE	T TESTED MIXTURE
<i>3 year dual purpose ley</i>			
3.0	AberEdge/AberEcho	Hybrid Ryegrass (Tet.)	
3.5	Cordial/Kirial	Hybrid Ryegrass (Tet.)	
3.0	Seagoe	Int. Perennial Ryegrass (Tet.)	
3.5	AberGreen	Int. Perennial Ryegrass	
0.6	AberDai	White Clover	
0.4	Violin/AberVantage	White Clover	
14.0 kg/acre pack		34.6 kg/ha	
Hybrid 3x3 produces high yields of silage for three years or more. Also available without Clover.			
3 Year Trials Results: Hybrid 3x3 averaged 12.5 tonnes/year more 30% DM silage than the control Hybrid Ryegrass			
<ul style="list-style-type: none"> ✓ Impressive yield, similar to Italian Ryegrasses but with simpler management and more persistence ✓ Easier to maintain 'D' value at 2nd and 3rd cut than Italian mixtures ✓ High sugar content for enhanced fermentation ✓ Ideal for multi-cut silage management and zero grazing ✓ Excellent resistance to foliar diseases ✓ Very good grazing in spring and late summer/autumn 			
Cutting Dates: 70'D' 21st May 67'D' 27th May Minimum Cutting Height: 4" (10 cm)			

Hybrid 3x3 Pro-Nitro		O ORGANIC AVAILABLE	T TESTED MIXTURE
<i>3 year dual purpose ley with Red Clover</i>			
2.5	AberEdge/AberEcho	Hybrid Ryegrass (Tet.)	
2.0	Cordial/Kirial	Hybrid Ryegrass (Tet.)	
2.5	Seagoe	Int. Perennial Ryegrass (Tet.)	
2.5	AberGreen	Int. Perennial Ryegrass	
0.5	AberDai	White Clover	
1.0	AberClaret/AberChianti	Red Clover	<i>Both varieties increased</i>
1.0	Harmonie/Milvus	Red Clover	<i>by 25% from 1st July</i>
12.0 kg/acre pack		29.7 kg/ha	
Similar to the standard Hybrid 3x3 but with Red Clover to increase protein content, drought tolerance and reduce dependence on nitrogen fertiliser.			
3 Year Trials Results: Hybrid 3x3 Pro-Nitro averaged 7.1 t/year more 30% DM silage than the control Hybrid Ryegrass			
<ul style="list-style-type: none"> ✓ Consistent high yields of high protein silage for three years ✓ Lower nitrogen requirements for similar silage yields compared to the standard Hybrid 3x3 ✓ Superior drought tolerance and excellent fertility building for the following crop ✓ Excellent late summer and autumn grazing, especially for lambs 			
Cutting Dates: 70'D' 21st May 67'D' 27th May Minimum Cutting Height: 4" (10 cm)			



Grassmaster HS

O ORGANIC AVAILABLE **T** TESTED MIXTURE

5–6 year cutting and grazing mixture

1.5	Seagoe	Int. Perennial Ryegrass (Tet.)	
1.5	AstonVision <i>NEW</i>	Int. Perennial Ryegrass (Tet.)	
3.7	AberGreen	Int. Perennial Ryegrass	
2.0	AberGain	Late Perennial Ryegrass (Tet.)	
3.5	AberLee <i>NEW</i>	Late Perennial Ryegrass	
1.0	Presto	Timothy	
0.4	AberSwan <i>NEW</i>	White Clover	<i>White Clover</i>
0.2	AberVantage	White Clover	<i>increased by 20%</i>
0.2	Crusader/Iona	White Clover	<i>from 1st July</i>

14.0 kg/acre pack 34.6 kg/ha

Top yields of quality silage and/or palatable grazing for five years or more. Upgraded with the best 'Aber' technology.

Also available without Clover.

More than 10,000 acres sown!

4 Year Trials Results: Grassmaster averaged 6.0 tonnes/year more 30% DM silage than the control Perennial Ryegrass

- ✓ Good spring growth for more grazing or extra 1st cut silage
- ✓ High yield potential at 1st cut with flexibility over cutting date
- ✓ Ideal for multi-cut silage management and zero grazing
- ✓ Contains three of the top 'High Sugar' varieties
- ✓ Excellent mid and late season growth boosted by AberGreen, AberGain and AberLee, plus Timothy and Clover
- ✓ Very good resistance to disease, especially Crown Rust
- ✓ Clovers selected for their ability to compete in a cutting regime and to adapt well to either sheep or cattle grazing

Cutting Dates: 70'D' 24th May 67'D': 1st June
Minimum Cutting Height: 4" (10 cm)



Grassmaster HS

Harper Adams Grass Mixture Trials
 Grassmaster Mixtures v Perennial Ryegrass Control



Grassmaster HS Pro-Nitro

O ORGANIC AVAILABLE **T** TESTED MIXTURE

5–6 year cutting and grazing mixture

1.5	Seagoe	Int. Perennial Ryegrass (Tet.)	
1.5	AstonVision <i>NEW</i>	Int. Perennial Ryegrass (Tet.)	
3.0	AberGreen	Int. Perennial Ryegrass	
1.5	AberGain	Late Perennial Ryegrass (Tet.)	
2.0	AberLee <i>NEW</i>	Late Perennial Ryegrass	
1.0	Presto	Timothy	
0.5	AberSwan <i>NEW</i>	White Clover	
1.0	AberClaret/AberChianti	Red Clover	<i>Red Clover increased</i>
0.5	Harmonie/Milvus	Red Clover	<i>by 20% from 1st July</i>

12.5 kg/acre pack 30.9 kg/ha

Similar to the standard **Grassmaster HS** but with Red Clover added to increase protein content, drought tolerance and allow less dependence on nitrogen fertiliser.

4 Year Trials Results: Grassmaster Pro-Nitro averaged 11.4 tonnes/year more 30% DM silage than the control Perennial Ryegrass

- ✓ Consistent high yields of high-protein silage for three + years
- ✓ As the Red Clover dies out, the White Clover takes its place
- ✓ Ideal for multi-cut silage management and zero grazing
- ✓ The Red Clover varieties all have top scores for persistence, optimising the number of years Red Clover contributes to the ley
- ✓ Lower nitrogen requirements for similar silage yields compared with the standard Grassmaster HS
- ✓ Excellent late summer and autumn grazing for lambs

Cutting Dates: 70'D' 24th May 67'D': 1st June
Minimum Cutting Height: 4" (10 cm)



Grassmaster HS Pro-Nitro

Easy-Graze



2–3 year ley for grazing in arable rotations

3.0	Seagoe	Int. Perennial Ryegrass (Tet.)
3.0	AstonVision/Seagoe	Int. Perennial Ryegrass (Tet.)
3.5	AberGain/Bijou	Late Perennial Ryegrass (Tet.)
3.0	AberChoice/Glenarm	Late Perennial Ryegrass
0.5	Dawn/Aurora	Alsike Clover
0.6	AberDai Rz+*/Alice	White Clover * = <i>Rhizobium Coated</i>
0.4	Crusader	White Clover

14.0 kg/acre pack 34.6 kg/ha

Most short term grasses are very challenging to graze and rarely well utilised by grazing livestock. These grasses do not produce densely tillered swards, are less palatable and prone to producing heads too quickly. There is an increasing demand for short term grazing leys for both sheep and cattle, especially in arable rotations where grass leys are being reintroduced to enhance the rotation and assist in controlling Blackgrass. To meet this demand we have developed **Easy-Graze**. It is based on the most productive, palatable Perennial Ryegrasses and White Clovers.

- ✓ Very high yield under grazing management
- ✓ High levels of production throughout the grazing season
- ✓ Ideal for multi-cut silage management and zero grazing
- ✓ Excellent resistance to foliar diseases
- ✓ Surplus production can make excellent silage or hay
- ✓ Can last up to five years if required

Easy-Graze Herbal This mix is available including 0.5 kg/acre of a blend of **Boston** Plantain and **Puna II** Chicory to enhance summer production and mineral content of the pasture. (See page 16)



Easy-Graze

Ultra-Lamb



5 year+ sheep grazing mixture

2.5	AstonVision NEW	Int. Perennial Ryegrass (Tet.)
3.5	AberZeus	Int. Perennial Ryegrass
2.5	AberGain	Late Perennial Ryegrass (Tet.)
3.5	AberBann NEW	Late Perennial Ryegrass
1.0	Promesse/Winnetou	Timothy
0.25	AberDai	White Clover
0.5	Crusader/Iona	White Clover
0.25	AberLasting	White Clover

14.0 kg/acre pack 34.6 kg/ha

Ultra-Lamb is designed to provide optimum performance for progressive sheep enterprises. It includes varieties selected for stronger spring growth, palatability, high sward density and very persistent clover.

- ✓ Very early spring growth
- ✓ Late heading for easy management
- ✓ Can produce excellent mid-season silage cut if required
- ✓ Strong summer and autumn growth for lamb finishing
- ✓ Highly adaptable clovers tolerant of hard grazing regimes
- ✓ Good overall disease resistance
- ✓ Surplus production can make excellent quality hay or silage

Ultra Lamb Herbal A version of this mix is available including 0.5 kg/acre of a blend of **Boston** Plantain and **Puna II** Chicory to enhance summer production and mineral content of the pasture. (See page 16)





Ultra-Bite II

ORGANIC AVAILABLE

5 year+ high intake cattle grazing mixture

3.0	AberGreen	Int. Perennial Ryegrass
2.5	AberGain	Late Perennial Ryegrass (Tet.)
2.0	Caleo	Late Perennial Ryegrass (Tet.)
3.0	Oakpark <small>NEW</small>	Late Perennial Ryegrass
2.5	AberLee <small>NEW</small>	Late Perennial Ryegrass
0.5	AberDai	White Clover
0.5	Crusader/Iona	White Clover

14.0 kg/acre pack

34.6 kg/ha

Ultra-Bite II is based on the very best performing late Perennial Ryegrasses. It includes the award winning **AberGreen**, officially classified as an intermediate heading variety, but only by one day.

The mixture produces a very dense, hard wearing sward providing season-long production of highly palatable grass and clover. With 35% tetraploid grasses, production and palatability are enhanced without sacrificing density and persistence.

Also available without Clover.

- ✓ To help with grazing management *Ultra-Bite II* does not head until 4th June
- ✓ Varieties selected for high palatability and long season growth
- ✓ Clovers selected to tolerate intensive grazing and high fertility
- ✓ Very good resistance to Crown Rust
- ✓ Improved Drechslera resistance
- ✓ Good winter hardiness
- ✓ Surplus production can make excellent quality silage

Moore-Graze

5 year+ high intake long season cattle grazing mixture

2.5	Seagoe	Int. Perennial Ryegrass (Tet.)
2.0	Nifty	Int. Perennial Ryegrass
3.0	AberGreen	Int. Perennial Ryegrass
2.5	AberGain	Late Perennial Ryegrass (Tet.)
3.0	Oakpark <small>NEW</small>	Late Perennial Ryegrass
0.5	AberDai	White Clover
0.5	Crusader/Iona	White Clover

14.0 kg/acre pack

34.6 kg/ha

Moore-Graze produces a dense sward designed with enhanced levels of production in spring and autumn for longer season growth in extended grazing systems.

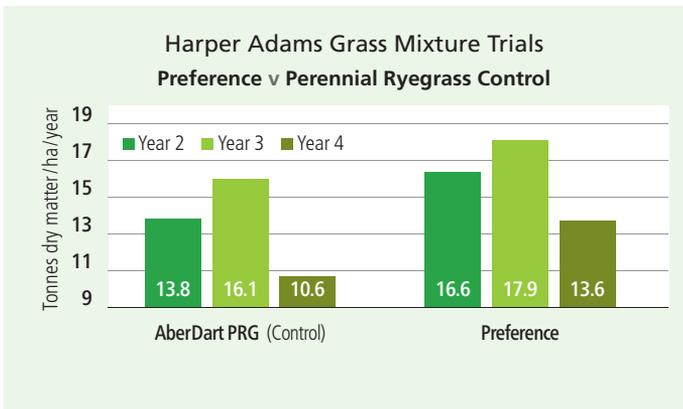
It is based on varieties which are highly rated in the TEAGASC Moorepark Pasture Profit Index and that are also very high scoring on the BSPB and SAC lists for yield, quality, persistence and disease resistance. With 35% tetraploid grasses, production and palatability are enhanced without sacrificing density and persistence.

Also available without Clover.

- ✓ Varieties chosen for very high yield under dairy and beef grazing systems
- ✓ Good spring growth
- ✓ Excellent summer and autumn production
- ✓ Good sward density for poaching resistance
- ✓ Good Crown Rust resistance for optimum late-season yield and palatability

To enhance summer production and mineral content of the pasture there are 'Herbal' versions of both **Ultra-Bite II** and **Moore-Graze**. These contain 0.3 kg/pack of **Boston** Plantain and 0.2 kg/acre of **Puna II** Chicory.





Preference

ORGANIC AVAILABLE TESTED MIXTURE

Long term dual purpose mixture

4.0	AberGreen	Int. Perennial Ryegrass
2.0	Caleo	Late Perennial Ryegrass (Tet.)
2.0	AberAvon	Late Perennial Ryegrass
2.0	Oakpark NEW	Late Perennial Ryegrass
1.5	AberLee NEW	Late Perennial Ryegrass
1.0	Winnetou/Promesse	Timothy
0.25	AberSwan NEW	White Clover
0.25	AberDai	White Clover
0.5	Crusader/Iona	White Clover

13.5 kg/acre pack 33.3 kg/ha

Currently our best selling mixture, **Preference** produces a highly palatable, productive and very dense sward. It is formulated primarily for grazing with an emphasis on longevity. It is actually adapted to a wide range of management regimes and can produce high yields of quality hay or silage. **Also available without Clover.**

More than 27,000 acres sown!

3 Year Trials Results: Preference averaged 2.5 T DM/ha/year more than the control Perennial Ryegrass. That's an extra 625 lamb grazing days/ha or over 2,000 litres of milk.

- ✓ Suited to both sheep and cattle grazing
- ✓ Very good cutting yields for a late heading mixture
- ✓ Ideal for multi-cut silage management and zero grazing
- ✓ Very dense hard wearing sward
- ✓ Holds 'D' value over a long period adding flexibility to silage dates
- ✓ Very dense hard wearing sward
- ✓ Good all round disease resistance, especially to Crown Rust
- ✓ Top Clover varieties, adapted to even the harshest grazing regimes

Cutting Dates: 70'D' 29th May 67'D' 4th June
Minimum Cutting Height: 4" (10 cm)



Preference Herbal

Long term dual purpose mixture

4.0	AberGreen	Int. Perennial Ryegrass
2.0	Caleo	Late Perennial Ryegrass (Tet.)
2.0	AberAvon	Late Perennial Ryegrass
1.5	Oakpark NEW	Late Perennial Ryegrass
2.0	AberLee NEW	Late Perennial Ryegrass
1.0	Winnetou/Promesse	Timothy
0.25	AberSwan NEW	White Clover
0.25	AberDai	White Clover
0.5	Crusader/Iona	White Clover
0.3	Boston	Grazing Plantain
0.15	Puna II	Grazing Chicory
0.05		Yarrow

14.0 kg/acre pack 34.6 kg/ha

An updated version of the best selling **Preference** including Plantain and Chicory to enhance grazing performance through improved mineral content and extra production during dry periods.

- ✓ Extra yield during establishment season
- ✓ Herbs provide extra drought tolerance and stock health

Preference Pro-Nitro

Long term dual purpose mixture with added Red Clover

4.0	AberGreen	Int. Perennial Ryegrass
2.0	Caleo	Late Perennial Ryegrass (Tet.)
2.0	AberAvon	Late Perennial Ryegrass
1.5	Oakpark NEW	Late Perennial Ryegrass
1.8	AberLee NEW	Late Perennial Ryegrass
1.0	Winnetou/Promesse	Timothy
0.7	AberClaret	Red Clover
0.25	AberSwan NEW	White Clover
0.25	AberDai	White Clover
0.5	Crusader/Iona	White Clover

14.0 kg/acre pack 34.6 kg/ha

A variant of the popular **Preference** mixture with the persistent Red Clover **AberClaret** added to boost production in the first three years. It provides extra protein, drought tolerance and enhanced grazing performance as well as reduced dependence on nitrogen.

Red Clovers die out after 3–4 years, depending on management.

- ✓ Enhanced cutting performance over standard Preference for the first three years
- ✓ Excellent lamb performance on improved clover aftermaths

Endurance II

ORGANIC AVAILABLE TESTED MIXTURE

Long term mixture for dry land

2.5	AberGreen	Int. Perennial Ryegrass
2.75	AberLee <small>NEW</small>	Late Perennial Ryegrass
2.5	Calao	Late Perennial Ryegrass (Tet.)
1.5	Winnetou/Promesse	Timothy
2.5	Donata/Beverly	Cocksfoot
0.25	Virgo	Yellow Trefoil
0.25	Leo	Birdsfoot Trefoil
0.5	AberDai	White Clover
0.25	Crusader/Iona	White Clover
0.5	AberLasting	White Clover

13.5 kg/acre pack 33.3 kg/ha

The best Perennial Ryegrasses are adapted to a range of conditions, but the performance of a sward can be enhanced by other species, especially in low fertility situations and dry areas. **Endurance II** contains a range of species adapted to these soil types and to enhance stock health.

3 Year Trials Results: **Endurance II** averaged 3.8 T DM/ha/year more than the control Perennial Ryegrass.

An extra 950 lamb grazing days/ha or over 3,000 litres of milk.

- ✓ Primarily suited to grazing
- ✓ Very long growing season
- ✓ Modern Cocksfoot varieties with minimal heading after 20th June, more palatable and less prone to producing tussocks than traditional varieties
- ✓ Excellent dry season performance
- ✓ Very good persistence and winter hardiness
- ✓ Wider mineral profile than Ryegrass dominant mixtures

Endurance II Herbal

ORGANIC AVAILABLE

Long term mixture for dry land with additional herbs

2.5	AberGreen	Int Perennial Ryegrass
2.75	AberLee	Late Perennial Ryegrass
2.5	Calao	Late Perennial Ryegrass (Tet)
1.5	Winnetou/Promesse	Timothy
2.5	Donata/Beverly	Cocksfoot
0.25	Virgo	Yellow Trefoil
0.25	Leo	Birdsfoot Trefoil
0.5	AberDai	White Clover
0.25	Crusader/Iona	White Clover
0.5	AberLasting	White Clover
0.3	Boston	Grazing Plantain
0.15	Puna II	Grazing Chicory
0.05		Yarrow

14.0 kg/acre pack 34.6 kg/ha

The highest yielding long term mixture in Field Options mixture trials, this is an updated version of **Endurance II** including Plantain, Chicory and Yarrow to enhance grazing performance through improved mineral content and extra production during dry periods.



Endurance II Herbal

Harper Adams Grass Mixture Trials
Endurance v Perennial Ryegrass Control



Invincible

ORGANIC AVAILABLE

Long term mixture for wet lying land

2.5	AberGreen	Int. Perennial Ryegrass
2.5	AberAvon	Late Perennial Ryegrass
2.5	Oakpark <small>NEW</small>	Late Perennial Ryegrass
1.6	Motim	Timothy
1.5	Liherold	Meadow Fescue
2.0	Donata/Beverly	Cocksfoot
0.4	Ermo/Aurora	Alsike Clover
0.5	AberDai RZ+ Coated	White Clover
0.25	Crusader/Iona	White Clover
0.25	AberLasting	White Clover

14.0 kg/acre pack 34.6 kg/ha

Invincible contains species which tolerate flooding and high winter water tables. It also includes some of the most persistent of the high performance perennial ryegrasses and clovers. It needs to be well established before it is first immersed in water.

- ✓ Produces a very dense hard wearing sward which persists for many more years than a standard long term mix in these conditions
- ✓ Can be used for grazing either sheep or cattle
- ✓ Rhizobium inoculated AberDai boosts clover establishment

Highlander

ORGANIC AVAILABLE

Long term mixture for hill and marginal land

3.0	AberGreen	Int. Perennial Ryegrass
3.5	AberAvon	Late Perennial Ryegrass
3.0	Oakpark <small>NEW</small>	Late Perennial Ryegrass
1.5	Motim	Timothy
1.4	Corail or other	Strong Red Fescue
0.5	Ermo/Aurora	Alsike Clover
0.5	AberDai RZ+ Coated	White Clover
0.3	Crusader/Iona	White Clover
0.3	AberLasting	White Clover

14.0 kg/acre pack 34.6 kg/ha

Similar to **Preference** but with extra hardiness and persistence. For use in exposed hill locations, especially in high rainfall areas.

- ✓ Produces a very dense hard wearing, productive sward
- ✓ Excellent winter hardiness
- ✓ Production enhanced by AberGreen
- ✓ Tolerant to pH and fertility variation
- ✓ Includes rhizobium inoculated AberDai to boost clover establishment

High Performance Stewardship and Greening Mixtures

Mixtures for environmental stewardship schemes are mainly mixed to order and are often particular to local specification. We have access to a massive range of species suitable to these schemes and have considerable experience in designing mixtures to create good field performance, while also meeting the scheme specifications and realising the environmental objectives. Contact our office with the codes specific to your scheme and we will give you our recommendations. We detail below two popular stewardship mixtures designed for certain ELS, HLS and the Countryside Stewardship schemes.

Eco-Pasture Multi-species Mix



2–5 year cutting & grazing mixture (for GS4, OP4, OP5, EK21, OK21)

4.0	AberGreen	Int. Perennial Ryegrass
3.3	AberGain	Late Perennial Ryegrass (Tet.)
1.0	Presto	Timothy
0.5	Liherold	Meadow Fescue
0.5	Donata/Beverly	Cocksfoot
0.5	AberFleece	Sheep's Fescue
0.7	Maxima	Creeping Red Fescue
1.5	Atlantis	Red Clover (Tet.)
0.5	Ermo/Aurora	Alsike Clover
0.25	AberDai	White Clover
0.5	Leo	Birdsfoot Trefoil
0.35	Boston	Grazing Plantain
0.2	Puna II	Grazing Chicory
0.05		Burnett
0.05		Yarrow
0.05		Sheep's Parsley
0.05		Common Knapweed

14.0 kg/acre pack

34.6 kg/ha

A mixture containing a broad range of grasses, legumes and herbs designed to combine productive grazing with habitat for pollinators and invertebrates as well as improving soil structure and fertility.

- ✓ Suited to all classes of ruminant livestock in controlled grazing situations
- ✓ Long season of production
- ✓ Very good mid-season production and drought tolerance
- ✓ Enhanced mineral profile from the wide range of species grown
- ✓ Suitable for both cutting and grazing

Eco-Legume Break



2 year legume fallow for mowing (for AB15)

2.5	Seagoe	Int. Perennial Ryegrass (Tet.)
2.0	AberGreen	Int. Perennial Ryegrass
2.0	Caleo	Late Perennial Ryegrass (Tet.)
2.0	AberAvon	Late Perennial Ryegrass
1.0	Merviot	Red Clover
1.0	Atlantis/Magellan	Red Clover (Tet.)
1.5	Early English	Common Vetch
1.0	Leo	Birdsfoot Trefoil
0.25		Common Knapweed

13.25 kg/acre pack

32.7 kg/ha

Some farmers selecting the AB15 option will just be looking for fertility building cover, others will want to combine a legume break with the production of high quality silage. This version is designed for the latter strategy, including the best performing Perennial Ryegrasses which combine very high yield with the ability to produce silage of very high 'D' value.



Eco-Pasture

High Performance Environmental Focus Areas (EFA)

Before 2018 many farmers grew pulses and legumes to optimise production and income while conforming to their need for Environmental Focus Areas. Restrictions on the use of plant protection products has caused a drop in the area of pulses grown. Growing perennial forage legumes like Red Clover and Lucerne (pages 17 and 18) are however still an option. In England this actually became easier because certain legumes can now be grown with companion grass, so long as the forage legume accounts for more than 50% of the plants in the sward. **Hy-Red Clover** mixture is specifically designed for this use, or as an alternative to straight Red Clover, with extra spring growth and better ground cover from the Hybrid Ryegrasses.

Hy-Red Clover EFA Mixture

2–3 Year Cutting Mix for Environmental Focus Areas

3.5	Cordial	Hybrid Ryegrass (Tet.)
4.0	Kirial	Hybrid Ryegrass (Tet.)
2.5	Merviot	Red Clover
2.5	Atlantis	Red Clover (Tet.)

12.5 kg/0.5 hectare pack

25.0 kg/ha

High performance silage mixture producing four cuts of silage and designed to optimise production while meeting EFA criteria. Inclusion of two of the best Hybrid Ryegrasses gives earlier spring growth and adds sugar to enhance silage fermentation.

- ✓ Big yield of high protein silage for up to three seasons
- ✓ Drought tolerant
- ✓ Excellent late season grazing, especially for lambs



Hy-Red Clover Mixture

Equine Grass Mixtures

There are approximately 1.3 million horses in the UK, requiring more than 800,000 acres of grazing paddocks and creating a significant market for hay and haylage. Equine grazing pasture and hay and haylage production require different specifications to the ruminant livestock industry. We produce a range of mixtures designed to meet these specific criteria.

Grazing Paddocks: Pasture for horses needs to be dense, very hard wearing and to produce leafy, palatable growth through a long grazing season.

Unlike our mixtures designed for sheep and cattle, our equine mixtures do not contain high sugar grasses and tend to contain a range of species to optimise the length of the grazing season and to enhance the mineral profile of the herbage.

Top Paddock

ORGANIC AVAILABLE

Hard wearing equine grazing mixture

6.0	Toddington	Late Perennial Ryegrass
2.0	Sports Turf	Perennial Ryegrass
3.0	Maxima	Strong Red Fescue
1.5	Comer	Timothy
1.0	Evora/Sunbeam	Kentucky Bluegrass

13.5 kg/acre pack 33.4 kg/ha

Designed to tolerate tough use, this is a multi-species blend that develops a very dense hard wearing sward while producing a uniform supply of palatable grazing throughout the growing season. Surplus production can make excellent hay or haylage. Herbs can also be added (page 16).

Top Paddock



Hay Paddock

ORGANIC AVAILABLE

Long term mixture for equine hay, haylage and grazing

5.0	Boyne	Int. Perennial Ryegrass
4.0	Toddington	Late Perennial Ryegrass
2.5	Comer	Timothy
2.0	Pardus	Meadow Fescue

13.5 kg/acre pack 33.4 kg/ha

This combination of varieties has been selected to produce high yields of top quality hay or haylage over many seasons. It is dominated by higher dry matter grasses for faster wilting. Disease resistance is high, reducing the risk of producing dusty forage.

It produces a very dense pasture which can also be used for grazing.

Cutting Mixtures: The quality market is dominated by low protein, well headed, strong ryegrass hay and haylage. Much of the rest of the market is made up of mixed species 'meadow' hay and haylage cut at a similar 'headed' stage. The objective, to produce dust free, stemmy material primarily for maintenance. Higher energy and protein levels can be created by cutting these mixtures at earlier growth stage. This type of fodder should only be used for performance working horses.

Tomahawk + Timothy

1-2 year ley for top quality hay and haylage

3.5	Gemini	Italian Ryegrass (Tet.)
3.5	Alamo	Italian Ryegrass
2.5	Fox	Italian Ryegrass
2.5	Kirial	Hybrid Ryegrass (Tet.)
2.0	Comer	Timothy

14.0 kg/acre pack 34.6 kg/ha

A variation on our main one-two year Ryegrass mixture with additional Timothy to add a new dimension to quality hay and haylage production. It produces very high yields of strong hay or haylage. Good resistance to the early season diseases, Mildew, Rhynchosporium and Brown Rust. Reduces the risk of dusty hay or haylage.

Also available without Timothy.

- ✓ Good range of thick and thin stems and broad leaf
- ✓ High sugar content for rapid fermentation of haylage

Minimum Cutting Height: 4" (10 cm)

Hay Paddock



Derby Haylage

2-3 year specialist haylage mix

4.0	Alamo	Italian Ryegrass
4.0	Perun	Festulolium (Tet.)
4.0	Rusa	Hybrid Ryegrass (Tet.)
2.0	Comer	Timothy

14.0 kg/acre pack 34.6 kg/ha

Designed to produce strong haylage or hay for up to 3 years. It is based on varieties proven to produce top quality haylage. **Alamo**, the most persistent Italian Ryegrass plus **Rusa** or **Kirial**, plus **Perun**, all hybrids of Ryegrass, each crossed with more persistent species also incorporating winter hardiness and drought tolerance.

- ✓ Good resistance to early season Rust, Mildew and Drechslera, reducing the risk of dusty hay or haylage
- ✓ Good range of thick and thin stems and broad leaves

Minimum Cutting Height: 4" (10 cm)

Herbs provide good summer/autumn feed. In most of the UK they have a lower total yield potential than Perennial Ryegrass, but have a different growth pattern, increasing production especially in dry seasons like 2018. Herbs can be grown alone but are normally sown in mixtures with grass and clovers. Herbs greatly enhance the trace element profile in the herbage. Pastures with a high herb density can be used as 'Tonic Pastures' to revive poor stock. Chicory and Plantain are particularly reliable, deep-rooted and drought tolerant. Both species have very good mineral profiles and Chicory is also reported to have some anthelmintic properties.

Our herbal grazing mixtures differ from many competitor products because they contain a significant amount of grass. This helps keep a dense base in the predominantly herb and clover rich sward, reducing ingress of weeds, extending the grazing season and broadening the nutrient profile of the sward.

These mixtures contain very fine seed and should only be shallow drilled into very fine, firm seedbeds.

Mineral Profile of Other Herbage Species*										
	P	K	Ca	Mg	Mn	Na	Cu	Co	Fe	Se
Chicory	✓✓	✓✓	✓✓	✓✓	✓	✓✓	✓	✓		
Plantain		✓	✓	✓	✓	✓	✓✓	✓	✓	✓✓
Sheep's Parsley		✓	✓	✓		✓				
Yarrow	✓	✓✓	✓✓	✓	✓		✓			
Sheep's Burnet			✓	✓						
Trefoil	✓	✓		✓	✓			✓	✓	

✓ = More than Perennial Ryegrass ✓✓ = Much more
*Mineral profile compiled from a range of sources

White Herbal Grazing Mix



4–5 year herbal grazing blend for dairy, beef and sheep

1.5	Puna II	Grazing Chicory
2.0	Boston	Grazing Plantain
0.1		Yarrow
4.4	AberGreen	Int. Perennial Ryegrass
4.0	Caleo	Late Perennial Ryegrass (Tet.)
1.0	Winnetou/Promesse	Timothy
1.5	AberDai	White Clover
1.0	Crusader/Iona	White Clover
0.5	Ermo/Aurora	Alsike Clover

16.0 kg/ha pack 6.5 kg/acre

Herbal ley with White and Alsike Clover. The herbs and clovers combined with easily managed late perennial Ryegrass ensure a long growing season and better ground cover than many herbal mixes. It is designed for dairy, beef and sheep grazing.

- ✓ Strong summer and autumn growth
- ✓ Rotational graze for best results

Herbal Boost

Upgrade any grass mixture with key herb species

Many of our grazing mixtures have 'Herbal' options containing these key herbs. Other mixtures can be upgraded using these convenient packs. Chicory and plantain are sensitive to many herbicides used to control broad leaved weeds in grassland. In these situations packs of Herbal Boost can be useful where farmers want to sow herbs later, or on the headland where weed problems are often more limited.

60%	Boston	Grazing Plantain
35%	Puna II	Grazing Chicory
5%		Yarrow

2 kg pack

Sow as part of any grass mixture at 0.25–0.5 kg/acre (0.6–1.2 kg/ha).

Red Herbal Grazing Mix



3 year herbal grazing mix for lamb finishing

1.5	Puna II	Grazing Chicory
2.0	Boston	Grazing Plantain
4.0	AberGreen	Int. Perennial Ryegrass
3.5	Caleo	Late Perennial Ryegrass (Tet.)
2.0	AberClaret/AberChianti	Red Clover
1.0	Harmonie/Milvus	Red Clover
2.0	AberDai	White Clover

16.0 kg/ha pack 6.5 kg/acre

Herbal ley containing Red Clover, herbs and dense but productive pasture perennial Ryegrasses. Designed for summer-autumn lamb finishing systems.

- ✓ Excellent drought tolerance
- ✓ Strong summer and autumn growth
- ✓ Must be rotationally grazed for best results
- ✓ Performs best on free draining soils

Boston

Grazing Plantain



Narrow leaved plantain is a particularly useful source of Selenium and naturally occurs in the UK. Performance is best in low fertility and drought prone soils where it can last for many years. It does not always thrive on moist fertile sites.

Boston is a new variety developed in New Zealand from hardy plants found in N. Germany. It is significantly higher yielding than **Tonic**, the main variety used in the UK. It also remains much leafier because it flowers 25–28 day later.

5 and 25 kg pack

For pure stand sow 4.0 kg/acre (10.0 kg/ha)
or, as part of a mixture, up to 1.0 kg/acre (2.5 kg/ha)

Puna II

Grazing Chicory



Vigorous establishment and highly adaptable, **Puna II** was developed in New Zealand to provide summer and autumn grazing in drought prone areas. It is widely used for grazing sheep, cattle and deer. **Puna II** can last up to three years sheep grazing, but only if rotationally grazed. It can last longer when grazed by cattle.

Sown to enhance mineral profile of grazing. Because it is fast establishing it can be used as a one year crop for repeat summer-autumn grazing.

5 and 25 kg pack

For pure stand sow 2.0 kg/acre (5.0 kg/ha)
or, as part of a mixture, sow a maximum 0.5 kg/acre (1.25 kg/ha)

The Benefits of Clover

Clovers do not suit all situations but, we believe, some clovers should be more widely grown. In Field Options' trials White Clover increased annual yield over four seasons by 1.5 tonnes of dry matter per hectare. Including Red Clover increased dry matter yield by a further 1.5 tonnes per hectare. Extra yield is generated by a combination of:

- ✓ Strong mid season growth when grass production slows.
- ✓ Clovers fix up to 150 kg/ha. of nitrogen.

Additional Benefits of Clover:

- ✓ High protein content
- ✓ Broaden the mineral profile of forage
- ✓ Enhance soil structure and biology
- ✓ Boosts grazing intake
- ✓ Pollen for bees

Dynamic Clover Rate: Achieving good clover to grass balance is important if performance is to be optimised. If there is too much clover and grasses can be smothered. Too little, and the benefits cannot be realised. Clover establishes better in the spring and early summer than it does in the late summer and autumn so, in some mixtures, we use higher clover seed rates in the autumn. These mixtures are highlighted in this catalogue.

White Clover

Primarily a grazing species. Annual yield is limited, so it is always grown with companion grasses. White Clover boosts yield of grass as well as enhancing animal grazing performance. Extra grazing performance comes from:

- ✓ Higher energy and protein content than Perennial Ryegrasses
- ✓ Boost to grazing intake through higher digestibility and palatability
- ✓ Improved mineral profile over Perennial Ryegrass

Which Type of White Clover?

There are a range of White Clovers and each variety performs best under specific management. Erect, large leaved, varieties compete well in cutting regimes but have fewer stolons and do not tolerate hard grazing. At the other extreme are compact, stoloniferous types with small leaves. These tolerate hard grazing but cannot compete in cutting regimes.

Most adaptable are in the mid-range, like **AberDai**, highly adaptable with medium-large leaves and a lot of stolons. Field Options select combinations which perform best in each management situation.

2020 sees the introduction of the impressive new variety **AberSwan** and greater use of the **AberLasting**, a stress tolerant variety which has both stolons and rhizomes.

Red Clover

Principally a cutting species and ideal for silage making, there has been a resurgence in use in recent years. Originally stimulated by the growth in organic farming, conventional farmers also saw the benefits in yield, protein content, low N use, drought tolerance and improved soil structure. In Field Options mixture trials Red Clover has boosted the annual yield of mixtures by more than 3 tonnes/ha of dry matter.

Red Clover can be grown on its own but the forage can be challenging to ensile. Options within CAP reform to grow legumes in Environmental Focus Areas is further boosting interest.

Red Clover Benefits:

- ✓ Very high DM yield, ±13 tonnes DM/hectare
- ✓ High protein content 18–22%CP and good ME
- ✓ Protein naturally protected from degradation in ensiling
- ✓ Very drought tolerant
- ✓ Compatible with grasses
- ✓ Adapted to most soils and regions
- ✓ Excellent for late summer and autumn lamb grazing
- ✓ Fixes +/- 150 kg N/ha/year

Further development has been driven by the breeding of improved varieties. Yields are getting higher, but the key improvement is in persistence with varieties like **AberClaret**, **Harmonie**, **Magellan** and **Atlantis** performing for 3–4 seasons.

Introducing Clover into Swards

In recent seasons there has been a resurgence in interest in using Clover to boost sward production to enhance animal performance, or to save on nitrogen fertiliser. Some farmers are also sowing mixtures without Clover to give them the flexibility to use a wider range of herbicides in the establishment phase with a plan to introduce the Clover once the weeds have been controlled. The two mixtures below are designed for introducing or re-introducing White Clover into established pastures. Each contains a spectrum of highly adaptable Clover varieties.

Clover Overseeding

ORGANIC AVAILABLE

T TESTED MIXTURE

Pasture Renovation mixture

4.0	AberGreen	Int. Perennial Ryegrass
3.0	Twymax/Caleo <small>NEW</small>	Late Perennial Ryegrass (Tet.)
3.0	AberGain	Late Perennial Ryegrass (Tet.)
3.5	AberAvon	Late Perennial Ryegrass
1.25	AberDai Rz+*	White Clover * = <i>Rhizobium Coated</i>
1.25	Crusader	White Clover

16.0 kg/two acre pack (8 kg/acre) 20 kg/ha

A blend with 50% of the normal grass rate combined with 100% White Clover rate. It is designed for introducing White Clover into a sward while also boosting the grass content.

- ✓ Rapid establishment
- ✓ Produces a dense, hard wearing sward
- ✓ Persistent clover varieties
- ✓ Adaptable to a wide range of management regimes

Clover Boost

ORGANIC AVAILABLE

White Clover mixture

20%	AberDai	White Clover
20%	AberVantage	White Clover
20%	AberLasting <small>NEW</small>	White Clover
20%	Crusader	White Clover
20%	Iona	White Clover

5.0 kg/acre pack (1–2 kg/acre) 2.5–5.0 kg/ha

A highly adaptable blend of White Clovers for introducing or boosting the White Clover content of pastures.



White Clover

Lucerne

Lucerne is the world's most widely grown forage crop for ruminants. In recent years there has been a resurgence in the growing of Lucerne as farmers strive to produce more home grown protein. The impressive performance of Lucerne in the hot dry season of 2018 has further stimulated interest. Lucerne thrives on free draining, high pH soils, especially in drier areas of the UK.

The option within CAP reform to grow legumes as a form of Environmental Focus Area has also boosted interest. The benefits of Lucerne are listed below. Lucerne is not suited to all farms, it is relatively slow to establish and needs specific field management and careful ensiling, so some of its drawbacks are also listed.



Benefits of Lucerne

- ✓ Very high DM yield ± 13 T DM/hectare
- ✓ Protein content is 18–22% CP
- ✓ Produces very good structural fibre
- ✓ Complements high maize diets
- ✓ Ideal for summer zero grazing
- ✓ Yield improves over the first three years
- ✓ Lasts for 4–5 years
- ✓ Exceptionally drought tolerant
- ✓ Good break crop for grass and cereals
- ✓ Unlike Red Clover it does not contain oestrogen so it is useful for autumn grazing for ewes or lambs
- ✓ Fixes +/- 150kg N/hectare/year
- ✓ Improves soil structure

Possible Drawbacks of Lucerne

- ✗ Slow to establish
- ✗ Only adapted to high pH, deep, free-draining soils
- ✗ Limited weed control options
- ✗ Needs a strict management routine for best results
- ✗ Limited compatibility with grasses
- ✗ It has a high demand for P, K and S
- ✗ Low sugar level and protein buffers fermentation
- ✗ Must be cut at the right stage to avoid low ME
- ✗ Needs a 4–5 year break between Lucerne crops
- ✗ Limited grazing opportunities, though systems are being developed, especially for sheep

To help you realise the potential of the crop Field Options produce detailed **Lucerne Growers' Guidelines**

Lucerne Varieties

There is limited testing in the UK, but there is excellent testing in Northern France where soils are similar to those of Central, East and South-East of the UK. These French trials combined with UK and Scandinavian trials have proved a reliable source of data.

Some cheaper seed offered in the UK are varieties from the Mediterranean and are unlikely to be hardy or persistent in UK conditions.

We include **Luzelle**, a grazing variety which has a much more prostrate growth habit and is more suited to traditional grazing regimes.

Lucerne Selector

Data extracted from the French Recommended List 2019, except **Luzelle**, where the data is taken from a previous season when it was included.

Variety	Mean DM Yield	Protein Content	Spring Vigour	Persistence	Eelworm Resistance	Verticillium Resistance
	<i>T DM/ha</i>	%	<i>10 = Best</i>	<i>10 = Best</i>	<i>10 = Best</i>	<i>10 = Best</i>
Mezzo	17.7	19.2	4.5	7.9	6.9	6.6
Sibemol	17.7	19.2	4.8	7.5	7.0	6.9
Artemis	17.4	18.9	6.2	9.0	8.0	5.7
Volga	17.4	19.3	(6.4)	8.2	7.1	5.3
Galaxie	17.0	19.4	6.1	7.9	6.5	5.7
Timbale	16.7	19.6	-	-	5.7	5.7
Luzelle	(15.6)	(19.7)	-	Very High	(5.7)	(4.1)

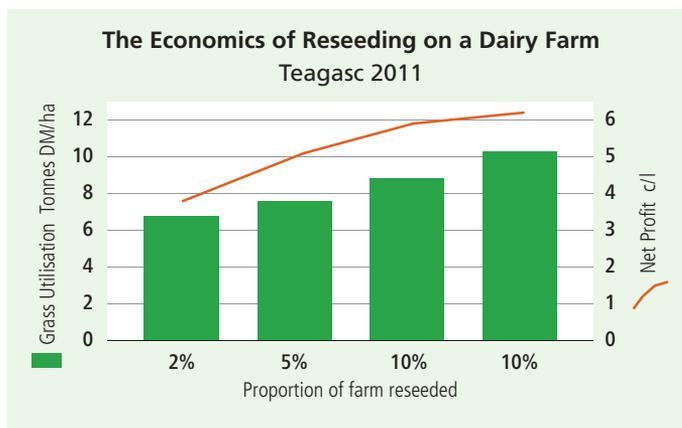
Sowing Grass and Clovers—Getting the Best Results

The aim of this section of the **Grass, Clover & Forage Crop Guide** is to draw attention to the advantages of reseeding and to highlight best practice when reseeding to assure best establishment, thereby protecting your investment in grass seed and optimising the performance of the sward and reducing production costs.

Benefits of Reseeding

Reseeding creates an opportunity to massively increase sward yield and quality.

- ✓ *Improvement in intake and stock performance*
- ✓ *Increase stocking density*
- ✓ *Reduces bought-in feed requirement*
- ✓ *Longer production season*
- ✓ *Add resilience and the benefits of new species into any forage system*
- ✓ *Fixes +/- 150kg N/hectare/year*
- ✓ *Improves soil structure*



The financial benefit of reseeding is significant, even when considering that costs can be £400 to £700/hectare. A young well-managed ley is capable of producing 13.5t DM/Ha at an energy content of 12.0–12.5ME when compared with an average sward only producing 7.0t DM/Ha, at 10.8ME this equates to a loss of 93,150MJ/hectare. At 80% utilisation from grazing, that is 13,549 L/Ha of milk production lost, (at £0.29/L = £3,522/hectare). Irish research on dairy farms identified a clear positive relationship between the area of a farm reseeded each year and net on farm profit.

Soil Structure and Health

Poorly structured soils that remain wet have a reduced grazing season. An extra 30 days at grass can save £3,725/100 cows in housing costs alone. Any damage through poaching when wet can reduce grass production by at least 20% and increase weed species.

Optimum field performance is highly dependent on adequate soil structure and nutrition for all the species being sown. Whatever method of establishment, any compaction issues that limit root growth or drainage should be identified. This is best done by digging a spade depth hole (30cm x 30cm). Carefully extract soil and turf, if present. The soil should have a good crumb structure with vertical fissure and roots evident throughout the profile.

Well-structured soils contain aggregates that can be broken down easily with one hand and evidence of roots throughout the spade depth. Conversely, compacted soils have aggregates that are very cloddy and angular, these do not break up as easily and have tight

horizontal layers. There may also be areas of ferrous ions which look like rust. This marks where waterlogging and anaerobic conditions have occurred. If compaction is at depth of greater than 10 cm then rooting and any cracks or natural fissures in the soil will be limited to that depth.

The depth that a limiting layer occurs at, is an indicator of its cause, but also defines the remedial work required. Less than 10cm a sward aerator may be appropriate, or it will be eliminated by ploughing. Deeper compaction requires a grassland subsoiler set 4cms below the problem layer, but only when soil at that depth is dry enough to heave and crack. Heavier 'plastic' soils, like clays may require mole-draining to improve and maintain drainage.



Soil Nutrition and pH

For optimum establishment it is recommended that a soil should be at pH 6.5 when reseeding grass and clover on mineral soils. For organic, peaty soils the ideal pH is lower at 5.5–5.7. Knowing your soil type is paramount. These pH targets will ensure nutrient availability from the soil and optimum efficiency of all applied nutrients, mineral fertiliser or organic manures. This supports good soil biology whilst also promoting good soil structure, especially on heavier clay soils. It also benefits the environment by reducing potential leaching of macro and minor nutrients into waterways.

Be aware of NVZ Regulations and closed periods if sowing later in the season

Undertake soil analysis well in advance of reseeding, at least six months and preferably twelve months beforehand. If pH needs addressing, consider your liming product options carefully. Neutralising value and fineness/particle size of lime define its effectiveness and overall return on investment as soil pH amendment.

Nitrogen is vital for plant growth but is not required in significant amounts during establishment. Spring requirement is 60kg N/hectare. Due to soil mineralisation of nitrogen throughout the year, applied nitrogen is not essential for late summer/autumn reseeding, though some can be beneficial if establishment maybe challenged by seedbed or if direct drilling into a desiccated sward where nitrogen will be used

by soil biology to breakdown the previous turf/crop residues.

Be aware of NVZ Regulations and closed periods if sowing later in the season.

Phosphate (P) and Potash (K) indexes should be maintained at P 2+ and K 2-. Available forms of both nutrients are essential when reseeding to promote cell division and vigorous development of shoots and roots. Reseeding is a good opportunity to utilise organic manures as nutrient sources, whilst having the added benefit of adding organic matter into the soil. Tables 1 and 2 give the nutrient (NPK) recommendations for grass and clover reseeds. (Extracted from RB209). Remember to deduct any nutrient applied as organic manures from the total requirement.

Table 1

Grass Establishment Nitrogen Requirements (RB209)			
	Soil Nitrogen Supply (SNS)		
	Low	Moderate	High
Season	Kg N/hectare		
Spring Sown (April–June)	60	60	60
Summer/Autumn Sown (July–mid October)	30-50	0-30	0
Grass and Clover	0	0	0

Table 2

Grass Establishment P and K Requirements (RB209)					
	Soil Index				
	0	1	2	3	4+
	Kg/hectare				
P	120	80	50	30	0
K	120	80	60 (2-) 40 (2+)	0	0

We have a team of FACTS qualified advisors and agronomists who can advise on liming product suitability.

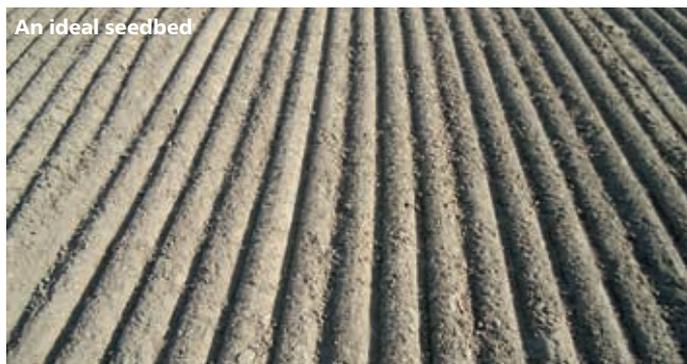
Cultivations and Seedbeds

There are many methods of sowing grass and clover, but to get optimum seedling vigour, the key objective must always be to sow all the seed at the correct depth, this assures seedling emergence. The seed must have good contact from soil consolidated around it. There needs to be adequate levels of moisture, nutrients and freedom from pests.

A poor quality seedbed



An ideal seedbed



Seedbed

The perfect seedbed is level, uniform, fine, firm and well consolidated, ensuring a good seed to soil contact and retain moisture. Cultivation methods will be defined by soil type. Direct drilling may be an option and can be very successful. We have **Reseeding without Ploughing Guidelines** available on request.

Sowing depth is critical, no deeper than 1–2 cm. Small seed species, like clovers ideally placed shallower. Pre-sowing cultivations must be appropriate to achieve this. Cultivations are often deeper than necessary. Once sown and rolled, the seed is buried too deep and emergence is reduced. Deeply worked soils are also difficult to fully consolidate post-sowing. The seedbed should be firm before sowing and then seed rolled after sowing, ideally with a Cambridge roll which will give a better structure to the surface. Any variation between

headland area and in-field, or ability to easily identify tractor tyre tread marks points to lack of consolidation.

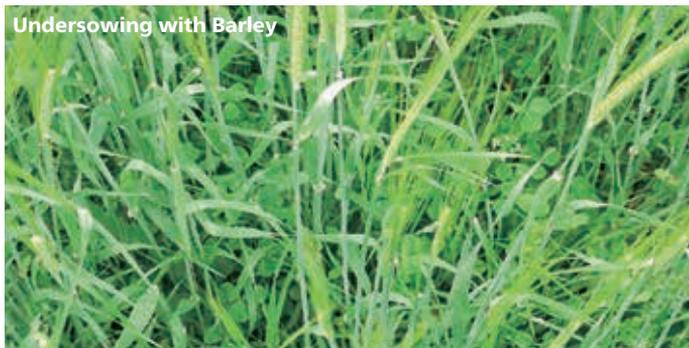
Remember the 3 "Rs": **Required Seedbed depth, Roll and Roll.**

In recent years there has been an increase in use of one-pass cultivation and sowing machines. These cultivate, then seed is broadcasted and followed with a roller to consolidate. Their use must be considered carefully and is very dependent on soil type. Soil is often over-worked and "fluffy" and seed buried too deep. They are great machines for stonier, shallower ground, but best results are achieved if cultivation and sowing are separate operations. Seedbeds should be rolled and levelled pre-sowing to achieve consolidation and a uniform seed depth. Sowing depth is most easily achieved with a well-designed, narrow row drill operating on a well consolidated level seedbed.

Sowing Grass and Clover

There are many methods of sowing grass and clover, but to get optimum seedling vigour, the key objective must always be to sow all the seed at the correct depth, this assures seedling emergence. The seed must have good contact from soil consolidated around it. There needs to be adequate levels of moisture, nutrients and freedom from pests.

Undersowing with Barley



Early Establishment



Undersowing

There has been a resurgence of undersowing grass with a cover crop of cereals, especially since the development of early harvesting as wholecrop silage and it does not matter how grassy the silage is. It is important to prioritise grass establishment. Reduce the cereal seed rate by 30% to reduce risk of it shading out the grass. If it is to be harvested as wholecrop, drill the cereal, then shallow drill or broadcast the grass immediately afterwards and consolidate with a Cambridge roll. Monitor the crop and if the undersown seeds are being swamped, harvest the cereal early as a 'grass' silage.



Post Seeding Management

Graze the new sward as soon as it is not possible to up-root the seedlings. Grazing encourages the seedlings to tiller and firms up the soil. Use sheep or youngstock to tread lightly. It can also aid weed control if population of annuals is low. See weed control section overleaf for weed control advice.

Try to avoid cutting longer term during the first six months, grazing is best to achieve good tillering and sward density to assure their long term potential.

Overseeding and Direct Drilling

Pressure on maintaining fields in production and the cost of traditional re-seeding techniques has inspired the development of machines designed to renovate and revitalise pasture. Success is not guaranteed and careful planning is required. Effective renovation needs to be done with care and attention to detail. Many of our grass mixtures are suitable for renovation, mix choices being dependent on soil type, area and planned use.

Certain mixtures are more appropriate than others. **Hybrid 3x3** (page 8) and **Grassmaster HS** (page 9), are ideal, due to their vigour and the flexibility of management. If the objective is to introduce Clover and thicken up the grass in the sward, then **Clover Overseeding Mix** (page 17) is recommended. In our experience seed-box/rake combinations are not as effective as direct drilling or slot seeding, unless a very good tilth is created and the sward is relatively open. Swards need to be cut or grazed as short as possible before seeding and grazed immediately afterwards until the new seedlings are showing through.

For a full blueprint on renovation ask for our **Pasture Renovation or Reseeding Without Ploughing Guidelines**.



Pest Control

There are certain pests that can cause severe damage to establishing leys. Currently the only options to control them are with cultural techniques including cultivations, avoiding high risk periods, disrupting pest lifecycles through rotation and growing break crops. Pest mobility can be reduced and seedling vigour enhanced by creating a fine, firm seedbed that's well consolidated after sowing.

When renovating pastures seedlings are more vulnerable to grassland pests because you are introducing seeds into a potentially 'infested' soil. There are a limited number of pesticides available to control either the weeds or pests associated with grass to grass reseedling, so it is important to plan for success. For more information on strategies for reducing them please contact the Field Options technical team.

Leatherjackets

Leatherjackets are the larvae of the Crane Fly (Daddy Long Legs). They feed on roots and shoots of plants on or just below the soil surface.

Eggs are laid during July–October in grass and cereal fields. Weak fliers, adult crane flies are most likely to lay eggs in the same field that they emerge from, leading to population growth and the higher associated risk with grassland and direct reseedling in these fields.

A high population of leatherjackets feeding on newly emerged seedlings can lead to total failure or at best a reduced establishment of sown species. This can lead to significant loss in production, quality and rapid sward deterioration.

Peak damage to swards is during March–May when the larvae reach maturity. Feeding stops when they pupate in the soil during late May–July.

- ✓ Break the lifecycle by planting a summer break crop which does not attract the egg laying adult. Brassica catch crops are ideal.
- ✓ Ploughing in July and leaving at least two weeks before seeding can reduce the risk by 50% by allowing birds to feed on the larvae.
- ✓ When Leatherjackets have stopped feeding, sward rejuvenation could be undertaken if other conditions are favourable.
- ✓ Crane flies prefer to lay eggs into long swards. Tightly grazed swards are less attractive, so hard grazing through the egg laying phase can be effective.

Frit Flies

Frit flies can be a problem throughout the growing season, but the population is at its highest with the third generation, from July–October. Adults lay their eggs on grass plants and larvae, once hatched, migrate down and feed on the central shoot, causing dead-heart symptoms, they move from plant to plant. Italian Ryegrass is more susceptible to attack than perennial ryegrass, some grasses and clovers are not affected. Late direct drilled reseeds are at highest risk.

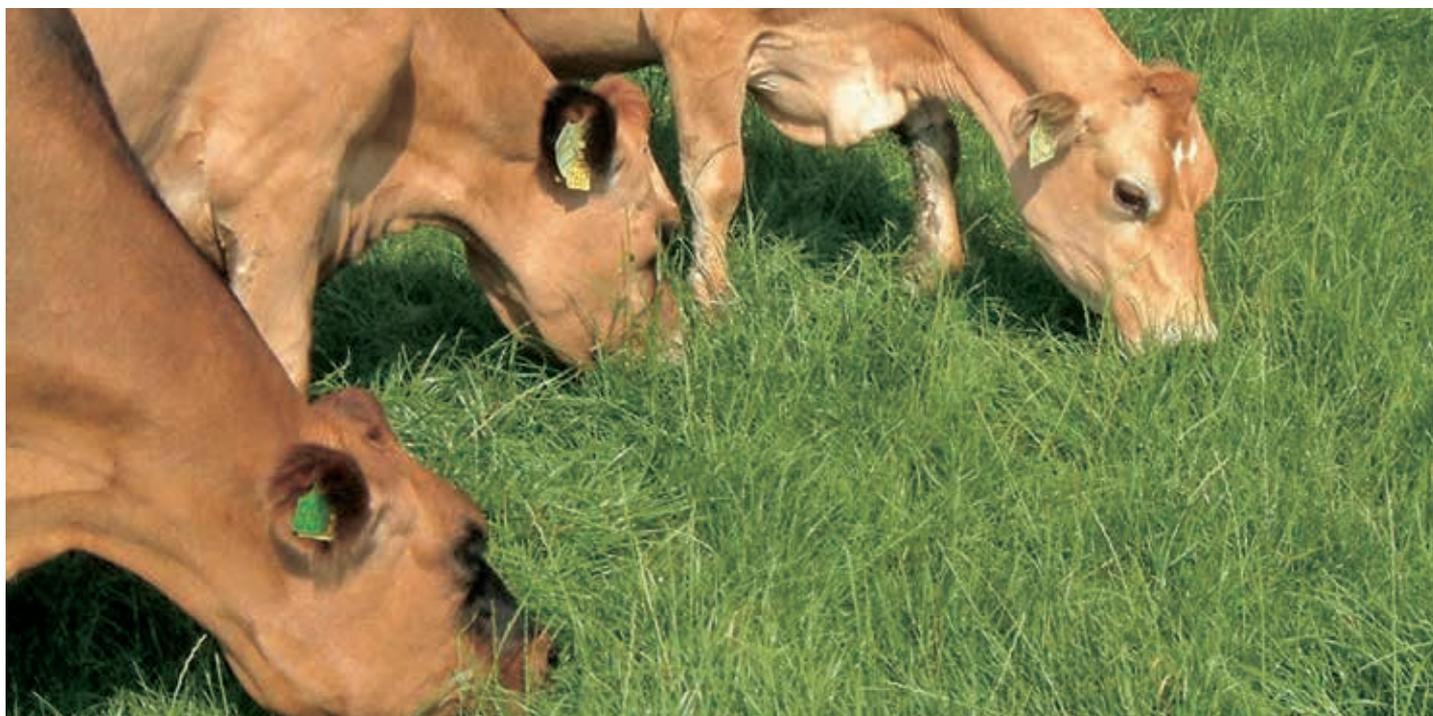
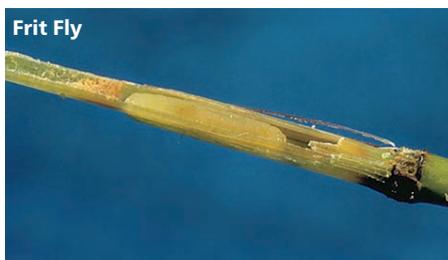
- ✓ Lower risk with spring reseeds.
- ✓ Break the life cycle by destroying old sward at least six weeks before reseedling.
- ✓ Break the lifecycle by planting a summer Brassica break crop.

Slugs

In some conditions and scenarios, slug attack can be devastating to all species on newly sown grass leys. Direct drilled crops can be at higher risk, especially if there is a lot of previous crop/ley residues on the surface, as is wet land and poor, unconsolidated seedbeds.

- ✓ Plough to minimise surface trash.
- ✓ A fine, firm, well consolidated seedbed reduces slug mobility and enhance seedling vigour.
- ✓ Slug pellets can be applied as an effective control. Use ferric phosphate pellets as part of integrated pest management.

Use Pesticides Responsibly and consult our BASIS Registered Agronomist for advice



Weed Control

Reducing weed competition is critical to optimising grass and clover seedling performance. This involves the control of problem perennial weeds prior to reseeding, minimising weed seedling development through optimising establishment of the sown species, then, where necessary controlling established seedlings of problem weeds as early as possible in the establishment phase.

Weed Control, a Programmed Approach

A programmed approach is the most effective solution to controlling troublesome perennial grassland weeds (e.g. Docks, Creeping Thistle, Nettles, Buttercups), and annuals such as Chickweed which can be problematic in autumn reseeds on high fertility sites.

1 Routinely controlling weeds in established swards.

By implementing a grassland weed control strategy you will minimise weed populations on farm. Using the appropriate product, at correct rate and timing, in good growing conditions will achieve best results.

2 Pre-Cultivation/Drilling Herbicide to kill-off the old sward and any weeds present.

Start clean, by controlling key weeds in previous crop or swards. Glyphosate ensures minimal carryover, be they broadleaved or grass weeds. Key to success is to ensure adequate growth of the target species before application with the correct rate of herbicide and allowing enough time for the active ingredient to translocate to the roots. Leave for a period of 7–10 days (minimum 5 days) before applying FYM/Slurry or cultivating, or in some instances graze/mow the previous sward.



Glyphosate is less effective on some weed species. A co-formulation with 2,4-D is available for enhanced control of Thistles, Docks, Buttercups and Nettles, but there are restrictions dependant on reseeding method and clover use. Discuss with a BASIS agronomist with grassland experience.

3 Early Selective Post-Emergence Herbicide

It is easier to control weed at an early stage of growth, so checking establishing swards is a high priority. The effectiveness and timing of each herbicide is defined by the growth stage of both the sown species and the weed seedling. Early well-timed application when weeds are at the seedling stage (2–4 leaf) will achieve very good results ensuring minimal competition, this maximises establishment of sown species.

Grazing is a key management tool to promote tillering of a newly established ley, but there is a defined period after application for each herbicide before a sward can be grazed, so early control will not hinder plans for first grazing. Product choice needs to be tailored to individual fields and weed species/pressure along with species present in sown sward.



Weed Control with Clover

Some herbicide manufacturers recommend that you should not include clover in mixtures because it limits weed control options. Instead, they recommend that clover should be introduced once the sward is established. This strategy is sometimes necessary, however later introduction of Clover can be a challenge.

Clover-safe herbicides are available and generally effective on weeds at the seedling stage. With some products the clover may suffer a transient check. Consult a BASIS agronomist with grassland experience for up to date advice on weed control options in leys containing clovers.



Weed Control with Herbs

More of our main grass mixtures are available with the addition of Plantain and Chicory. There are **no** herbicide options that are safe to use as an overall spray. Light populations of annual weeds such as Redshank, Fat Hen or Charlock can be controlled through well managed grazing/topping or flailing. For perennial weeds, the use of a weed-wiper and glyphosate has shown some success.



Over the last seventeen years we have developed a range of reliable, high performance maize varieties sourced from several key breeders. As well as analysing data from UK and European national list trials, we have our own replicated trials as well as strip trials on farms across the country in both favourable and challenging sites, some with varieties tested under film with the Samco System. Selection in challenging seasons is of value, allowing us to confirm the performance of key varieties and discard others. 2018 tested the drought tolerance of varieties, but a variety is only good if it also performs in a cool wet season, like 2015. Our priorities are stability of earliness and yield, plus high energy density with no agronomic weaknesses. The table below identifies which varieties are suited to each segment of the market.



Key Maize Varieties for 2020

Maturity Class (FAO)	Pit Fillers	Very High Energy		Grain Maize	Biogas Maize	Under Samco Film*	
		High Starch	High Fibre 'D'				
Ultra-Early (150–160)	12					P7326	
	11	Augustus	Augustus		Augustus		
	10	Reason Arvid	Sergio Reason Arvid Prospect	Sergio Arvid Prospect	Sergio	Sergio Reason Arvid Prospect	P7034 LG30.179 PRIXDOR P7378
Early (170–190)	9		P7326		P7326	Isanto Mopolka	
	8	Autens	Rodriguez	Rodriguez	Rodriguez	Rodriguez	P8201
	7		LG30.179 Emblem P7034 P7328	Emblem	LG30.179 Kontender	LG30.179 Kontender	P8333
Second Early (200–210)	6		Agnan PRIXDOR		Agnan	Agnan	
Maincrop (220–230)	5	Rubesto P8201	Agagold	Agagold		Agagold P8021	P9911

* The position of the varieties in the 'Under Film' column suggests their harvest date under film compared to the other varieties grown in the open. e.g: **Isanto** under film should harvest at a similar time to **P7326** in the open.

Ultra-Early Group

Augustus

A benchmark for earliness, yield and quality. Fast dry down.

Sergio

Very reliable in all seasons, top vigour, good yield with excellent feed quality.

Arvid

Excellent early vigour, very high yield for this group. **Sergio** + 2.5 t silage/ha. Combined with very high starch content and ME.

Prospect NEW

New standard for yield and earliness

Early Group

P7326

Excellent vigour, very robust and stable. Impressive plants.

Rodriguez

Our best-selling variety. Big yields of very high quality silage. Totally stable and adaptable. Good lodging resistance.

LG30.179

Best vigour score. Similar type to **Rodriguez**, possibly better.

Emblem

Good yields of very high digestibility.

Second Early Group

Agnan

High vigour hybrid with very high yield, quality and stability. Impressive looking and excellent lodging resistance.

Maincrop Group

AgaGold

Potentially the highest yielding variety in the portfolio. **AgaGold** is a massive variety with potentially excellent digestibility. Ideally suited to the better growing areas.

P8201

Very high yield potential for very favourable areas, or under film.

Under SAMCO Film Group

P7326

Very early variety. Robust and stable. Good lodging resistance.

P7034

Early variety with high yield of excellent quality.

Isanto

Thrives under the SAMCO film. Vigorous variety producing impressive, uniform crops.

Mopolka

Similar earliness to **Isanto**, with excellent results under film. Recent.

P8201

A week later than **Isanto**. Very big plants with good standing power.

Information sheets on each variety are available from Field Options or on our website www.field-options.co.uk

Wholecrop Silage

Each year we are asked which is the best cereal species to use for wholecrop. Until the middle of the last decade, we did not know. During 2005–6, NIAB undertook trials at two sites to compare different varieties. Variety differences were small, though significant, while the differences between species were much greater. In 2015 we collaborated with Biotal to test all winter and spring species of cereal plus some bi-crops, all harvested at five different growth stages. The trial was undertaken by NIAB-TAG at Harper Adams University. We now have access to a comprehensive amount of data which helps to identify which species is most appropriate to each situation and the harvest management most appropriate to different ruminant or anaerobic digester diets.

Contact us for our **Wholecrop Growers' Guidelines** and the associated costs of production for each species or mixture.

Wholecrop BPX



Pea x Barley wholecrop mixture

60%	Rose/Rainbow <small>NEW</small>	Maple Peas
40%	Westminster	Spring Barley

25.0 kg and 500 kg bag pack sizes

- ✓ Short growing season of 12–15 weeks
- ✓ Potential yield: 9–11 t/acre (22–27 t/ha) @ 35% DM
- ✓ Potential quality 12% Protein and 10.9 ME
- ✓ Low input
- ✓ High degree of reliability
- ✓ Potential for under-sowing
- ✓ Can also be combined and dried or crimped

Ideal Planting Date: mid-March to mid-April

Ideal Sowing Depth: 3–4 cm

Seed Rate: 70–75* kg/acre (175–190* kg/ha)

***Organic Seed Rate**

Increase seed rate if sowing after 15th April.
Decrease seed rate by 30% if under-sowing.

In fertile soils, the vigour of standard Wholecrop BPX can shade out grass seedlings, especially slower growing, longer term species. For these situations we produce a version of the mix with a shorter, less aggressive barley.

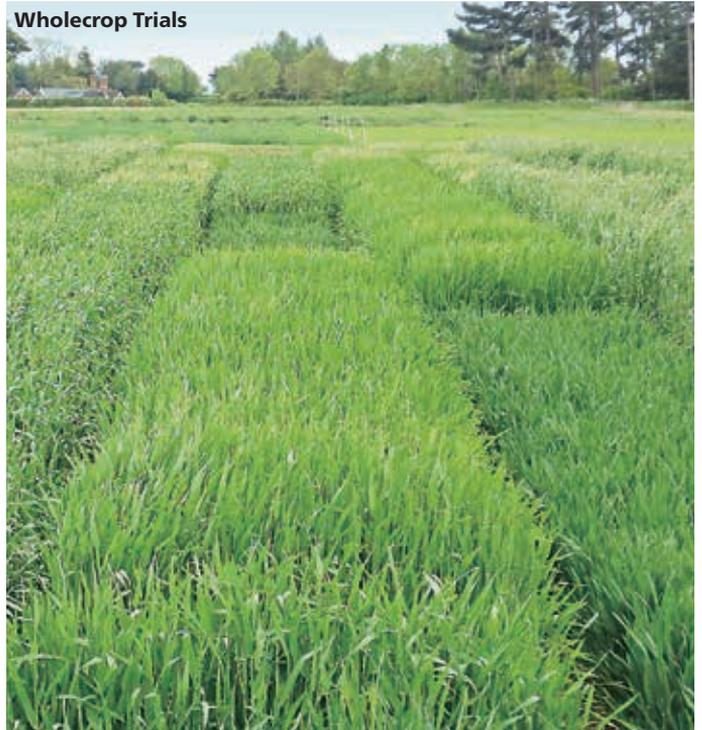
To optimise grass establishment decrease cover crop seed rate by 30% and sow the grass seed on the same day.

Mixtures with other cereal and pulse species are also available.



Wholecrop BPX

Wholecrop Trials



Why Peas?

- ✓ Higher protein and ME than straight cereal wholecrop
- ✓ Potential to add +70 kg/ha of Nitrogen to the following crop
- ✓ Similar harvest date to Spring Barley
- ✓ 3–5 weeks earlier than Lupins and more reliable

Why Maple Peas?

- ✓ More vigorous than other peas—easier to establish!
- ✓ Tannin in seed protects it from pests and disease
- ✓ Less attractive to pigeons!
- ✓ Higher protein % than conventional peas

Why Rose and Rainbow?

- ✓ High grain yields for Maple Peas giving optimum nutrient densities
- ✓ Proven in wholecrop trials
- ✓ Tall, very stiff-stemmed, semi-leafless varieties
- ✓ Early ripening
- ✓ Small seeded varieties for easier drilling and low seed rates
- ✓ More compatible with barley than aggressive forage peas

Why Spring Barley?

- ✓ Proven high wholecrop yield
- ✓ Better 'D' value than Wheat, Triticale or Oats
- ✓ Earlier than the other spring cereals
- ✓ Harvest date similar to peas

Why Westminster Barley?

- ✓ Good grain yield for optimum energy density
- ✓ Very competitive
- ✓ Tall, soft, highly digestible straw
- ✓ Excellent Mildew and Rhynchosporium resistance

Forage Crops

There are many forage crops available. The table below gives details of the main species and their relative differences in yield, nutrient content and the number of days needed to reach optimum growth. This year we also include figures for calculating grazing budgets, subject to certain adjustments detailed below the table. The bar chart below the table identifies the ideal sowing time and associated utilisation period for the full range of species and associated mixtures included in the following sections of the guide. It also gives an indication of the potential extended sowing time and utilisation window when the crop can be utilised. This performance is dependent on a favourable site and season. To help farmers realise the potential of their crops, Field Options' Growers' Guidelines are available for many of the species.

Comparative Performance of Forage Crops in UK Testing Systems

Grazing Budget at 85% Utilisation

	DM Yield Tonnes/ha	DM %	Protein Content %	ME MJ/kg DM	Days to Optimum Growth	Average m ² /day for grazing 60kg Ewes	Average m ² /day for grazing 500kg Cows
Fodder Beet (Roots)	14.0 – 18.0	10 – 20	10	12.6	200 – 250	1.21	6.71
Fodder Beet (Tops)	2.0 – 4.0	10 – 12	15	10.4	200 – 250	N/A	N/A
Swedes	8.0 – 10.0	8 – 12	11	13.1	160 – 210	2.3	13.8
Kale	8.0 – 10.0	15.0	14	9.0–11.2	160 – 210	2.3	13.8
Turnip (Maincrop)	4.5 – 6.5	9.0 – 10.0	16.0	10.5	90 – 130	3.5	N/A
Fodder Rape	4.0 – 6.0	12.0	19.0 – 22.0	9.9–10.5	90 – 120	4.3	25.3
Stubble Turnips	4.0 – 6.0	8.0 – 9.0	19.0	11.0	60 – 90	4.3	24

Assumptions: 85% Utilisation of forage crop. Dry matter intake for maintenance + some liveweight gain = 3% of Liveweight.
 Ewes = 100% DMI from crop 1.8kg dry matter/head/day. Cattle = 70% DMI from crop, 30% from supplementary forage. 15kg dry matter/head/day.
 For Fodder Beet the grazing budget yield is calculated as root yield + 2.0t DM/ha from tops. Top yield may decline through winter.

Key Fodder Crops Sowing and Utilisation Dates

	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	
Summer/Autumn Crops																
Fodder Rape Main Grazing Period/Regrowth ¹																±70 days to start of grazing
Kale x Rape Main Grazing Period/Regrowth ¹																±80 days to start of grazing
Stubble Turnip																±70 days to start of grazing
Summer Grazer																±70 days to start of grazing
Kale																±110 days to start of grazing
Whirlwind																Silage?
Clampsaver² Rape x Ryegrass																±60 days to start of grazing? Repeat ±30 day rotational grazing Silage?
Autumn/Winter Crops																
Fodder Beet Harvested Beet																>200 days to maturity
Grazed Beet																Lifting ? ? ? ? ? ? ? ? ? ? ? ?
Swedes																±150–170 days to maturity
Kale																±150–170 days to maturity
Winter Keep																±120–150 days to maturity
Maincrop Turnips																±110–130 days to maturity
Kale x Rape Hybrids																±110–130 days to maturity
Fodder Rape																±100–120 days to maturity
Stubble Turnips																±80–100 days to maturity
Brassica Express																±80–100 days to maturity
Forage Radish																±60 days to maturity
Verte Mustard																±60 days to start of grazing
Whirlwind																Silage?
Clampsaver² Rape x Ryegrass																±60 days to start of grazing? Repeat ±30 day rotational grazing Silage?
Forage Rye³ and N-Rich																±60 days to start of grazing Silage?
Key:	 Sowing period  Utilisation period															
1:	Regrowth will be limited by very tight grazing or trampling by stock.															
2:	Early sown Clampsaver will take longer to reach the grazing stage due to slower growing in cool conditions.															
3:	Forage Rye can either be rotationally grazed or growth can accumulate for early spring turnout.															
?:	Risk of frost damage in later lifted beet.															

This is a basic guide to sowing dates in England and Wales up to c200 metres. Good soil conditions and seedbed are of overriding importance. The growing season is shorter at higher altitudes and in the North. The season is longer in coastal locations.

Fodder Beet

Potentially the highest yielding forage crop in the UK, Fodder Beet has been undergoing a revival in recent seasons. Growth has come from three sectors: An area used for out-wintering sheep and young cattle, arable farmers growing it as a cash crop and the increasing use of beet as a feedstock for anaerobic digesters. Nutritionists value the high sugar content of the beet, especially because of its relatively slow release. It also contains highly digestible fibre, both work well in dairy and beef rations, especially in diets using a high proportion of cereals and maize.

'Active Boost' Primed Seed Technology

For a few years most sugar beet seed has been 'Primed'. This is a process by which the seed is activated to start germination before final drying and pelleting. This results in more rapid and more uniform establishment. Trials on **Geronimo** beet have been impressive, increasing root yield by >8 tonnes/hectare. Response is greatest in challenging situations. A limited amount of Active Boost seed is available for 2020, both for conventional and organic use.



Variety Types

There is a great range of Fodder Beet types, from low DM% varieties with roots growing well above the ground, some like Mangels with 11–12% dry matter with roots 60% above the ground.

At the other end of the spectrum there are very high dry matter types, similar to Sugar Beet. These have less than 20% of the root above the ground. The market is dominated by high yielding intermediate types. Those with a high % of root above the ground are also used for grazing.

Some farmers are switching to higher dry matter types because of the higher DM intake, lower haulage costs and better keeping quality, especially if late lifted. Farmers feeding anaerobic digesters favour these deep-rooted varieties, however soil contamination can be a challenge.



Seed Rate:
42,500–50,000 seeds/acre
(105,000–124,000 seeds/ha).
Seed is packed in packs of 50,000 or 100,000 seeds.

Guides to
'Growing Fodder Beet'
and
'Grazing Fodder Beet'
are available

Beet Selector – Key Varieties

	Low Dry Matter	Medium Dry Matter	High Dry Matter	Very High Dry Matter								
Root dry matter	11 – 13%	14 – 16%	17 – 20%	21 – 24%								
% of root above ground	60 – 55%	45 – 36%	35 – 26%	25 – 15%								
Key Varieties	Brigadier	Lactimo	Geronimo	Fortimo	Summo	Enermax	Gahan	Acker				
Popular Varieties	Feldherr	Jamon	Kyros	Blaze	Robbos	Tarine	Magnum	Blizzard	Beretta	Barents	Gerty	
Use	Lifting or Grazing						Lifting					
Feeding	Grazing of Feed Whole			Whole or Chopped				Chopped Only				
Dry matter Yield	Lower	←—————→										Higher
Fresh Yield	Higher	←—————→										Lower
Storing	Poorer	←—————→										Better
Dirt Tare	Lower	←—————→										Dirtier



Lactimo

For all Classes of Livestock - For Grazing and Lifting

Over 13,000 packs sold

Well established variety, **Lactimo** produces high fresh weight yield of medium dry matter yellow/orange roots. It has good seedling vigour and strong foliar growth. It produces very big tops with good disease resistance. Roots have low dirt tare, ideally harvested by machine but can also be hand lifted. The low dry matter, high % of root above ground and large tops with winter growth make **Lactimo** a very popular variety for grazing in situ.

Active Boost (pre-germinated) seed is available for 2020



Geronimo

Upgraded Lactimo with Impressive Yield

Over 7,000 packs sold since 2017



From the same breeder as **Lactimo**, **Geronimo** produces 12% higher dry matter yield of similar yellow/orange roots. It has good seedling vigour and strong foliar growth producing very big tops with good disease resistance. It also has greater resistance to bolting, mildew, *Ramularia* and *Rhizomania*. Roots have low dirt tare. **Geronimo** can also be grazed in situ.

Active Boost (pre-germinated) seed is available for 2020



Fortimo

High Vigour - High Yielding - Clean Lifting



Fortimo produces very high yields of medium dry matter red roots. It has excellent early season vigour, highlighted in recent cool springs. It also has strong foliar growth, producing large and distinct red-veined tops. Roots tend to be uniform in size with conical-tankard shape ideally suited to machine harvesting.

Fortimo can be grazed but is normally lifted, producing very clean roots. The medium dry matter roots can be either fed whole or chopped.

Active Boost (pre-germinated) seed is available for 2020

High dry matter varieties

Lower fresh weight but higher dry matter yield than the medium dry matter Beet. These varieties offer better storage characteristics. Deeper roots mean they are not quite as clean lifting, so better suited to lighter soils where dirt tare is less of a problem.



Summo

For High Yield and Excellent Feed Quality

Over 6,500 packs sold



Summo is a fodder beet variety which produces very good yields of high dry matter red roots with very good feed quality and storage characteristics. It has strong foliar growth plus good disease resistance. Roots are very uniform in size with a conical shape and low dirt tare. They are ideal for machine lifting.

Active Boost (pre-germinated) seed is available for 2020



Enermax

Improved Magnum with Rhizomania Tolerance

Enermax is another uniform, high dry matter beet with high yield potential. From the same breeder as **Magnum**, they claim 9% higher fresh root yield and 10% higher dry matter yield. It is a dual-purpose variety for fodder or AD use. At a dry matter of $\pm 17-19\%$, it needs chopping before feeding to livestock. It also grows deeper in the soil than many lower dry matter types, but unlike sugar beet it's smoother skinned and relatively clean lifting. **Enermax** is *Rhizomania* tolerant.

Very high dry matter varieties

The highest energy density/tonne of fresh weight and potentially highest dry matter yield, combined with excellent storage characteristics and much lower haulage costs than conventional fodder beet. Because more of the root is in the ground, they are less affected by frost and so more appropriate for late lifting. This high dry matter beet is ideal for AD or for stock feed.



Gahan

Possibly the Highest Yield of Dry Matter in UK

Initially developed for the AD market by Strube, **Gahan** is now also used as animal feed. It combines very high yield with relatively clean lifting roots. DM yield in trials has been 5-6 t/ha higher than **Beretta**, energy yield 12% higher. **Gahan** has very large tops, potentially protecting the crown when harvesting late. Bolting resistance is excellent. Mildew and rust resistance are also very good. **Gahan** is also *Rhizomania* tolerant

Swedes produce exceptional quality feed, they are the highest energy root crop that you can grow. They also have the advantage of good winter hardiness. The disadvantage is challenging establishment and there are few recommended herbicides so weed control options are limited. Farmers are adopting different drilling techniques and seed treatments to limit Flea Beetle and Cabbage Root Fly damage. We select varieties for consistently high yields and disease resistance.

If late feeding is required, go for hardy, higher dry-matter varieties.



Invitation

TOP VARIETY

Bred in Scotland by JHI. High yields of high dry matter roots. Excellent establishment vigour. Big tops. Very good resistance to clubroot and mildew. The best for hardiness. Ideal for late feeding. **Graded and Natural Seed**

Gowrie

Bred by JHI Scotland. The highest yielding variety. Medium dry matter %, high resistance to Mildew, good resistance to Clubroot. Yields 8 tonnes/acre more roots than Marian. For both stock feeding and table use. **Graded and Natural Seed**

Triumph

Bred in New Zealand by PGG Wrightsons, it has massive yield potential with medium to high dry matter purple roots and yellow flesh. Good winter leaf retention. Very palatable. **Graded and Natural Seed**

Lomond

Bred by JHI Scotland. Medium dry matter, very high yielding, dual purpose variety for grazing or human consumption. Good resistance to Mildew, Clubroot and splitting. **Graded and Natural Seed + Organic Seed**

Seed Rates	Pack Size
Precision Drill: Graded Seed at 200 – 500g/acre (0.5 kg – 1.25 kg/ha)	500g
Conventional and Direct Drill: Natural Seed at 0.5 – 1.0 kg/acre (1.25 – 2.5 kg/ha)	1 kg
Broadcast: Natural Seed at 0.7 – 1.25 kg /acre (1.7 – 3.0 kg/ha)	1 kg

Ask for a copy of our **Swede Crop Costs and Growers' Guidelines**

Kale is slightly faster maturing than Swedes with similar yield potential, but lower energy density and higher protein content. The table on page 26 highlights the range in digestibility of Kale, varieties range from a low of 9.0ME to a high of 11.2ME. For stock use we focus on very high digestibility types, like **Kestrel** and **Bittern**, with high leaf/stem ratio, highly digestible stems and low level of SMCOs (Sulphur compounds found in Brassicas, especially in late winter, which can reduce animal performance by causing anaemia in stock). They should be well fertilised for optimum performance.



Kestrel



Bittern

Bittern

TOP VARIETY

Our top-selling Kale. A cross between Kale and Brussels Sprout, **Bittern** is a tall variety with very high yield potential and good digestibility. It is very winter hardy.

Can be used for both sheep and cattle grazing.

Natural Seed only

Proteor

A high-yielding, leafy kale. Intermediate height thin stems and high leaf to stem ratio giving good 'D' value and palatability. High yields and 'D' value similar to **Bittern**, but not quite as hardy. Tolerant of Clubroot and other diseases.

Natural Seed only

Kestrel

Dwarf Kale with the highest 'D' value. Very high leaf/stem ratio. Low levels of SMCO, relative to others, optimising winter stock performance. Good bolting and mildew resistance so suitable for spring planting for summer/autumn feeding as well as June sowing for autumn/winter use.

Natural Seed only

Grampian

A medium height, high-yielding, leafy Kale, bred by JHI in Scotland. Its quality and hardiness are intermediate between **Kestrel** and **Bittern**, but the yield is higher. Clubroot tolerant.

Natural Seed only

Seed Rates	Pack Size
Conventional and Direct Drill: 0.8 – 2.0 kg/acre (2 – 5 kg/ha)	1 kg and 25 kg
Broadcast: 1.5 – 2.5 kg/acre (3.7 – 6.2 kg/ha)	1 kg and 25 kg

Ask for a copy of our **Kale Crop Costs and Growers' Guidelines**

Maincrop Turnips

90–130 days to maturity

Maincrop turnips have the advantage over Swedes and Kale of more vigorous establishment and faster maturity. The Turnip market is dominated by fast growing Stubble Turnips. Traditional Turnips are slower to mature, but have a number of benefits over Stubble Turnips; they are higher yielding, have higher ME and better root anchorage. Some are not hardy and only suitable for feeding in late autumn/early winter, but the best, like **Massif**, were developed from **Green-Top Scotch** and are both high yielding and very hardy.



Massif

Massif

TOP VARIETY

Bred by SCRI in Scotland. The highest yielding variety combined with good hardiness. Matures in 100–125 days.
Natural Seed only

Green Globe

Popular variety. Faster maturing than **Massif**, but not as high yielding or as hardy.

Also available: **Green Top Scotch**

Seed Rates	Pack Size
Conventional and Direct Drill: 0.5 – 1.25 kg/acre (1.25 – 3 kg/ha)	1 kg and 5 kg
Broadcast: 0.7 – 1.25 kg/acre (1.7 – 3 kg/ha)	

Kale x Rape Hybrids

90–120 days to maturity

Known as Kale-Rapes, these are forage Brassicas produced by crossing Kale and Rape to produce varieties which have the rapid establishment and quality of Rape combined with the higher yield and hardiness of Kale. The best are hardier and more *Alternaria* resistant than most Forage Rapes and slightly higher yielding. **Interval** is ideally suited to summer planting and winter use. **Redstart** is a variety selected for good resistance to bolting, *Alternaria* and Mildew. Normally used for spring planting and summer use, it has also proven good for autumn/winter use.



Redstart

Redstart

For summer or autumn grazing.

Bred in New Zealand, it was selected for spring sowing and summer grazing. It is higher yielding than **Winfred** but with similar high palatability and regrowth characteristics if first grazed at about eight weeks from emergence. It reaches full yield potential in 110 days.

Experience during the hard winter of 2010–11 suggests that **Redstart** also exhibits good hardiness, so can be summer sown for autumn and early winter utilisation.

Untreated Natural Seed only

Interval

Bred in Scotland by SCRI. It is a cut leaved variety with high yield potential. Fairly good hardiness for a Fodder Rape with good *Alternaria* resistance.

Untreated Natural Seed only

Spitfire

Also bred in New Zealand, **Spitfire** is a highly palatable Kale Rape with very high yield potential. Good disease and pest resistance. Suited to summer, autumn or early winter grazing.

Untreated Natural Seed only

Seed Rates	Pack Size
Conventional and Direct Drill: 1.0 – 2.0 kg/acre (2.5 – 5.0 kg/ha)	5 kg and 25 kg
Broadcast: Natural Seed 1.5 – 2.5 kg/acre (3.75 – 6.25 kg/ha)	

Fodder Rapes

90–120 days to maturity

Not as popular as stubble turnips, but fodder rapes have a number of potential advantages. They are potentially higher yielding, especially if planted early enough to realise their full potential and, if planted in the spring for summer grazing, they hold quality over a much longer period.

Because all of the grazed plant is above the ground, utilisation is also higher and the leaves are more frost tolerant when autumn-winter feeding. The best varieties have good bolting, mildew and *Alternaria* resistance as well as a high leaf to stem ratio and good hardiness. Some also have strong regrowth after grazing allowing them to be grazed twice.



SF Greenland

SF Greenland

TOP VARIETY

A medium-height, leafy rape with good aphid tolerance. It can be used for summer, autumn and winter feeding. It matures later than **Winfred** but has similar re-growth potential and much higher yield potential. In UK trials it out yielded **Hobson** by 0.9 t/ha. Outstanding performance for spring sown **Greenland** for grazing in summer 2018.

Gorilla

A very high yielding variety suited to summer, autumn or winter grazing. It also has good re-growth potential. Medium height with high leaf to stem ratio and excellent palatability. It has some *Alternaria* resistance. UK trials have also indicated good Clubroot resistance.

Also available: **Hobson, Emerald**

Seed Rates	Pack Size
Conventional and Direct Drill: 1.0 – 2.0 kg/acre (2.5 – 5.0 kg/ha)	5 kg and 25 kg
Broadcast: Natural Seed 1.5 – 2.5 kg/acre (3.75 – 6.25 kg/ha)	

Stubble Turnips

60–90 days to grazing

The most widely grown of all the forage brassicas, yield potential is above 4 tonnes of dry matter/hectare or 3–4,000 lamb grazing days/hectare, but only if they are given appropriate soil nutrition and planted early enough to reach full maturity. Some varieties like **Vollenda** have bolting and disease resistance which allows them to be sown in late spring for summer grazing.



Delilah

Vollenda TOP VARIETY

The best all-round variety for summer, autumn or winter use. Reliable high yield. A vigorous tetraploid with large, pink, tankard shaped roots. Good resistance to bolting, *Alternaria* & clubroot. Very good hardiness.

Delilah

Potentially the highest yielding variety. Large white 'tankard' roots. Good disease resistance. Ideal for autumn/winter use.

Rondo

Very leafy variety with well anchored small round bulbs. Good disease resistance. Very good hardiness.

Seed Rates	Pack Size
Conventional and Direct Drill: 1–2 kg/acre (2.5–5 kg/ha)	5 kg and 25 kg
Broadcast: 1.5–2.5 kg/acre (3.7–6.2 kg/ha)	

Fodder Mustard

50–70 days to grazing

Mustard is not widely used as fodder, but can produce excellent autumn grazing for cattle, lambs and for flushing ewes. It is easy to grow and much faster to establish than Rape or Stubble Turnips. From late August, it has the potential to produce more dry matter yield than Rape or Turnips and can be available for grazing within seven weeks of sowing. Graze before it is in full flower to optimise palatability and quality. Lamb growth rates can be above 300g/day. Mustard is not hardy, so should be grazed by the end of November.



Verte

Verte TOP VARIETY

One of the latest flowering varieties. It heads 30 days later than most, so remains leafy for much longer.

Seed Rates	Pack Size
Conventional and Direct Drill: 4–5 kg/acre (10–12.5 kg/ha)	25 kg
Broadcast: 5–6 kg/acre (12.5–15 kg/ha)	

Fodder Radish

60–90 days to grazing

Widely used for autumn-winter cover crops, Fodder Radish is slightly slower to flower and hardier than Mustard, so can potentially be grazed for longer, but ideally by the end of the year. As with Mustard, for best results graze before well before flowering.



Smart

Smart

Selected for its high biomass above ground, it produces an impressive tap root with many strong side shoots.

Seed Rates	Pack Size
Conventional and Direct Drill: 3 kg/acre (7.5 kg/ha)	25 kg
Broadcast: 4 kg/acre (10 kg/ha)	

Winter to Spring Catch Crops*

Sow late Aug/Oct, graze Nov/Apr



Protector

Protector or Humbolt

Forage Rye

From a September sowing the best Forage Ryes can produce 6 tonnes of dry matter/hectare by 1st May. By the end of March Rye can produce one tonne more dry matter/ha than Italian Ryegrass. Early sown Rye can also be grazed in the autumn-early winter period. Rye is exceptionally hardy and will grow through the winter producing the earliest spring grazing. Normally strip grazed by cattle, or rotationally block grazed by sheep. Surplus growth can make good silage at the end of April.

- ✓ Hardier than any other cereal
- ✓ Rarely stops growing in winter
- ✓ Exceptional March grazing
- ✓ Holds soil nutrients and builds soil fibre
- ✓ Extra silage

Seed Rate	Pack Size
50–60 kg/acre (125–150 kg/ha)	25 kg and 500 kg

* See also N-Rich Rye x Hairy Vetch mix (page 35)

Fodder Crop Mixtures

Clampsaver II *(Revised for 2020)*



Rape, Ryegrass and Barseem Clover Mixture

6.3% SF Greenland	Fodder Rape
4.2% Gorilla	Fodder Rape
31.3% Kigezi	Italian Ryegrass (Tet.)
41.7% Muriello	Italian Ryegrass
16.7% Tigri	Berseem Clover

Upgraded for 2020 with Berseem Clover to broaden the nutrition and enhance fertility building. Sow at any time from April to mid August. Normally ready for grazing 60 days from emergence. Ideal for summer use or for extending autumn-winter grazing. Block graze or strip graze with a back fence. The Rape and Clover die out after 2nd or 3rd grazing, depending on how hard it is grazed. The Italian Ryegrasses do not head in the sowing season and remain palatable and leafy through to the following spring. If it is kept beyond the following April it is better for cutting.

Clampsaver II



Seed Rates	Pack Size
Drill: 8–10 kg/acre (20–25 kg/ha)	24 kg
Broadcast: 10–12 kg/acre (25–30 kg/ha)	

Summer Grazer PLUS

NEW

Rape, Chicory and Barseem Clover Mix

27.8% Greenland	Fodder Rape
22.2% Puna II	Grazing Chicory
50% Tigri	Barseem Clover

Reliable summer grazing yield from spring planted fodder crops can be a challenge, especially in dry seasons. In New Zealand and South Eastern Australia there has been widespread experience of using re-growing summer Fodder Rapes, Chicory and other annual species for summer grazing. Introduced in 2019 following the dry summer of 2018, it has been further enhanced with aggressive Berseem Clover. It is an ideal option for graziers needing a drought tolerant break crop.

Summer Grazer PLUS



Seed Rates	Pack Size
Drill: 3.6 kg/acre (9 kg/ha)	9 kg
Broadcast: 4.5 kg/acre (11 kg/ha)	

Winter Keep

Hardy Kale and Turnip Mix

25% Bittern	Kale
40% Redstart	Kale x Rape Hybrid
35% Massif	Hardy Scottish Turnip

Designed for feeding ewes or lambs from Oct through to Feb where land is available for sowing before the 20th July. It combines one of the best quality Kales available with hardy Turnips and fast growing Kale x Rape hybrid. It is slower to establish and reach maturity than **Brassica Express**, but higher yielding, more frost tolerant and it has the potential to produce 30% more grazing days per hectare.

Can be sown by organic growers with a derogation

Winter Keep



Seed Rates	Pack Size
Drill: 1–2 kg/acre (2.5–5 kg/ha)	5 kg
Broadcast: 1.5–2.5 kg/acre (3.7–6.2 kg/ha)	

Brassica Express

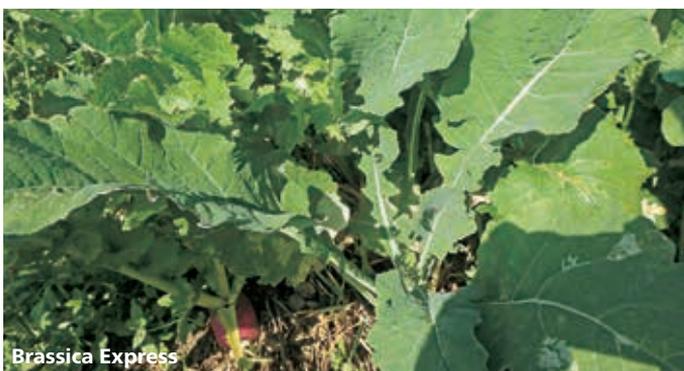


Rape and Stubble Turnip Mix

20% Gorilla	Fodder Rape
20% SF Greenland	Fodder Rape
30% Vollenda	Stubble Turnip
29% Delilah	Stubble Turnip
1% Kestrel	Kale

Sown from the end of March through to August, **Brassica Express** is designed for feeding cattle or sheep from summer through to autumn and winter. It is ready to graze 70–80 days from sowing. It combines fast and slow maturing varieties with bolting and disease resistance, hardiness, high yield and digestibility. The Rapes provide high protein, palatable leaf and stems which hold quality over prolonged grazing periods. The Turnips produce massive root yield and relatively higher energy levels.

Brassica Express



Seed Rates	Pack Size
Drill: 1–2 kg/acre (2.5–5 kg/ha)	5 kg
Broadcast: 1.5–2.5 kg/acre (3.7–6.2 kg/ha)	

Why Cover Crops?

There is a developing interest in improving UK soil. Cover crops can be used to build fertility, improve soil structure, suppress weeds and prevent soil erosion. Summarised below are the benefits, principles and information on a number of crops and mixtures which can be incorporated into farm rotations. Some can be combined to conform to catch and cover crops for Environmental Focus Areas (EFA) under the 'greening' regulations; others are just good cover crop crops.

The benefits of using cover crops:

- ✓ Holding soluble nutrients in the soil to prevent leaching
- ✓ Increase soil organic matter content
- ✓ Maintaining 'active' soil biology between crops
- ✓ Suppression or control of weeds
- ✓ Improve soil structure
- ✓ Reduce risk of soil erosion
- ✓ Leguminous green manures help build fertility
- ✓ Some cover crops can be used for biological pest control reducing eelworm and other pests
- ✓ Some green manures qualify as EFA catch or cover crops
- ✓ Some can also be utilised as grazed or ensiled forage

The case for using a mixture of species:

- ✓ Reliability
- ✓ Combines the different benefits of a range of species

Factors affecting the choice of cover crop species:

- ✓ Date the crop is to be sown
- ✓ Date when the crop is to be incorporated
- ✓ Duration of green manuring period
- ✓ Rotation limitations
- ✓ Winter hardiness
- ✓ Is there a need for fertility building?
- ✓ Ability to be utilised by grazing stock
- ✓ Potential for ensiling

It is best to incorporate leafy material that will break down quickly in the soil. Too much fibrous material can absorb nitrogen in the process of breaking down in the soil

- ✓ Less vulnerable to pests which may affect a single species
- ✓ Greater range of active soil biology is maintained

Environmental Focus Area (EFA) Greening Options: Catch Crop or Cover Crop Notes

Farmer's EFA areas should not be sown with the intention of being used for harvesting or grazing, however the cover does not need to be destroyed after these periods detailed above and there are no restrictions on the management of catch or cover crops areas beyond these periods, so crops can be grazed or ensiled after the end of the restricted period.

To count as an EFA **Catch Crop** crops must be:

- ✓ Must be in the ground for a minimum of 8 weeks
- ✓ Established by 20th August and
- ✓ Retained until at least 14th October

To count as an EFA **Cover Crop** crops must be:

- ✓ Established by 1st October and
- ✓ Retained until at least 15th January the following year



To calculate the appropriate area required, count each square-metre of Catch or Cover crops as 0.3 square-metres of EFA. Thus, if your greening obligation is 10 hectares, you will need 33.4 hectares of catch or cover crops.

Farmers who use nitrogen-fixing crops, fallow land, catch crops or cover crops to meet their EFA requirement need to be aware that they are forbidden from using any form of plant protection product (PPPs) on these crops/covers. There are no exemptions or derogations under any circumstances.

EFA Catch and Cover Species Options

To qualify for use in EFA, these must be a mixture of at least two different cover crop species that establish quickly, achieve ground cover and will effectively use available nutrients. Any percentage of a sown mix can be used, so long as there is a visible mix of at least two different crops from the lists below. A minimum of one cereal and one non-cereal must be used.

Non-cereal species:

- ✓ Common Vetch
- ✓ Hairy Vetch
- ✓ Phacelia
- ✓ Mustard
- ✓ Lucerne
- ✓ Fodder Radish (Oil Radish)
- ✓ Tillage Radish

Cereal species:

- ✓ Rye
 - ✓ Barley
 - ✓ Oats
- Winter or Spring types can be used.

Winter or Spring Cereals?

Use spring cereals if you want:

- ✓ Minimum surface trash for direct or tine till drills

Use winter cereals if you want:

- ✓ Biomass to incorporate in spring
- ✓ Forage to utilise for livestock
- ✓ Active transpiration of a growing crop to improve drying of soils
- ✓ Optimum active soil biology

Grass can be counted as either an EFA Catch Crop or an EFA Cover Crop, so long as it was undersown in the previous crop and is visible and dense enough to cover the ground by the start of the catch crop or cover crop period. Consider undersowing spring cereals or maize?

The mixtures detailed on the following pages are solutions to regularly requested scenarios. They are divided into non-hardy mixtures for autumn biomass and hardy blends which will also bulk up in the spring for grazing or ploughing in biomass. Contact Field Options for more advice.

Soil Buster

NOT HARDY

4.0	Mustard
3.0	Fodder Radish
3.0	Tillage Radish

10.0 kg/hectare pack

Sow July for incorporation late Sept-Oct before autumn cereals.
Sow August–early Sept to provide autumn to early winter cover.

- ✓ Good weed suppression
- ✓ Enhances soil structure and reduces nutrient leaching
- ✓ Surplus biomass may be grazed
- ✓ Qualifies for EFA when combined with Oats (see below)

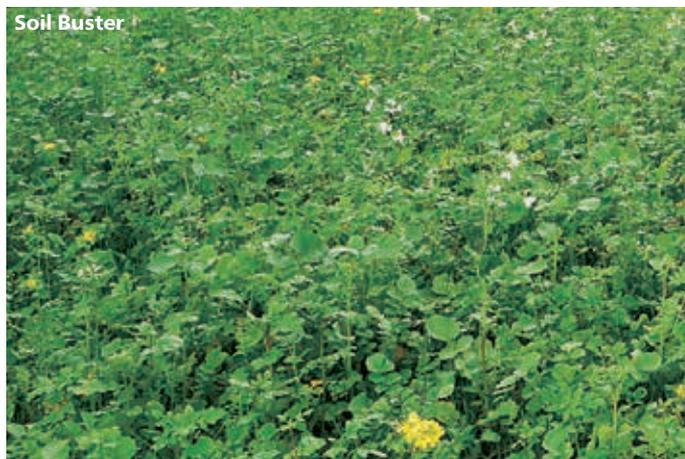
Soil Buster + Oats

NOT HARDY

EFA qualifying option with winter or spring oats

14.0 kg/½ hectare pack

Soil Buster



Nematode Buster

NOT HARDY

5.0	Anti-Nematode Mustard
4.0	Anti-Nematode Fodder Radish

9.0 kg/hectare pack

Sow July for incorporation late Sept-Oct before autumn cereals.
Sow August–early Sept to provide autumn to early winter cover.

- ✓ Active nematode reduction
- ✓ Good weed suppression
- ✓ Enhances soil structure and reduces nutrient leaching
- ✓ Qualifies for EFA when combined with Oats (see below)

Nematode Buster + Oats

NOT HARDY

EFA qualifying option with winter or spring oats

14.0 kg / ½ hectare pack

Brassica Break

NOT HARDY

4.5	Berseem Clover
4.0	Crimson Clover
1.5	Phacelia
12.0	Buckwheat

22.0 kg/hectare pack

Sow July for incorporation late Sept-Oct before autumn cereals.
Sow August to provide autumn to early winter cover.

- ✓ Good weed suppression
- ✓ Clovers build fertility (>50 kg N/hectare)
- ✓ Potential for good autumn nectar source
- ✓ Enhances soil structure and reduces nutrient leaching

Mega-Root

NOT HARDY

3.0	Smart	Radish
2.5	Apoli/Torro	Fodder Radish
2.5	Structurator	Tillage Radish

8.0 kg/hectare pack

A blend of Smart Radish plus widely used Tillage and Fodder Radish.
For use as later summer-autumn or autumn-winter catch or cover crop. Sow July for incorporation late Sept-Oct before autumn cereals.
Sow August–early Sept to provide autumn to early winter cover.

- ✓ Very good weed suppression
- ✓ Enhances soil structure and reduces leaching
- ✓ Surplus biomass may be grazed
- ✓ Qualifies for EFA when combined with Oats, Rye or Barley

Autumn Primer

NOT HARDY

7.0	Spring Oats
6.0	Black Oats
1.5	Berseem Clover
1.0	Crimson Clover
1.0	Fodder Radish
0.5	Phacelia
3.0	Buckwheat

20.0 kg/½ hectare pack

Many soil specialists advocate using a broad range of species. This has the potential to maintain and enhance a more complex range of soil biology. This mixture contains a spectrum of very reliable species at a ratio that gives all species a chance to perform.

Sow July for incorporation late Sept-Oct before autumn cereals.
Sow August–early Sept to provide autumn to early winter cover.

- ✓ Very good weed suppression
- ✓ Enhances soil structure and reduces nutrient leaching



Cover Crop Trials

N-Rich

VERY HARDY

Forage Rye and Winter Vetch mixture

80%	Protector	Forage Rye
20%		Hairy Winter Vetch

25–36 kg/acre (60–90 kg/hectare) 25 and 500 kg packs

Good autumn weed suppression. Very hardy, it continues to grow even in very hard winters. Best potential yield of spring biomass. Sow from early September to early October for optimum performance.

Also makes a good Winter to Spring catch crop that qualifies as a cover crop for EFA if allowed to grow on through to late January before grazing. It can then be rotationally grazed through to April or cut for silage late April-early May.

- ✓ Good weed suppression
- ✓ Vetches build fertility
- ✓ Excellent reduction of nutrient leaching
- ✓ Holds soil nutrients and enhances soil structure
- ✓ Spring growth dries out soil through transpiration
- ✓ Surplus can provide both autumn and early spring grazing



N-Rich

Top Fertility

VERY HARDY

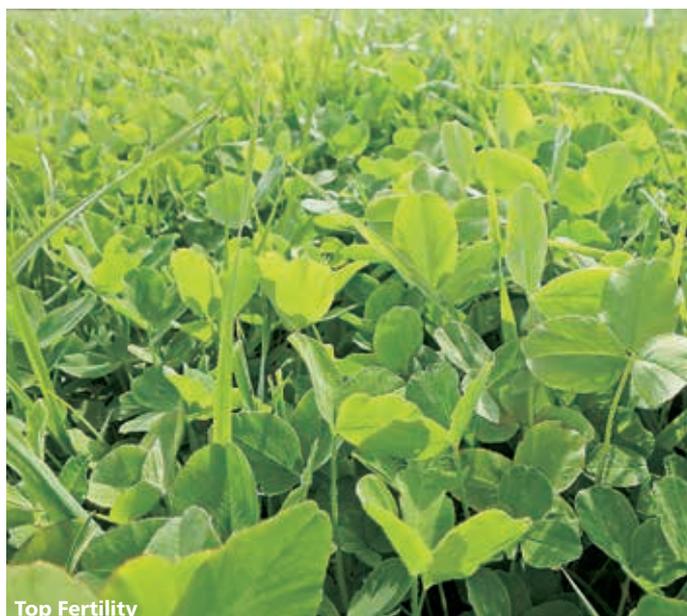
Two year fertility building ley

32%	Intermediate Tetraploid Perennial Ryegrass
32%	Intermediate Perennial Ryegrass
16%	Cocksfoot
8%	Broad Red Clover
8%	Late Red Clover
4%	Alsike Clover

25 kg hectare pack

Designed to be down for 1–2 years (or more). It produces a relatively dense easily managed sward. The Cocksfoot and clovers are deep rooting once fully established. The biomass produced can be grazed, cut for silage or mulched. Sow anytime between late March and early September to be sure of good clover establishment.

- ✓ Transforms depleted arable soils
- ✓ Excellent fertility building
- ✓ Avoids species that may become a problem in arable rotations
- ✓ Surplus biomass can be used for silage or grazing



Top Fertility

Whirlwind

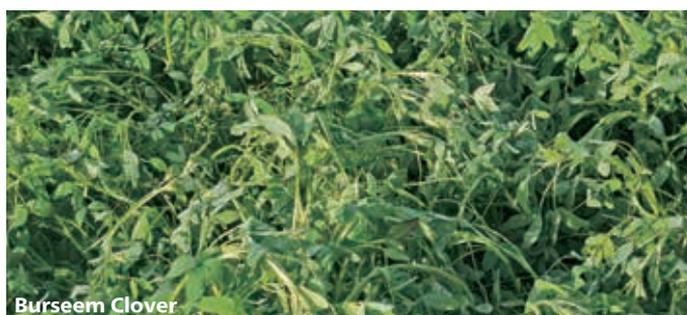
HARDY

70%	Fox	Italian Ryegrass
30%	Akhenaten	Berseem Clover

22.0 kg/hectare pack (Seed rate 20–25 kg/ha)

The fastest establishing diploid Italian Ryegrass combined with rapid establishing Berseem (aka Egyptian Clover). Provides leafy, palatable growth throughout the autumn – Ideal for lamb finishing, or flushing ewes followed by early spring grazing, if required. Sow July-early September for autumn cover and grazing. The Ryegrass provides grass and grazing through to the spring.

- ✓ Good weed suppression
- ✓ Clover builds fertility
- ✓ Provides a source of nectar
- ✓ Excellent reduction of nutrient leaching
- ✓ Growing Ryegrass dries out the soil faster in the spring
- ✓ Enhances soil structure
- ✓ Excellent autumn through to early spring grazing
- ✗ Berseem Clover is not hardy



Berseem Clover

Special Mixtures

The mixtures detailed here are solutions to regularly requested scenarios. Each farm may have specific objectives and species which perform well in their particular situation. Field Options can quote you for any combination and, where requested, give you guidance on the formulation of any combination of species.

Summaries of the key species are on the following pages.

Key Leguminous Cover Crop Species



Common Vetch <small>OK for EFA</small>	HARDY
<p>'N' Fixing UK native. Vigorous, scrambling plant with very good weed suppression. Often planted with cereals. Spring-sown, it will keep growing through to late summer. It can produce high yields of biomass. It can grow through a mild winter but is Not Fully Hardy. Potential to be grazed and ensiled.</p>	
Seed Rate: 50–75 kg/hectare (20–30 kg/acre)	25 kg Packs



Hairy Vetch <small>OK for EFA</small>	VERY HARDY
<p>Very vigorous, scrambling plant with excellent nitrogen fixing potential. More hardy than common vetches making it an ideal winter cover crop either on its own or in combination with Rye or Oats. Weed suppression is excellent. Rhizobium nodulation is very reliable. Excellent potential for grazing or silage.</p>	
Seed Rate: 38–62 kg/hectare (15–25 kg/acre)	25 kg Packs



Crimson Clover	NOT HARDY
<p>'N' Fixing, rapid growing annual clover with good weed suppression. Impressive crop when flowering and can be a good source of nectar. It can be sown any time from April to August. Early sown crops can produce impressive volumes of biomass, which can be cut twice if cut young enough. Good potential for grazing or silage.</p>	
Seed Rate: 12.5–15 kg/hectare (5–6 kg/acre)	25 kg Packs



Berseem Clover	NOT HARDY
<p>'N' Fixing, rapid growing annual clover with good weed suppression. Much less fibrous than Crimson Clover, it can be sown any time from April to late August. Early sown crops can produce impressive volumes of biomass, which can be cut two or three times. Good potential for silage and autumn growth is excellent for finishing lambs.</p>	
Seed Rate: 14–18 kg/hectare (5.5–7 kg/acre)	25 kg Packs



Yellow Trefoil	HARDY
<p>Vigorous and leafy perennial legume used as a straight green manure and in mixtures. It is often used as an understory cover crop in cereals and pulses to suppress weeds and build fertility while not competing too much with the crop. It thrives on free draining, neutral to alkaline soils.</p>	
Seed Rate: 10 kg/hectare (4 kg/acre)	10 and 25 kg Packs



Red Clover	VERY HARDY
<p>Slower establishing than Crimson and Berseem Clover, but less fibrous and much more persistent, lasting for 2–3 years. Better suited to longer periods of fertility building. It puts down a long taproot which can have an impressive effect on soil structure. Good silage and lamb grazing opportunities. Sow from April to August.</p>	
Seed Rate: 12.5–15 kg/hectare (5–6 kg/acre)	25 kg Packs



Sweet Clover	HARDY
<p>A clover which lasts for two seasons and thrives on light and less fertile soils. Normally spring sown, it grows up to 1.8 metres producing a good tap root making it both drought tolerant and good for improving soil structure at depth. It is an excellent nectar source. Top growth is fairly fibrous, so forage quality is poor unless cut at a young stage.</p>	
Seed Rate: 10–12.5 kg/hectare (4–5 kg/acre)	10 and 25 kg Packs

Range of seed rates covers drilling to broadcasting. All seed rates are for monocultures. When in mixtures adjust in proportion to the crop required. For example, if you want 50% Mustard and 50% Fodder Radish, 2 kg Mustard + 1.5 kg Fodder Radish is adequate for drilling.

Key Non-Leguminous Cover Crop Species



Standard Mustard OK for EFA **NOT HARDY**

A very low cost cover crop widely used in the UK. Aggressive establishment makes it very good for weed suppression. It should be topped 50–60 days after sowing to avoid accumulation of stemmy material which is slower to breakdown in the soil. Surplus growth can provide good grazing, especially for sheep, but only in the vegetative phase.

Seed Rate: 10–12.5 kg/hectare (4–5 kg/acre) 25 kg Packs



VERTE Mustard OK for EFA **NOT HARDY**

Ultra-late flowering Mustard, extending the period of leafy growth. This produces biomass that is easier to incorporate or can be grazed for longer. Flowering date from a mid-August sowing would not be until mid-November. Excellent for grazing but like all Mustards, it should be grazed by the end of November.

Seed Rate: 10–12.5 kg/hectare (4–5 kg/acre) 25 kg Packs



Anti-Nematode Mustard OK for EFA **NOT HARDY**

Some Mustard varieties are bred to suppress eelworm, especially strains of beet cyst nematode. They combine resistance to the nematode with not acting as a host to other species. We can supply a range of varieties. They also appear to reduce the incidence of *Rhizoctonia*. A range of varieties is available.

Seed Rate: 10–12.5 kg/hectare (4–5 kg/acre) 25 kg Packs



CALIENTE I99 Super Hot Mustard OK for EFA **NOT HARDY**

The ultimate 'biofumigant', it is a selection of Brown Mustard with very high levels of glucosinolates. These chemicals break down when the plant is macerated and incorporated into the soil, they release isothiocyanate and other compounds which suppress nematodes and other soil borne pests and pathogens.

Seed Rate: 10–12.5 kg/hectare (4–5 kg/acre) 25 kg Packs



Fodder Radish OK for EFA **NOT HARDY**

A vigorous and low cost option with similar characteristics to Mustard. Fodder Radish provides less groundcover, but it produces a similar level of weed suppression. It is later flowering, less stemmy and normally hardier. Some varieties also suppress a range of nematodes. It should ideally be swiped off 70–80 days after sowing.

Seed Rate: 7.5–10 kg/hectare (3–4 kg/acre) 25 kg Packs



Tillage Radish OK for EFA **NOT HARDY**

Tillage Radish appear similar to standard Fodder Radish above the ground but develop impressive 30–40 cm tap roots below the surface. These create and open up fissures in the soil, helping to improve soil structure. When they die off in the winter, they break down fast, releasing nutrients into the soil in organic form. Weed suppression is also very good.

Seed Rate: 7.5–10 kg/hectare (3–4 kg/acre) 25 kg Packs



Smart Radish **NOT HARDY**

A new development in soil structure enhancing Fodder Radish. Smart Radish produces a ground penetrating fat tap root combined with strong lateral roots which exploit horizontal fissures in the soil. Smart was originally selected for its massive top growth. This biomass can be used for mulching or grazing. Supplies were limited in 2018, much more is available in 2020.

Seed Rate: 7.5–10 kg/hectare (3–4 kg/acre) 25 kg Packs

Range of seed rates covers drilling to broadcasting. All seed rates are for monocultures. When in mixtures adjust in proportion to the crop required. For example, if you want 50% Mustard and 50% Fodder Radish, 2 kg Mustard + 1.5 kg Fodder Radish is adequate for drilling.



Phacelia <i>OK for EFA</i>	NOT HARDY
Ideal break crop. Not related to any crop species in the UK. Fast establishing, it is an excellent weed suppressing annual. Easily incorporated because top growth breaks down easily. In summer can flower over a long period. Good nectar source. Not hardy.	
Seed Rate: 7.5–10 kg/hectare (3–4 kg/acre)	25 kg Packs



Buckwheat	NOT HARDY
Fast growing and competitive, broadleaved annual of the polygonum family. It is easy to grow, suppresses weeds and flowers readily in late summer providing a good source of pollen for bees. Seed shed through the autumn-early winter period provides good feed for a range of birds.	
Seed Rate: 50 kg/hectare (20 kg/acre)	25 kg Packs



Ryegrass <i>OK for EFA</i>	VERY HARDY ❄️
Not often considered as a cover crop, but its rapid establishment and smothering nature makes it a useful green manure, especially in late summer and autumn when it can mop up nutrients that would otherwise be leached out during the winter. Surplus can be grazed or cut.	
Seed Rate: 25–35 kg/hectare (10–14 kg/acre)	20 and 25 kg Packs

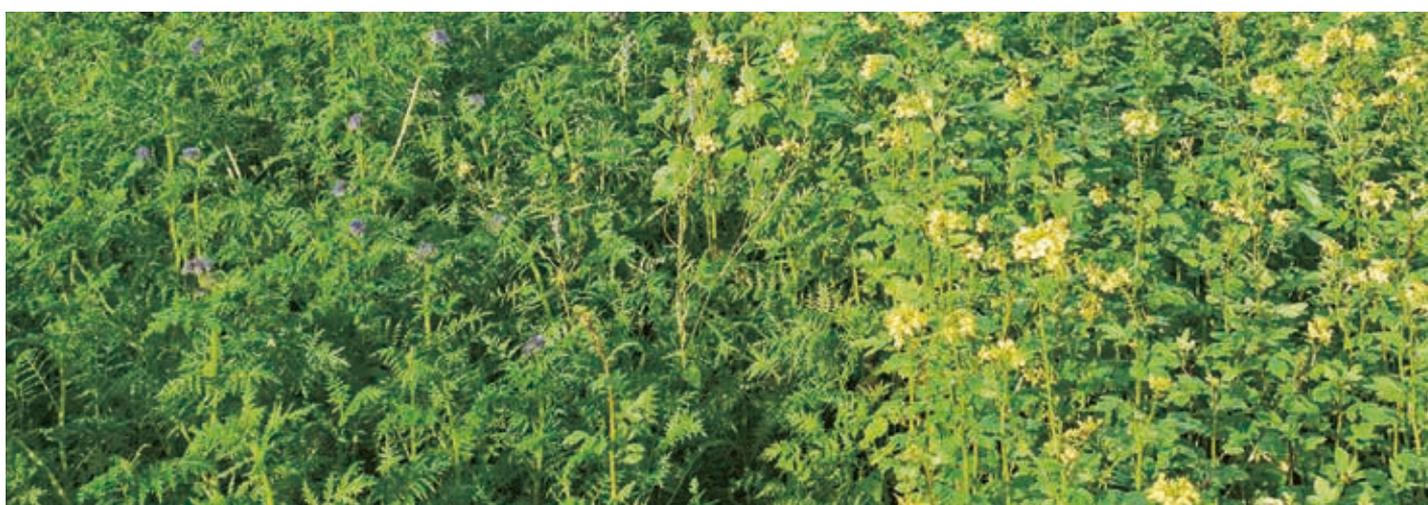


Forage Rye <i>OK for EFA</i>	VERY HARDY ❄️
Fastest growing cereal species and best weed suppressor, it is also exceptionally hardy. Sown in the autumn, it will keep growing in all but the coldest conditions. Forage types produce more winter biomass than grain types. Opportunity for spring grazing or early silage.	
Seed Rate: 100–150 kg/hectare (40–60 kg/acre)	25 and 500 kg Packs



Forage Oats <i>OK for EFA</i>	<i>Spring Oats</i> NOT HARDY <i>Winter Oats</i> HARDY
More widely available than Rye and cheaper, but not as hardy. Winter and spring types establish reliably and suppress weeds well. Spring Oats are more vigorous, but not hardy. Even Winter Oats can leave top growth in very hard winters, but it regrows in early spring. Often combined with Hairy Vetch.	
Seed Rate: 100–150 kg/hectare (40–60 kg/acre)	500 kg Packs

Range of seed rates covers drilling to broadcasting. All seed rates are for monocultures. When in mixtures adjust in proportion to the crop required. For example, if you want 50% Mustard and 50% Fodder Radish, 2 kg Mustard + 1.5 kg Fodder Radish is adequate for drilling.



1 Definitions

- 1.1 "Buyer" means the person who accepts Field Options quotation for the sale of goods or whose order for goods is accepted by Field Options.
- 1.2 "Contract" means the contract for the sale and purchase of goods.
- 1.3 "Seller" means Field Options of Unit 3, Broadaxe Business Park, Presteigne, Powys LD8 2UH.
- 1.4 "Terms" means the standard terms and conditions of sale as set out in this document and (unless the context otherwise requires) includes any special terms agreed in writing between the Buyer and the Seller.
- 1.5 "Goods" means such that is sold by the Seller to the Buyer.

2 Conditions

- 2.2 All orders for Goods shall be deemed to be an offer by the Buyer to purchase Goods pursuant to these conditions.
- 2.3 Acceptance of delivery of the Goods shall be deemed conclusive evidence of the Buyer's acceptance of these conditions.

4 Acceptance of orders

- 4.1 No order shall be binding upon the Seller unless accepted by the Seller in writing.
- 4.2 Acceptance of delivery of the Goods shall be deemed to constitute acceptance by the Buyer of these Conditions.
- 4.3 Orders are accepted by the Seller subject to Goods of the contract description being available to the Seller at the time delivery is required as to which the Seller accepts no obligation.

6 Price and Payment

- 6.1 All prices are quoted exclusive of value added tax.

- 6.2 The Seller reserves the right to increase the price to reflect the imposition of or increase in any tariff or tax and in the case of imported Goods any variation of exchange rates after the date of acceptance unless otherwise agreed in writing.
- 6.3 Payment for the Goods shall be made in full by the Buyer within 30 days unless otherwise agreed in writing.

7 Delivery and Risk

- 7.1 Delivery dates are given as a guide and do not constitute a legal obligation.
- 7.2 The Goods shall be delivered to the Buyer at the Buyer's address, or to another address as formally notified in writing to the Seller. The risk in the Goods shall pass to the Buyer upon such delivery taking place.
- 7.4 The Seller may deliver the Goods by separate instalments. Each separate instalment shall be invoiced and paid for in accordance with these conditions.
- 7.5 No failure of or delay in delivery of any instalment or any defect in the Goods the subject thereof shall entitle the Buyer to treat the Sale Contract as repudiated.
- 7.6 Failure by the Buyer to take delivery of any instalment of the Goods or to pay for such instalment in accordance with these conditions shall entitle the Seller to terminate the Contract and/or re-sell the Goods, in which case the Buyer shall be liable for any costs, or losses incurred by the Seller.

8 Title

- 8.1 In spite of delivery having been made, the property in the Goods shall not pass from the Seller until the Buyer shall have paid the price plus VAT in full.

9 Limitation of Liability

- 9.1 In respect of any breach by the Seller of any warranties given by it under these Conditions, the Seller's liability to the Buyer shall be limited at the Seller's sole discretion to replace the Goods in question, or where supplies are not available, to offer a suitable alternative, or to refund the appropriate proportion of the price attributable to the Goods in question.
- 9.2 Notwithstanding clause 9.1, the Seller's liability to the Buyer is conditional in any event on the following:
- 9.3 The Buyer having notified the Seller of the alleged breach of warranty within 5 working days of Delivery where that breach ought to be apparent on reasonable examination and in any event within 4 months of Delivery, and, where the Goods have been damaged in transit, the carrier's delivery sheet having been marked "damaged in transit".
- 9.4 The Buyer having taken all necessary and reasonable measures to store the Goods properly so that there is no further deterioration in their condition.

10 General

- 10.1 The Contract constitutes the entire agreement and understanding between the parties with respect to its subject matter.
- 10.2 No variations to these Conditions shall be binding unless agreed in writing by the Seller.
- 10.4 The Contract shall be governed by and construed in accordance with the laws of England and shall be subject to the non-exclusive jurisdiction of the English courts.

Other Products and Information

Advanced Silage Inoculants



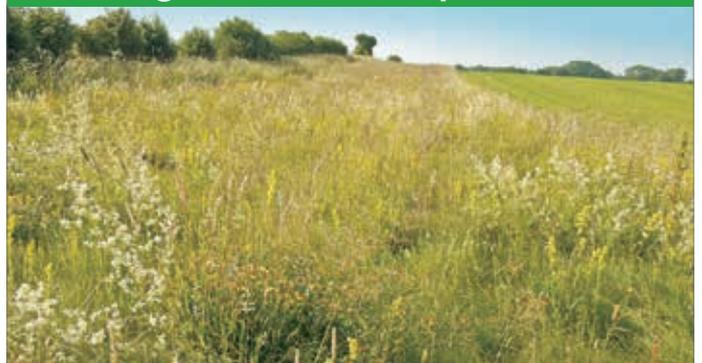
Soil Management Advice



Silage Sheets and Films



Full Range of Stewardship Mixtures





Key Suppliers



Your local contact is:

Grass and Forage HELPLINE: 01544 262 500

Supporters of

