Forage Seed
2017

Award winning forage options
Introduction

Quality forage is the key to a sustainable future and an asset that the majority of livestock businesses in this country have the opportunity to produce.

Used effectively, the variety of forages available to dairy, beef and sheep offers opportunities for efficient production and ways to negate the impact of price volatility and subsidy removal.

At Germinal we are committed to providing year-round quality forage solutions. Our Aber High Sugar Grass varieties are proven performers in terms of dry matter yield, D-value and ME yield, boosting not only your production from forage but your environmental credentials too. This has been recognised with a string of prestigious awards, referred to later in this catalogue.

These industry leading ryegrasses are complemented by our range of Aber white clovers, whilst another grazing sward option is Puna II perennial chicory. In terms of protein crops, we offer the first 4-5 year duration red clovers with AberClaret and AberChianti, whilst modern lucerne varieties equipped to perform in our northern European conditions offer a new viable alternative.

Forage brassicas with the versatility to bridge summer grazing gaps, extend autumn grazing or provide the basis for out-wintering are another important forage option, with the hybrid brassicas Swift and Redstart leading the way.

In our 2017 Forage Seed catalogue, we hope you will find the route to more efficient livestock production. With the right management, current ‘greening’ rules should present no barriers to best practice and innovative use of forage. Start by selecting the very best varieties and the important stages of establishment, growing and utilisation will follow more easily.

Ben Wixey
National Agricultural Sales Manager, Germinal GB
Aber HSG 1 is a long term, general purpose mixture for milk and meat production.

Ideal for grazing, the mixture also offers the potential for a heavy silage cut in late May. Ideally suited for set stocking, it can be grazed with cattle, ewes or used to finish lambs. Aber HSG 1 produces a dense sward which will resist poaching and with good management will maintain its quality for 5 – 7 years. Puna II perennial chicory can be included for added drought tolerance and sward variety.

Key benefits in summary

- Combines an outstanding grazing yield for the mixture of 106% and a grazing D-value of 77.5
- 100% Aber HSG grasses
- Correct balance of diploid and tetraploid varieties
- High palatability and increased dry matter intakes
- Reduced nitrogen losses to the environment

Fig 01. Long term general purpose mix:

<table>
<thead>
<tr>
<th>Kg/acre</th>
<th>Variety</th>
<th>Type</th>
<th>Heading Date</th>
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<tbody>
<tr>
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<td>3.0</td>
<td>AberMagic HSG</td>
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<td>AberGreen HSG</td>
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</tr>
<tr>
<td>4.0</td>
<td>AberGain HSG</td>
<td>Perennial Ryegrass (T)</td>
<td>04-Jun</td>
</tr>
<tr>
<td>1.0</td>
<td>AberDairy</td>
<td>White Clover Blend</td>
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</tr>
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</table>

Heading date average for Aber HSG 1 is 30 May for central Britain.

When cutting for silage, aim to cut 5-10 days before average heading date for optimum quality.

Optimum spread of heading dates within mixtures for grazing and cutting results in better performance of the leys.

Fig 02. Aber HSG 1 Milk and Meat Production: Spread of heading dates

Maximising milk from forage

Treating grass like a crop and growing wholecrop cereals with an arable farming mentality are helping dairy farmer John Hughes to maximise milk production from forage.

Farming at Ynysgain Fawr, Criccieth, with his son Sion, John applies a meticulous approach to growing and making the best possible conserved feed. This involves regular reseeding with Aber High Sugar Grass leys to maintain sward performance, frequent soil analyses to ensure crops are adequately fertilised, and attention to detail on all aspects of harvesting and ensiling.

The 120 cow Friesian herd produce around 7,500 litres per cow, with roughly 60% of overall production coming from forage. This is achieved with the milking herd, replacements and sheep over winter performing off a total farmed area (owned and rented) of just over 100ha.
Aber HSG 2 Early Cut

Aber HSG 2 Early Cut is a specialist silage mixture for those aiming to cut a very high quality crop from the end of April to mid May.

Combining the outstanding hybrid Aber High Sugar Grass AberEcho with compatible Aber perennial ryegrasses, this mixture delivers quality and yield and can persist for 3-4 years – twice as long as Italian ryegrass based swards. Aber HSG 2 Early Cut is a straight grass mixture that will perform under medium and high levels of nitrogen. AberClaret red clover can be included, whilst for those seeking longer lasting specialist silage mixtures we recommend Aber Red 5 HSG.

The addition of red clover at 3kg/acre within the Aber HSG 2 mixtures will increase the yield and quality of your silage.

More farmers are choosing to include red clover in their cutting mixture to:
- Increase overall forage production potential
- Improve the protein content of silage
- Reduce protein losses in the clamp
- Benefit from red clover’s ability to contribute over 150 kgN/ha of nitrogen through fixation
- Improve soil structure and drought tolerance

### Key benefits in summary
- AberHybrid High Sugar Grass content
- Compatible heading date varieties
- Over twice the persistency of Italian ryegrass leys
- Suitable for combination with red clover
- Aber High Sugar Grasses enhance fermentation, especially when red clover is included
- Very high ME yield

### Heading dates

#### Aber HSG 2 Early Cut:
- Heading date average for Aber HSG 2 Early Cut is 21 May for central Britain.
- When cutting for silage, aim to cut 5-10 days before average heading date for optimum quality.
- Optimum spread of heading dates within mixtures for grazing and cutting results in better performance of the leys.

### Mixtures

<table>
<thead>
<tr>
<th>Kg/acre</th>
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<td>AberClyde</td>
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</tr>
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</table>

#### Including red clover in your cutting mixtures

#### Key benefits in summary

### Aber HSG 2 Later Cut

Aber HSG 2 Later Cut is a specialist silage mixture for those aiming to cut a very high quality crop in mid-to-late May.

Combining the outstanding Aber High Sugar Grass AberGain with other compatible Aber HSG perennial ryegrasses this mixture delivers quality and yield and can persist for 5 years - twice as long as Italian ryegrass based swards. Aber HSG 2 Later Cut is a straight grass mixture that will perform under medium and high levels of nitrogen. AberClaret red clover can be included, whilst for those seeking longer lasting specialist silage mixtures we recommend Aber Red 5 HSG.

The addition of red clover at 3kg/acre within the Aber HSG 2 mixtures will increase the yield and quality of your silage.

More farmers are choosing to include red clover in their cutting mixture to:
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### Key benefits in summary

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<tr>
<td>5.0</td>
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<td>Perennial Ryegrass (T)</td>
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<tr>
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<td>AberPlentiful HSG</td>
<td>Perennial Ryegrass (T)</td>
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<td>5.0</td>
<td>AberChoice HSG</td>
<td>Perennial Ryegrass</td>
<td>09-Jun</td>
</tr>
</tbody>
</table>

#### Including red clover in your cutting mixtures

#### Key benefits in summary
Award winning ryegrasses

Celebrated breeding and performance

The plant breeding programme at IBERS Aberystwyth University responsible for the creation and development of Aber High Sugar Grass has been recognised with a seventh major award in just 12 years since varieties first became widely available.

In June 2015, the perennial ryegrass AberGreen became only the second forage grass variety to receive the prestigious Variety Cup from the National Institute of Agricultural Botany (NIAB). Awarded only periodically (since 1986), the NIAB Variety Cup recognises varieties from agricultural, horticultural or ornamental sectors that have made a major contribution to crop productivity through improved quality, disease resistance, grower return or commercial success.

Outstanding dry matter yield combined with exceptional D-value make the intermediate diploid AberGreen one of the very highest ranked perennial ryegrasses for total Metabolisable Energy (ME) yield. With its higher water soluble carbohydrate content but without a proportional increase in protein, AberGreen exhibits what breeders describe as close to the optimum forage protein-to-energy balance for efficient livestock production.

Earlier awards for Aber HSG

• 2013: Times Higher Education Award
  Aberystwyth University’s Institute of Biological Environmental and Rural Sciences (IBERS) won the Outstanding Contribution to Innovation and Technology award in the Times Higher Education Awards for the breeding and development of Aber High Sugar Grasses.

• 2011: British Grassland Society Innovation Award
  The work of the IBERS plant breeding team at Aberystwyth University was recognised with the presentation of the British Grassland Society Innovation Award for the development of Aber High Sugar Grasses.

• 2011: Excellence With Impact Award
  IBERS grass breeders responsible for Aber High Sugar Grasses were key contributors to success that led to the department winning one of the first ever Excellence With Impact Awards from the UK’s Biotechnology and Biological Sciences Research Council.

• 2009: Queen’s Anniversary Prize for Higher and Further Education
  The Queen’s Anniversary Prize for Higher and Further Education was awarded to IBERS for public good plant breeding that includes the development of Aber High Sugar Grasses.

• 2007: Royal Agricultural Society of England (RASE) Award
  IBERS received the Royal Agricultural Society of England (RASE) Award for Technology and Innovation for the development of Aber High Sugar Grasses as well as other innovations in clover and cereal varieties that have had a significant impact over the last 20 years.

• 2003: NIAB Variety Cup
  AberDart was awarded the NIAB Variety Cup in recognition of its improved quality combined with excellent agronomic performance. This was the first time this cup was awarded to a grass variety.

Germinal Managing director William Gilbert (right) with seed Production Manager John Fairey collecting the NIAB Cup awarded for the Aber High Sugar Grass AberGreen
Forage Seed 2017 Aber High Sugar Grass cutting and grazing mixtures

Long Term

Aber HSG 3 Long Term Grazing

The biggest selling mixture in the Aber HSG range, Aber HSG 3 Long Term Grazing is for cattle or sheep systems aiming to maximise returns from grazing, whether rotational or set stocked.

Aber HSG 3 is made up exclusively of Aber High Sugar Grass diploid perennial ryegrasses which have the highest ratings for grazing quality and yield on the Recommended List. This mixture is unrivalled for persistency under grazing; managed well it can continue to perform for 7 to 10 years, giving you maximum yields of the highest quality grazing. AberWolf HSG, one of the outstanding perennial ryegrasses on the Recommended List, is included for the first time this year.

Key benefits in summary

- Combines a very good grazing yield for the mixture of 103% and an outstanding grazing D-value of 77.4
- Outstanding autumn production for the mixture
- 100% Aber HSG diploid perennial ryegrasses
- Very persistent sward with good 'bottom'
- High palatability and dry matter intakes
- Reduced nitrogen losses to the environment
- Persists for up to ten years

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<tbody>
<tr>
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<td>3.0</td>
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<td>AberPasture</td>
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</tr>
<tr>
<td>15.0</td>
<td>Presto Timothy</td>
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</table>

Heading date average for Aber HSG 3 is 31 May for central Britain. When cutting for silage, aim to cut 5-10 days before average heading date for optimum quality. Optimum spread of heading dates within mixtures for grazing and cutting results in better performance of the leys.

Aber HSG 3 + Timothy

Aber HSG 3 + Timothy is the most popular mixture in the Aber HSG range, being ideally suited to cattle or sheep grazing where the aim is to maximise returns using either a rotational or set stocked system.

With all the attributes of Aber HSG 3, this mixture has the addition of Timothy, a grass that will add 'bottom' to the sward and provide greater tolerance to wet conditions. Presto is chosen for its excellent spring growth and palatability.

Key benefits in summary

- Combines a very good grazing yield and an outstanding grazing D-value
- Outstanding autumn production ensures strong extended grazing potential
- Very persistent sward with good 'bottom'
- High palatability and dry matter intakes
- Reduced nitrogen losses to the environment
- Persists for up to ten years

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<td>AberWolf HSG</td>
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<td>3.0</td>
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<td>2.0</td>
<td>AberChoice HSG</td>
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Heading date average for Aber HSG + Timothy is 31 May for central Britain. When cutting for silage, aim to cut 5-10 days before average heading date for optimum quality. Optimum spread of heading dates within mixtures for grazing and cutting results in better performance of the leys.

Benefits of Timothy

- Good tolerance of wet conditions
- Excellent spring growth
- High palatability
- Adds extra 'bottom' to swards to reduce the impact of poaching
Forage use key for autumn calving system

It was a drive to make life easier and maximise the potential of farm resources that first instigated Richard Fryer’s decision to move away from all year round calving to an autumn block.

After joining a grassland discussion group in 2009, Mr Fryer has overhauled the system at Home Farm to calve in a 12 week block whilst making better use of forage. As a result he has simplified management, upped stocking rates and improved output per hectare.

The grazing platform extends across 50.6ha (125 acres) with an additional 40ha (100 acres) of off-lying, dedicated silage ground. Having occasionally split fields in the past and not measured grass growth, fields are now plate metered weekly during peak grass growth and cows go to a fresh bite after each milking.

Good silage is also considered very important for autumn calvers to provide adequate nutrition when they reach peak production.

The Fryers choose to use Germinal’s Aber HSG 3 mixture on both grazing and silage ground. This includes a selection of high sugar late heading diploid perennial ryegrasses.

“The high sugar grasses are very palatable and cows like eating it - and that’s noticeable. We filled in a spot in a field with Aber HSG 3 and the cows noticeably go and eat that patch. It also makes good silage and is very reliable,” says Mr Fryer.

All in all, better grass management has led to improved grass yields so the farm is now able to carry more stock. This has allowed the number of milking cows to be increased from 185 to 230-240 cows and in-calf replacements to be managed on farm.

The farm is now producing 59% of milk from forage with cows receiving 1,400kg of concentrate a cow a year. Extended grazing and improved grass growth also means that despite increases in stock numbers, silage use has been reduced from 11-12t/cow/year to about 7t/cow/year.
**Aber HSG 4 Dairy System**

Aber HSG 4 Dairy System is a mixture for milk producers who are aiming for one or two high quality silage cuts followed by the best possible rotational grazing.

First cut will be mid-to-late May, with the option of a second cut approximately 4 – 5 weeks later, or alternatively commence rotational grazing. The Aber HSG varieties selected for this mixture significantly out-perform other grasses for grazing quality and grazing yields. This year Aber HSG 4 is further improved by the introduction of AberWolf HSG, the stand-out grass on the latest UK Recommended Lists.

### Key benefits in summary
- Long-lasting ley with outstanding quality
- Top yields of high ME silage at first cut
- For cutting and rotational grazing
- 100% Aber HSG perennial ryegrasses
- Balance of diploid and tetraploid varieties
- High palatability and dry matter intakes
- Extended spring and autumn grazing

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**Kg/acre  Variety  Type  Heading Date**

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<thead>
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<td>3.0</td>
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<td>AberBite HSG</td>
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<td>1.0</td>
<td>AberDairy</td>
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<td></td>
</tr>
<tr>
<td>15.0</td>
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Heading date average for Aber HSG 4 is 3 June for central Britain.

When cutting for silage, aim to cut 5-10 days before average heading date for optimum quality.

Optimum spread of heading dates within mixtures for grazing and cutting results in better performance of the leys.

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**AberZeus: The best Aber HSG to date**

The Aber High Sugar Grass AberZeus is the latest top-performing variety from the award-winning IBERS Aberystwyth University breeding programme to enter the independent Recommended Grass and Clover Lists (England and Wales).

An intermediate diploid perennial ryegrass, AberZeus excels under grazing management, with an overall dry matter yield of 106% against control varieties and a D-value of 77.5. This combination of production and quality gives AberZeus an unrivalled ME yield of 107% of controls.

It is also a strong performer both early and late in the grass growing season, with spring production at 116% of controls and autumn production at 114% of controls. AberZeus has been bred for improved ground cover and persistency, alongside production and quality, and has good resistance to the common diseases of grassland.

The variety is one of the highest on the list for resistance to Crown Rust and early data shows it is also performing well against Drechslera.

**AberZeus is included in a number of Aber HSG mixtures for 2017.**
Longer lasting red clover underpins quality forage

Phil Cowcher, who farms beef and sheep with his parents across 500 acres (202ha) of part-owned, part-rented and part share-farmed organic farmland in Penrhyn, West Ceredigion, values the crop for its high yields of good-quality forage. Red clover is also important for fixing nitrogen, suppressing weeds and it leaves a good soil structure for following crops.

In the past red clover crops have been grown for three years, but moving to longer-lasting variety AberClaret - which typically lasts about 4-5 years – has brought significant improvements, Phil says.

"The new longer-lasting varieties have been a major breakthrough. It’s cheaper to grow because the establishment costs are spread over a longer time. We sow it as a mixture with grass, either with oats to combine, or with barley/pea whole crop. We lower the cereal seed rate to 55 kg/acre to ensure small seeds aren’t smothered, and find red clover leys no more difficult to establish than a normal grass ley."

### Aber Red 5 HSG Quality Silage

Aber Red 5 HSG offers a significant breakthrough in silage production, providing for the first time a mixture including 4-5 year persistency red clover.

Aber Red 5 HSG overcomes the normal restriction of red clover leys, extending the life of the red clover component beyond the normal 2-3 years up to five years with the inclusion of AberClaret.

It is also now time to rethink the grasses that are paired with red clover. AberClaret can last five years, so the grasses must too. Aber Red 5 therefore includes intermediate and late perennial ryegrass, including the latest Aber HSG varieties AberGreen HSG and AberGain HSG perennial ryegrasses which will also improve silage quality especially in the second cut.

#### Key benefits in summary

- Red clover with potential for five years persistency
- 100% Aber HSG perennial grasses
- Balance of diploid and tetraploid varieties compatible with long lasting red clover
- 150kgN/ha nitrogen fixed from red clover
- Reduced nitrogen losses to the environment
- Aber High Sugar Grasses enhance fermentation, especially when red clover is included

### Table: Kg/acre Variety Type Heading Date

<table>
<thead>
<tr>
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<td>4.0</td>
<td>AberGain HSG</td>
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<tr>
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<td>Red Clover</td>
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<tr>
<td>1.0</td>
<td>AberChianti</td>
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<tr>
<td>12.0</td>
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When cutting red clover for optimum quality silage, aim to cut when 25% of clover flowers show. Optimum spread of heading dates within mixtures for grazing and cutting results in better performance of the leys.

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The Cowcher family has seen the advantages of growing red clover on their farm for over a decade, but the introduction of long-lasting varieties has boosted the benefits of the crop even further.
New generation long term red clovers

One of red clover’s traditional shortcomings is its relatively short persistence, typically remaining in the sward for just two to three years when a longer productive life would make it more compatible with medium term leys.

Now, a new generation of red clovers is being bred at IBERS Aberystwyth University, with the first varieties AberClaret and AberChianti now on UK Descriptive Lists and commercially available in Germinal’s Aber Red 5 HSG mixture.

AberClaret and AberChianti are the first of a new generation of red clovers bred and selected by plant breeders at IBERS to last 4 years and longer in a cutting sward and to be significantly more tolerant of grazing by dairy animals. Dry matter yields in IBERS long term trials were in excess of 14,500kg of dry matter in the fourth year and averaged over 13,500kg in each year of the trial. Over the four years, AberClaret totalled around 60tDM/ha compared with 40-45tDM/ha from the controls.

With greater persistency of red clover remaining a key objective, the latest breeding work at IBERS is focused in particular on resistance to the soil borne pathogens Sclerotinia and stem nematode.

Medium / Long Term

Aber HSG 6 Tetraploid

Aber HSG 6 Tetraploid is a dual purpose cutting and grazing mixture comprising late heading tetraploid varieties that offer a very high yield and quality combination.

A compact heading date range in the first week of June makes this mixture ideal for very late first cuts. With the high ranking AberGain HSG, AberBite HSG and AberPlentiful HSG as its component perennial ryegrasses, this mixture provides access to some of the newest Aber High Sugar Grasses on the Recommended List.

Fig 17. Aber HSG 6 Tetraploid: Spread of heading dates

Fig 16. Aber HSG 6 Tetraploid: Heading date average for Aber HSG 6 is 6 June for central Britain.

Key benefits in summary
• Very high first cut yield and D-value
• Exclusively Aber High Sugar Grass tetraploid varieties
• Late heading varieties to ensure highest quality for later cuts
• High palatability and dry matter intakes
• Reduced nitrogen losses to the environment
• Suitable for cutting and rotational grazing

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Fig 16. Aber HSG 6 Tetraploid: Heading date average for Aber HSG 6 is 6 June for central Britain.

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• Exclusively Aber High Sugar Grass tetraploid varieties
• Late heading varieties to ensure highest quality for later cuts
• High palatability and dry matter intakes
• Reduced nitrogen losses to the environment
• Suitable for cutting and rotational grazing
Medium / Long Term

AberXtend HSG Extended Grazing

At last, you can extend your grazing season, without compromising persistence, grazing yield and grazing quality.

AberXtend HSG is the Aber HSG mixture for livestock farmers aiming to increase yields and lengthen the grazing season. The Recommended Lists in both the UK and Ireland show how varieties such as AberStar HSG, AberDart HSG and AberGain HSG top the lists for spring and autumn performance, but there is absolutely no compromise on the other main performance criteria, with top scores for grazing D-value, ME yield and overall dry matter yields. With the appropriate management, AberXtend HSG can perform to a high standard for 5 – 7 years.

<table>
<thead>
<tr>
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<th>Variety</th>
<th>Type</th>
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<tr>
<td>5.0</td>
<td>AberDart HSG</td>
<td>Perennial Ryegrass</td>
<td>24-May</td>
</tr>
<tr>
<td>5.0</td>
<td>AberZeus HSG</td>
<td>Perennial Ryegrass</td>
<td>26-May</td>
</tr>
<tr>
<td>4.0</td>
<td>AberGain HSG</td>
<td>Perennial Ryegrass (T)</td>
<td>04-Jun</td>
</tr>
<tr>
<td>1.0</td>
<td>AberPasture</td>
<td>White Clover Blend</td>
<td></td>
</tr>
<tr>
<td>15.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Heading date average for AberXtend HSG is 28 May for central Britain. When cutting for silage, aim to cut 5-10 days before average heading date for optimum quality. Optimum spread of heading dates within mixtures for grazing and cutting results in better performance of the leys.

Key benefits in summary

- Mixture averages an outstanding 109% of control varieties on the Recommended List for early grazing yield and 111% for autumn yield
- The best Aber HSG perennial grasses selected for spring and autumn yield
- Outstanding season-long yield and quality
- High palatability and dry matter intakes
- Reduced nitrogen losses to the environment

Rotation approach maximises grass productivity

Neil Perkins, who farms with his wife Lynda and father Roger at Dinas Island, Pembrokeshire, believes better grass utilisation by his sheep, made possible by rotational grazing, has helped improve grass productivity.

Recording and monitoring are crucial to success, as is regular reseeding with the best available grass and clover varieties, plus perennial chicory in some swards.

Neil aims to include three top intermediate perennial ryegrasses in his grazing mixtures, with D-values well in excess of 70 and with a tight heading date range for ease of management.

His current mixtures include the Aber High Sugar Grasses AberFarrell, AberMagic and AberGreen, whilst he is amongst the first in the country to grow the latest Aber HSG variety AberWolf.
His Galloway Farmhouse Cheese operation has been successful for 25 years, producing the renowned Cairnsmore sheep’s cheese amongst its range, but within the last year 90 spring calving heifers have added a new dimension to the business.

“We’ve started with 90 mainly Irish Friesian heifers and have ambitions to increase herd size to around 150 cows,” explains Alan. “It’s a grazing-based system, but as the heifers have all calved at two years old we are still having to supplement them to support growth and ensure they get back in calf. Our milk-from-forage performance will increase once the herd matures.”

Converting to organic in 2000, Millairies Farm near Newton Stewart is run across two blocks of land, each of around 52ha. One area is used for grazing and the second for producing grass and red clover silage. Generally about 10-12ha is reseeded annually, but this has been increased in recent years in preparation for the milking cows. The policy is usually to undersow grass with spring-sown wholecrop, and he selects mixtures containing Aber High Sugar Grasses for his longer term leys.

“We use Germinal’s organic Bio-Pasture mixture with white clover for our grazing ground,” adds Alan. “The high sugar diploids establish well and have good ground cover, producing strong regrowths that are particularly important in an organic rotational grazing system.”

He has also started using Germinal’s Bio-Red 5 mixture for his silage leys, which includes the five-year red clover AberClaret along with Aber High Sugar Grass perennial ryegrasses. Apart from providing high quality protein-rich silage for the cows, the aftermaths are valuable for fattening lambs in the autumn.

Maximising homegrown forage to produce in-demand quality cheeses and organic milk is, for Alan Brown, the route to a sustainable business.
Overseeding

Where a full reseed is impractical or unwarranted, short term productivity can be improved through a number of different overseeding methods. When overseeding, it pays to use the best available varieties that have been selected specifically for the purpose.

Key benefits in summary
• 100% tetraploids for rapid establishment
• Perennial ryegrasses for persistency
• High ranking Aber HSG varieties

Key benefits in summary
• 2-3 years, intensive finishing mixture
• Red clover can contribute up to 150kgN/ha
• Full production from May to September
• High protein forage suitable for finishing early lambs

Key benefits in summary
• As Lamb Finisher, but with the benefit of white clover to improve ground cover during late season
• 2-3 years duration

Key benefits in summary
• 3-4 year medium term ley
• Ideal for lambs, beef youngstock – finishing (or calves) or flushing ewes
• The grasses in this mixture offer improved grazing and ground cover in autumn

Key benefits in summary
• Rapid establishment
• High yielding under cutting
• New festulolium for increased rooting

Key benefits in summary
• 3-4 year medium term ley
• Ideal for lambs, beef youngstock – finishing (or calves) or flushing ewes
• The grasses in this mixture offer improved grazing and ground cover in autumn

### Puna II perennial chicory mixtures

<table>
<thead>
<tr>
<th>Kgable</th>
<th>Variety</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.00</td>
<td>Puna II</td>
<td>Perennial Chicory</td>
</tr>
<tr>
<td>2.00</td>
<td>AberClaret</td>
<td>Red Clover</td>
</tr>
<tr>
<td>1.25</td>
<td>Merriot</td>
<td>Red Clover</td>
</tr>
<tr>
<td>5.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key benefits in summary**
• 2-3 years, intensive finishing mixture
• Red clover can contribute up to 150kgN/ha
• Full production from May to September
• High protein forage suitable for finishing early lambs

<table>
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<tr>
<th>Kgable</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2.00</td>
<td>Puna II</td>
<td>Perennial Chicory</td>
</tr>
<tr>
<td>1.50</td>
<td>Merriot</td>
<td>Red Clover</td>
</tr>
<tr>
<td>1.00</td>
<td>AberClaret</td>
<td>Red Clover</td>
</tr>
<tr>
<td>1.00</td>
<td>Aran</td>
<td>White Clover</td>
</tr>
<tr>
<td>5.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key benefits in summary**
• As Lamb Finisher, but with the benefit of white clover to improve ground cover during late season
• 2-3 years duration

<table>
<thead>
<tr>
<th>Kgable</th>
<th>Variety</th>
<th>Type</th>
</tr>
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<tbody>
<tr>
<td>2.00</td>
<td>AberEcho HSG</td>
<td>Hybrid Ryegrass (T)</td>
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<tr>
<td>2.00</td>
<td>AberEve HSG</td>
<td>Hybrid Ryegrass (T)</td>
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<td>4.00</td>
<td>AberMagic HSG</td>
<td>Perennial Ryegrass</td>
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<tr>
<td>1.75</td>
<td>Puna II</td>
<td>Perennial Chicory</td>
</tr>
<tr>
<td>1.50</td>
<td>Aran</td>
<td>White Clover</td>
</tr>
<tr>
<td>11.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key benefits in summary**
• 3-4 year medium term ley
• Ideal for lambs, beef youngstock – finishing (or calves) or flushing ewes
• The grasses in this mixture offer improved grazing and ground cover in autumn

<table>
<thead>
<tr>
<th>Kgable</th>
<th>Variety</th>
<th>Type</th>
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</thead>
<tbody>
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<td>Perennial Ryegrass</td>
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<tr>
<td>3.00</td>
<td>AberMagic HSG</td>
<td>Perennial Ryegrass</td>
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<td>4.00</td>
<td>AberGreen HSG</td>
<td>Perennial Ryegrass</td>
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<td>4.30</td>
<td>AberKewn HSG</td>
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<tr>
<td>0.70</td>
<td>Puna II</td>
<td>Perennial Chicory</td>
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<tr>
<td>1.00</td>
<td>AberPasture</td>
<td>White Clover Blend</td>
</tr>
<tr>
<td>15.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Heading date average for Long Term Livestock Grazer is 27 May for central Britain.

**Key benefits in summary**
• 3-4 year medium term ley
• Ideal for lambs, beef youngstock – finishing (or calves) or flushing ewes
• The grasses in this mixture offer improved grazing and ground cover in autumn
The leading perennial chicory for UK farmers

Puna II is the leading perennial chicory variety, selected through a long term breeding programme in New Zealand for its nutritive value, productivity, palatability and persistency.

It is a broad-leaved perennial forage crop that can be grown in the UK as a pure stand or as a key part of mixed swards with clover, or grass and clover, for medium-long term rotational grazing (2-5 year persistency). Perennial chicory should not be confused with short-lived common chicory grown unsuccessfully previously.

Selection strategy in breeding Puna II has included tolerance to the fungal disease Sclerotinia, which causes plant death, and an erect growth habit to improve compatibility with ryegrass.

**Key benefits of Puna II**
- Outstanding animal performance (e.g. lamb growth rates of 300-400g/day)
- Yields up to 15tDM/ha in a season; crude protein up to 25%; D-value 70-80
- High mineral content, including zinc, potassium and copper
- Good tolerance to drought, acid soils and major pests
- Rapid regrowth after grazing
- Reduces the effect of internal parasites
- Provides high quality feed through the summer
- Does not cause bloat

AberClover Blends

The roles of white and red clovers in modern sustainable livestock farming are growing as new varieties offering higher yields and greater persistency become available.

Varieties of white clover bred at IBERS Aberystwyth University lead the way and are now, for example, achieving optimum targets of a 30-35% contribution to total sward dry matter under a range of management systems.

Grass and clover breeding at Aberystwyth has always maintained a strong affinity with real agricultural practice, which means selection and testing takes into account performance in the silo and in the rumen, as well as in the field under animal grazing and/or cutting regimes. This co-ordinated approach ensures the new varieties meet farmers’ needs.

Aber grass and clover mixtures are offered as standard with a recommended AberClover blend. However, specific blends of white or red clover can be requested to suit a particular farming system or requirement.

**Benefits of AberClover Blends**
- Boosts output of milk and meat from forage
- Improves soil structure
- Improves the quality of grazing
- Helps to maintain a balanced grass/clover sward
- Performs reliably on most soil types and under most management systems
- Tolerates moderately high applications of nitrogen fertiliser
- Reduces fertiliser requirements
Lucerne

**Varieties selected for UK conditions**

**TIMBALE**
- Excellent nutritional value (thin stemmed with good leaf retention)
- Good disease resistance
- High yielding

**GALAXIE**
- Exceptional yields
- Good disease resistance

**GALAXIE MAX**
- A blend of Timbale and Galaxie
- Two of the leading lucerne varieties with cold tolerance for northern European climates

**Pre-inoculated and treated seed**

Timbale, Galaxie and Galaxie Max from Germinal are pre-inoculated and treated with SAS Energy:
- Unique Seed Applied Solution (SAS Energy) to improve lucerne establishment
- Multi-layered permeable coating with 100% active ingredients
- Essential minerals and trace elements specific to lucerne requirements
- Stimulates early vigour and improves root and leaf development

**Optimum seed rate**

- Timbale, Galaxie and Galaxie Max are sold in Precidose packs
- Precidose ensures optimum plant population and prevents problems due to over or under seeding
- Easy to use; 2 Precidose packs per hectare in good conditions
- Increase to 2.3 packs/ha for later sowing or heavier conditions

**Proven performance**

In trials, SAS Energy treated seed drilled at Precidose rates achieved:
- 14% INCREASE IN PLANT ESTABLISHMENT
- 6% INCREASE IN FIRST CUT DRY MATTER YIELDS

Improved development of roots and foliage is seen in the Lucerne seedlings on the right as a result of Precidose seed treatment

**Planning your brassica crops**

**When do you require your brassica crop?**

<table>
<thead>
<tr>
<th>Regrowth Potential</th>
<th>Sowing to Grazing Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil Vollenda Avon</td>
<td>8 Weeks Avon</td>
</tr>
<tr>
<td>High Swift Avon</td>
<td>10 Weeks Redstart</td>
</tr>
<tr>
<td>High Vollenda</td>
<td>12 Weeks Vollenda</td>
</tr>
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</table>

**Regrowth Potential**
- *Rate and extent of regrowth depends on weather conditions.*

<table>
<thead>
<tr>
<th>Winter Tolerance</th>
<th>Autumn/ Winter</th>
<th>Summer/ Early Autumn</th>
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</thead>
<tbody>
<tr>
<td>Low Vollenda Avon</td>
<td>Oct - Feb</td>
<td>Jan - Sep</td>
</tr>
<tr>
<td>Moderate Maris Kestrel</td>
<td>Stubble turnip</td>
<td>Forage rape</td>
</tr>
<tr>
<td>High Swift Avon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Swift Avon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Maris Kestrel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Maris Kestrel</td>
<td></td>
<td></td>
</tr>
</tbody>
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Improved development of roots and foliage is seen in the Lucerne seedlings on the right as a result of Precidose seed treatment
Forage brassica options

Maris Kestrel
Kale

Maris Kestrel is established as the leading kale variety in the UK and is suitable for all classes of stock.

Sow at 2-3kg/acre from May to the end of June. Feed from July to the following March.

Main uses
- Ideal for out-wintering
- Good later summer/early autumn feed for cattle or sheep
- Solution to late season grazing deficits

Key benefits
- Outstanding leaf-to-stem ratio
- High whole plant D-value
- Vigorous early growth
- Resistant to lodging
- Good winter hardiness
- Long utilisation period
- Available with Cruiser SB

Bittern
Kale

Bittern is a medium height kale with the versatility to be used either for grazing or as a game cover crop.

Sow at 2-3kg/acre from May to the end of June. Feed from September to the following March.

Main uses
- Maintenance for dry cows
- Game cover
- Cattle grazing following game cover use

Key benefits
- Good leaf-to-stem ratio (44-48% leaf)
- Excellent palatability (high stem sugar content)
- Winter hardy with very good frost tolerance
- Added versatility due to club root resistance
- Medium height with good lodging resistance

Swift
Hybrid brassica

Swift is the first of a revolutionary range of interspecies (rape x kale) hybrids developed in New Zealand to provide a new generation of flexible and cost effective forage crops.

Sow at 2-3kg/acre from May to the end of August. Feed from July to the following March.

Main uses
- High energy grazing for cattle and sheep
- Summer, autumn and winter grazing
- Ideal for out-wintering systems

Key benefits
- Fast and vigorous growth
- Winter hardiness
- Regrowth potential
- Good late season yield potential
- High energy and good protein source

Redstart
Hybrid brassica

Redstart is from the same breeding line as Swift and offers similarly flexible and cost effective solutions to year-round quality forage supply, but with higher feed quality.

Sow at 2-3kg/acre from May to the end of August. Feed from July to the following March.

Main uses
- High energy grazing for cattle and sheep
- Summer, autumn and winter grazing
- Ideal where fast growth is required, such as upland situations

Key benefits
- Very rapid and vigorous growth
- Winter hardiness
- Regrowth potential
- Good late season yield potential
- High energy and good protein source
Forage brassica options

Avon
Forage rape

Avon is a forage rape variety with outstanding dry matter yields suitable for grazing livestock.

Drill at 2.5kg/acre (or broadcast at 4kg/acre) from March to July. Feed from June to December.

Main uses
• Summer or late season grazing

Key benefits
• Recorded 130% of control varieties in National List trials
• Exceptional resistance to club root and good resistance to mildew
• Favourable leaf-to-stem ratio

Vollenda
Stubble turnip

Vollenda is a high yielding stubble turnip offering cost effective feeding solutions in summer, autumn or winter for sheep or cattle.

Drill at 2kg/acre (or broadcast at 3kg/acre) from March to August. Feed from June to December.

Main uses
• Catch crops for overcoming summer grazing shortfalls
• Versatile autumn/winter grazing that reduces concentrate feeding period

Key benefits
• Easy to establish (undersown or scratched into stubbles)
• Early vigour variety suitable for May sowing (July feeding)
• Winter hardy variety ideal for later drilling (Nov – Jan feeding)
• Good resistance to bolting

Appin
Grazing turnips

Appin is a fast growing leafy grazing turnip providing a rapid source of palatable, easy-to-digest fodder for sheep and cattle.

Drill at 2kg/acre (or broadcast at 3kg/acre) from March to mid September. Feed from May to December.

Main uses
• Catch crops for overcoming summer grazing shortfalls
• Versatile autumn/winter grazing that reduces concentrate feeding period
• Autumn / winter brassica for worm free lamb finishing
• Extended grazing for cattle

Key benefits
• Vigorous establishment and quick maturity
• Wide sowing window
• Multi-crowned with excellent regrowth potential
• Good root anchorage

Triumph
Swede

Triumph is a very high yielding, yellow-fleshed, first crop swede, suitable as over-winter grazing for all classes of stock.

Drill from mid-May to the end of June at 250g/acre (precision drilled). Graze from November through to March.

Main uses
• High energy winter grazing for cattle and sheep

Key benefits
• Very high dry matter yields
• Winter hardy
• Good dry rot and mildew tolerance
• Available with Cruiser seed treatment
Brassica mixtures are being used increasingly by livestock farmers and are an effective way of tailoring a grazing crop more precisely to specific circumstances.

Individual crops including kale, forage rape and turnips have their own strengths but also grow well in combination and, as such, offer advantages in a similar way to herbage mixtures.

• Increased forage choice for livestock
• Higher dry matter intakes
• Greater overall production per hectare

<table>
<thead>
<tr>
<th>Mixture</th>
<th>Weight</th>
<th>Main use</th>
<th>Key features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bittern kale</td>
<td>1.0kg</td>
<td>Out-wintering for all ruminant livestock</td>
<td>A winter hardy blend of palatable fodder, Yield potential of over 12 tonnes/ha</td>
</tr>
<tr>
<td>Swift hybrid brassica</td>
<td>1.0kg</td>
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<td></td>
</tr>
</tbody>
</table>

**Winter Feed:**

<table>
<thead>
<tr>
<th>Mixture</th>
<th>Weight</th>
<th>Main use</th>
<th>Key features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swift hybrid brassica</td>
<td>0.75kg</td>
<td>Out-wintering for sheep or cattle</td>
<td>Fast growing fodder for late sowing</td>
</tr>
<tr>
<td>Redstart hybrid brassica</td>
<td>0.75kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appin grazing turnip</td>
<td>0.65kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maris Kestrel kale</td>
<td>0.10kg</td>
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**Late Sown Winter Feed:**

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<th>Mixture</th>
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<th>Main use</th>
<th>Key features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appin grazing turnip</td>
<td>0.5kg</td>
<td>Early lamb finishing</td>
<td>A blend of fast growing grazing turnips and forage rape with the added high yield, quality and regrowth potential of Swift</td>
</tr>
<tr>
<td>Swift hybrid brassica</td>
<td>1.0kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avon rape</td>
<td>0.9kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maris Kestrel kale</td>
<td>0.1kg</td>
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</table>

**Summer Multigraze:**

<table>
<thead>
<tr>
<th>Mixture</th>
<th>Weight</th>
<th>Main use</th>
<th>Key features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swift hybrid brassica</td>
<td>1.25kg</td>
<td>Late lamb finishing, Flushing ewes, Improving late season grazing when grass growth is declining</td>
<td>A blend that combines the winter hardiness and quality feed value of Swift for late grazing and the rapid establishment of Appin grazing turnip</td>
</tr>
<tr>
<td>Appin grazing turnip</td>
<td>0.90kg</td>
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<td></td>
</tr>
<tr>
<td>Maris Kestrel kale</td>
<td>0.10kg</td>
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</tr>
</tbody>
</table>

**Autumn Multigraze:**

Brassica mixtures boost farm productivity

Out-wintering contract reared dairy heifers on brassicas fits with Marc Jones’ long-term plan to improve grass production, reduce input costs and increase profits at Trefnant Hall Farm, Powys.

By using Maris Kestrel kale as a break crop before grassland re-seeding he has been able to rejuvenate swards, extend grazing and further drive down costs. Doing so is helping to improve profitability across both sheep and heifer rearing enterprises.

Marc typically takes on around 300 dairy heifers a year to contract year from 8-9 months of age until they are ready to calve at 24 months old. “Heifers go straight onto kale and big baled silage with a grass run-back when they arrive in November,” explains Mr Jones. “We introduce them onto the kale gradually over 10 days at the start as they take a while to get used to it.”

The aim is for stock to get 50% of their diet from kale and 50% from big bale silage. Feeding in such a way keeps costs down, with kale costing about 5-6p/kg DM and big bales 11-12p/kg DM, compared to up to 30p/kg DM for concentrate.

“For the smaller heifers we aim for dry matter intakes of 6kg/day, increasing to 7-8kg a day by the end of the winter,” he says.

Feed is carefully budgeted to ensure correct allocation of kale and silage. A selection of bales are analysed and weighed and kale requirements are assessed according to field size.

Correct rationing is crucial to ensure heifers reach target weight for service at about 14 months. This helps meet contract requirements for stock to calve at 24 months.
Anaerobic digestion (AD) is a growth area in renewable energy with increasing numbers of farm businesses involved with their own units or by growing feedstock.

The use of grass leys as a feedstock is attracting interest due to the range of advantages offered:

- Grass as a crop is relatively cheap and easy to grow in our climate and soil types
- It is cost effective compared to other biogas fuels (see Fig. 33)
- Equipment and infrastructure to grow and handle this feedstock is already in place
- Grass can be used fresh (offering the highest rate of gas production) and would be cut and carried on a rotational basis; it can also be stored and used as silage
- Medium and long term grass leys offer a more environmentally sustainable option than crops requiring annual cultivations
- Grass leys allow more opportunity to spread the waste products from the digesters, whether that is liquid or solid, without the need to plough back under
- Blackgrass control:
  - Medium to long term grass leys cut three or more times a year will reduce the blackgrass seed production; by constantly cutting the ley there is little if any seed returning to the soil
  - The viability of old undisturbed blackgrass seed within soil reduces by 70% per annum, meaning after the 3 plus years of grassland the blackgrass seed populations are reduced dramatically
  - 65% to 75% of blackgrass volunteers germinate in the autumn, so establishing your grass ley in the spring (even under-sown to a cereal crop) will help to further reduce the blackgrass populations

As with the supply of feed for livestock, where well managed Aber HSG leys are the cheapest source of nutrition for meat and milk production, Aber HSG offers great potential for biogas production.

Studies carried out at IBERS show that Aber HSG ryegrasses perform well compared to general grassland mixtures. All the Aber HSG varieties out-performed mixed grassland with the conclusion that higher water soluble carbohydrate content in grass has a positive effect on both the yield and rate at which biogas is produced.

To help answer outstanding questions, Germinal is setting up further research at IBERS comparing Aber HSG varieties with alternative feedstocks that have a range D-values and at varying harvest dates.

Aber High Sugar Grass varieties that have been bred for higher water soluble carbohydrate (sugar) content and rank high for D-value offer the ideal combination of characteristics for an AD feedstock, whether ensiled or as a fresh crop.

**Aber HSG mixtures for AD**

### AD Short term:

<table>
<thead>
<tr>
<th>Kg/acre</th>
<th>Variety</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>AberEcho HSG</td>
<td>Hybrid Ryegrass (T)</td>
</tr>
<tr>
<td>5.0</td>
<td>AberEve HSG</td>
<td>Hybrid Ryegrass (T)</td>
</tr>
<tr>
<td>5.0</td>
<td>AberNiche Festulolium</td>
<td></td>
</tr>
</tbody>
</table>

14.0 kg

### AD Medium term:

<table>
<thead>
<tr>
<th>Kg/acre</th>
<th>Variety</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td>AberEcho HSG</td>
<td>Hybrid Ryegrass (T)</td>
</tr>
<tr>
<td>8.0</td>
<td>AberMagic HSG</td>
<td>Perennial Ryegrass</td>
</tr>
</tbody>
</table>

14.0 kg

### AD Long term:

<table>
<thead>
<tr>
<th>Kg/acre</th>
<th>Variety</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.0</td>
<td>AberMagic HSG</td>
<td>Perennial Ryegrass</td>
</tr>
<tr>
<td>5.0</td>
<td>AberBite HSG</td>
<td>Perennial Ryegrass</td>
</tr>
</tbody>
</table>

14.0 kg

---

**Fig 33. Comparative costs of methane production:**

<table>
<thead>
<tr>
<th>Estimated Fresh Weight (Tonnes/Acre/Year)</th>
<th>Cost £/Acre</th>
<th>Methane M³/Tonne</th>
<th>Methane £/Acre</th>
<th>Cost £/M³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Barley (35%DM)</td>
<td>£480.00</td>
<td>108</td>
<td>10800</td>
<td>£0.44</td>
</tr>
<tr>
<td>Spring Triticale (35%DM)</td>
<td>£485.00</td>
<td>108</td>
<td>10800</td>
<td>£0.47</td>
</tr>
<tr>
<td>Winter Hybrid Rye (35%DM)</td>
<td>£535.00</td>
<td>108</td>
<td>10800</td>
<td>£0.35</td>
</tr>
<tr>
<td>Hybrid Ryegrass (25%DM)</td>
<td>£635.00</td>
<td>90</td>
<td>23400</td>
<td>£0.27</td>
</tr>
</tbody>
</table>

---

**Fig 34.** Aber HSG mixtures for AD

**Fig 35.** AD Short term:

**Fig 36.** AD Medium term:

**Fig 37.** AD Long term:

T = Tetraploid
Forage Seed 2016
Leisure Amenity Further information sourcesForage Seed 2017

Germinal supplies a wide range of amenity mixtures for equestrian, sports grounds, landscaping, turf and conservation. These mixtures bring together species to suit the different applications. All varieties are BSPB listed.

Horse Paddock
A resilient mixture providing season-long nutritional grazing and the potential for hay production. The high density of ground cover helps to resist poaching.

Allsport Ryebend
A very resilient and rapidly establishing sward suitable for all new sports pitches and for the repair of existing grounds.

Popular Hardwearing
An attractive and resilient sward that establishes quickly and is suitable for lawns, parks and sports pitches.

Emerald Multiscape
A high quality turf with high shoot density and year-round greenness, suitable for all soil types.

Low Maintenance Fineturf
A fine textured and resilient sward with good winter colour, and reduced mowing requirement.

Shaded Areas
A fine leaved sward with good ground cover, suitable for dry, shaded and low nutrient areas.

Prestige Golf & Bowling Greens
A dense disease resistant sward with uniform surface that withstands close mowing and looks attractive throughout the season.

Wildflower Conservation
Contains cornfield annuals to provide quick establishment and first year colour. Perennial species provide colour and persistency in future years.

WF1 Flowering Meadow
Rapid establishing to produce a first-year display and with perennials for longer term colour and persistency.

WFG2 Flowering Meadow
Combines the wild flora species of WF1 with ornamental grasses to provide a grassland meadow mixture suitable for acid soils.

WFG6 Heavy Clay Soils
Varieties selected for their suitability to heavy clay soils. Extra attention is required when preparing seedbeds in heavy clay soils to ensure optimum soil moisture for a medium tillth.

WFG9 Wetland and Pond Areas
Suitable for aquatic habitats and damp low lying sites, edge of ponds, rivers and ditches. Avoid establishment when there is risk of flooding.

WF10 Cornfield Annuals
A mixture for recreating the colour of cornfield annuals, once a feature of traditional farming areas. Ideal for sowing on its own or supplementing perennial mixtures that are slower to establish.

Leisure Amenity mixtures

Find out more

Should you require any more information or to request a selection of free brochures and technical guides please visit our website:

www.germinal.com

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The mixtures in this brochure are correct at the time of going to press and the supplies of the varieties used in the mixtures should be adequate for this season. If however we do run short of some, they will be replaced by the next best variety on the Recommended List.