2019

A PRACTICAL GUIDE TO GAME COVER,
ENVIRONMENTAL, GREEN MANURE AND FORAGE SEEDS

Openfield™

Seed, fertiliser, grain, storage.

Welcome

YOUR COUNTRYSIDE 2019

A warm welcome to all who regularly receive our spring catalogue and those who are reading it for the first time, we hope you find it informative.

2018 has been a year of extreme weather, with the later cold, wet spring and the extremely dry summer creating many challenges for most.

Our team of experienced technical advisors shared specialist knowledge to help tailor individual requirements through this difficult season. We continue to expand our diverse range of species and choice of specialist mixtures, bringing Environmental Stewardship, Green Manuring, Game Cover, and Forage Crops together in one comprehensive catalogue.

RESEARCH AND DEVELOPMENT

All the species marketed by DLF Seeds Ltd. are trialled at our Gloucestershire site. In consultation with many of our customers, we trial and evaluate many different types of products and mixture prescriptions. We believe this is the most important part of the process as we procure seed from more than a dozen countries, so testing and evaluating performance under UK conditions is vital. Our customers may rest assured that they are dealing with a forward thinking company which invests heavily in R&D, majoring in forage crops but also focusing on many other crop species. Our Product, Species and Mixture of the year have been carefully selected using customer feedback.

Our main goal is to ensure that our customers receive the best possible product portfolio we can supply for the stewardship schemes and the Your Countryside catalogue continues to offer valuable technical information and advice on a diverse range of game cover, environmental stewardship mixtures, root crops and cover crops products.

However, if you are unable to find exactly what you are looking for within this catalogue, please contact your local technical expert who will be able to assist and advise you on your specialist mixture.

We gratefully acknowledge all photographic contributions.

NEW FOR 2019

THE LATEST PRODUCTS

NEW UPDATES

NEW VARIETIES, MIXTURES

WE WORK CLOSELY WITH:

Natural England, RSPB, Campaign for the Farmed Environment, Game and Wildlife Conservation Trust, Bumblebee Conservation Trust and Floral Locale.

Promoting the restoration of wild plants and habitats for biodiversity, landscapes and people

www.floralocale.org

Supporting farmers to help their local wildlife

Farm Wildlife provides farmers and advisers with best practice guidance on helping wildlife on their farms and inspiring them to take action. Farm Wildlife guidance has been produced by a partnership of some of the UK's leading conservation organisations and the farmers they work with.

The 6 point plan to manage arable farms for wildlife provides advice on how to enhance:

1. Existing wildlife-rich areas
2. Field boundaries
3. Flower-rich habitats
4. Wet features
5. Seed-rich habitats
6. Cropped areas

For more information go to **www.farmwildlife.info**




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ICON GUIDE

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Countryside Stewardship

Countryside Stewardship (CSS) provides incentives for land managers to look after their environment. CSS is open to all eligible farmers, woodland owners, foresters and land managers through a competitive application process. It will replace Environmental Stewardship, The English Woodland Grant Scheme and capital grants from the Catchment Sensitive Farming. This new scheme will be delivered by Natural England, the Forestry Commission and the Rural Payments Agency.

The main priority for Countryside Stewardship is biodiversity and water quality. The scheme will also help to improve: flood management, the historic environment, landscape character, genetic conservation, educational access and climate change adaptation and mitigation. It will be more targeted and focused than previous schemes. Both Higher and Mid Tier agreements will use the same 'targeted' approach as current Higher Level Stewardship agreements.

The new scheme will help:

- WILDLIFE AND NATURE
  By restoring habitats, protecting hedges, providing food and nesting resources for birds, insects and other animals and creating farmed areas for rare flowering plants
- POLLINATORS
  By providing pollen and nectar sources and nesting places. Farmers will be able to provide the right resources for pollinators where they are most needed
- FORESTRY
  By funding the planting of new trees and supporting the management of woodlands
- WATER/FLOODING
  Making water cleaner and reducing risk of flooding by supporting changes to farming practice such as crop management, improving infrastructure and creating woodland

Countryside Stewardship has 3 main elements:

1. HIGHER TIER (Similar to current Higher Level Stewardship)
   The Higher Tier is for the most environmentally important sites and woodlands. These will usually be in places that need complex management such as habitat restoration, woodland creation or tailored measures for priority species
2. MID TIER (Replaces Entry Level Stewardship)
   The Mid Tier aims to address widespread environmental issues, such as reducing diffuse water pollution or improving the farmed environment for farmland birds and pollinators. Applicants will be encouraged to choose options that help achieve the environmental priorities that are important in their wider area. This means that environmental benefit will not just be on individual holdings but more widespread
3. LOWER TIER (Capital Grants)
   The Lower Tier targets grants for improving water quality, hedges and boundaries, tree health issues and woodland management plans

www.gov.uk/environment/countryside-stewardship

Championing the Farmed Environment (CFE)

CFE encourages farmers to implement more environmental measures voluntarily, and adopt best practice more generally. The key messages are to retain and take pride in what you have already done and enhance your Ecological Focus Areas, especially EFA Fallow, wherever possible. This helps the environment without impacting on the farm business and is still possible despite the ban on plant protection products during the EFA fallow period (1 Jan – 30-June).

If you have an expiring Stewardship agreement it is probably worth retaining the options as they are already established and are probably on less productive areas of the farm. This is particularly relevant with current crop prices and growing costs not going in the same direction. Retaining buffer strips will help the environment and make fieldwork easier. Established options help birds and pollinators, and can be used as EFA fallow options. Awkward corners, wet areas and small fields used for these fallow options with good management will deliver substantial benefit for wildlife and the environment.

Existing Entry or Higher Level Stewardship Schemes (ELS and HLS) options may also be used towards your EFA requirement through the fallow or buffer strip options as well as cover crop management. Check that the management requirements of both schemes are met. ELS's that started after 1st January 2012 may be affected by double funding and Natural England will have written to you explaining the choices.

Championing the Farmed Environment (CF

T: 024 7685 85255
E: cfe@nfu.org.uk
www.cfeonline.org.uk

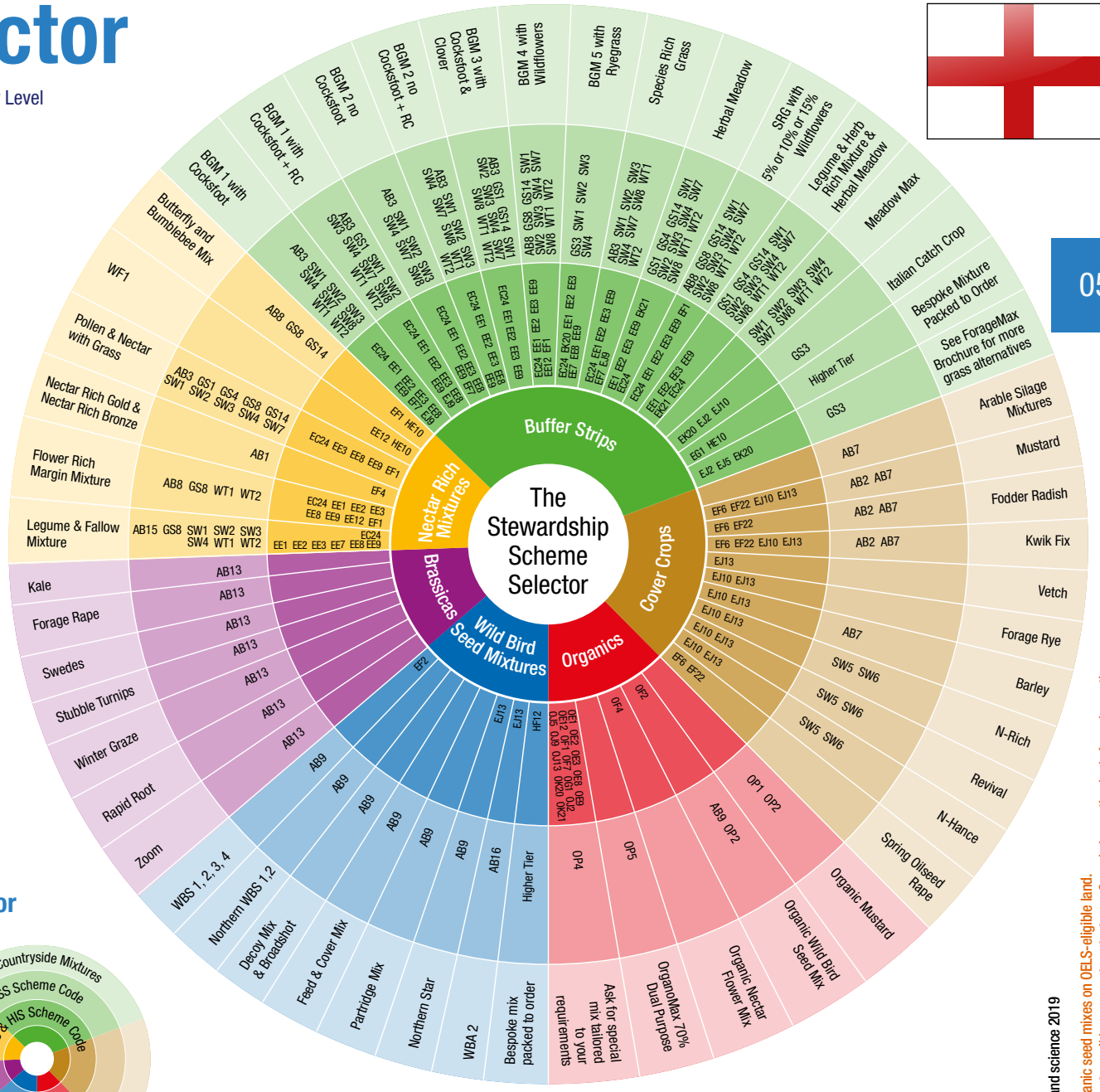
CFE
Championing the Farmed Environment

Stewardship Selector

Entry Level Stewardship selector with options that are also available under Higher Level Stewardship Schemes and Countryside Stewardship Scheme.

Countryside Stewardship Scheme Description			
CSS Higher Tier	**CSS Mid Tier**	**CSS Code**	**CSS Option Title**
Arable			
✓	✓	AB1	Nectar flower mixture
✓	✓	AB2	Basic overwinter stubble
✓	✓	AB3	Beetle banks
✓	✓	AB7	Wholecrop cereals
✓	✓	AB8	Flower-rich margins & plots
✓	✓	AB9	Winter bird food
✓	✓	AB13	Brassica fodder crop
✓	✓	AB15	Two year sown legume fallow
✓	✓	AB16	Autumn sown bumblebird mix
Grassland			
✓	✓	GS1	Take field corners out of field management
✓	✓	GS3	Ryegrass seed-set as winter food for birds
✓	✓	GS4	Legume and herb-rich swards
✓		GS8	Creation of species-rich grassland
✓		GS14	Creation of grassland for target features
Organic			
✓	✓	OP1	Overwintered stubble
✓	✓	OP2	Wild bird seed mixture
✓	✓	OP4	Multi-species ley
✓	✓	OP5	Undersown cereal
Soil and Water			
✓	✓	SW1	4-6 m buffer strip on cultivated land
✓	✓	SW2	4-6m buffer strip on intensive grassland
✓		SW3	In-field grass strips
✓	✓	SW4	12-24m watercourse buffer strip on cultivated land
✓	✓	SW5	Enhanced management of maize crops
✓	✓	SW6	Winter cover crops
✓	✓	SW7	Arable reversion to grassland with low fertiliser input
✓	✓	SW8	Management of intensive grassland adjacent to a watercourse
Wetlands			
✓	✓	WT1	Buffering in-field ponds and ditches in improved grassland
✓	✓	WT2	Buffering in-field ponds and ditches in arable land

ELS & HLS Description			
ELS Code	**HLS Code**	**OELS Code***	**ELS & HLS Description**
Options for trees and woodland			
EC24			Hedgerow tree buffer strips on cultivated land
Options for buffer strips			
EE1		OE1	2m Buffer strips on cultivated land
EE2		OE2	4m Buffer strips on cultivated land
EE3		OE3	6m Buffer strips on cultivated land
EE8		OE8	Buffering in-field ponds in arable land
EE9		OE9	6m buffer strips on intensive grassland next to a watercourse
	HE10		Floristically enhanced grass buffer strips (non-rotational)
EE12		OE12	Supplement to add wildflowers to field corners & buffer strips
Options for arable land			
EF1		OF1	Management of field corners
EF2		OF2	Wild bird seed mixture
EF4		OF4	Nectar flower mixture
EF6		OF6	Overwintered stubble
EF7		OF7	Beetle banks
	HF12		Enhanced wild birdseed mix plots (rotational or non- rotational)
EF22			Extended overwintered stubble
Options to encourage a range of crop types			
EG1		OG1	Under sown spring cereals
Options to protect soil and water			
EJ2		OJ2	Management of maize crops to reduce soil erosion
EJ5		OJ5	In-field grass areas to prevent erosion and run-off
EJ9		OJ9	12m buffer strips for watercourses on cultivated land.
EJ10			Enhanced mgmt. of maize crops to reduce soil erosion & run off
EJ13		OJ13	Winter cover crops
Options for grassland outside the severely disadvantaged areas (SDAs)			
EK20		OK20	Ryegrass seed-set as winter/ spring food for birds
EK21		OK21	Legume and herb-rich swards



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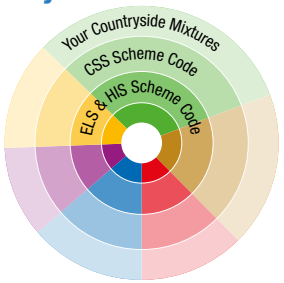


DISCLAIMER: Any information provided in this table is given in good faith and to the best of our knowledge. If you would like further advice please contact your local Natural England Advisor.

* Use only organic seed mixes on OELS-eligible land. Where this is not possible, you must contact your Organic Inspection body for a derogation.

Wild Bird Seed Mixtures

"WBS2 is an essential part of our HLS agreement, situated close to Lower Derwent Nature Reserve we are in a designated target area. We plant 10 ha of WBS2 and having a mixture that lasts two years fits well with our crop rotation and offers us flexibility.

The Goldeneye Kale developed superbly in the second year, giving the birds plenty of cover whilst allowing them to move freely under the canopy, forming vital areas of game cover for our shoot.

We give the crops generous applications of fertiliser in the spring as nutrition is an important factor when establishing and maintaining game cover."

Nicholas Hobson, Woodhouse Grange, Yorkshire. October 2018

SPRING SOWN MIXTURES

WBS 1 (AB9) 1 Year Spring Sown
Attracts Tree Sparrows

60%	Spring Barley
30%	Spring Triticale
5%	White Millet
3%	Fodder Radish
2%	Red Millet
100%	

Sowing rate 40kg/ha
Pack size 20kg

WBS 2 (AB9) 1 - 2 Year Spring Sown
Attracts Grey Partridge

30%	Spring Triticale
25%	Spring Barley
25%	Spring Wheat
7%	Kale
4%	Fodder Radish
4%	White Millet
3%	Quinoa
2%	Red Millet
100%	

Sowing rate 40kg/ha
Pack size 20kg

WBS 3 (AB9) 1 Year Spring Sown
Attracts Finches & Buntings

30%	Spring Triticale
25%	Spring Barley
25%	Spring Wheat
8%	White Mustard
8%	Linseed
4%	Forage Rape
100%	

Sowing rate 40kg/ha
Pack size 20kg

Treatment Some species may be treated

WBS 4 (AB9) 1 Year Spring Sown
Attracts Finches & Buntings

30%	Spring Barley
25%	Spring Wheat
15%	Spring Triticale
8.5%	Dwarf Sorghum
7%	White Millet
5%	Linseed
4%	Japanese Reed Millet
3%	Red Millet
2.5%	Gold of Pleasure
100%	

Sowing rate 40kg/ha
Pack size 20kg

WBS 4 - Herbicide tolerant, but please discuss with your agronomist for current specific products and recommendations.

SPRING SOWN MIXTURES

Feed & Cover Mixture (AB9)

24%	Spring Barley
24%	Spring Triticale
15%	Spring Wheat
10%	Spring Oats
7%	Dwarf Sorghum
6%	White Millet
5%	Linseed
3%	Japanese Reed Millet
2.5%	Red Millet
2.5%	Gold of Pleasure
1%	Quinoa
100%	

Sowing rate 40kg/ha
Pack size 20kg

ORGANIC WILD BIRD SEED MIXTURE 1

1 Year Spring Sown

70%	Organic Spring Wheat/Barley
20%	Spring Triticale
5%	White Millet
3%	Fodder Radish
2%	Red Millet
100%	

Sowing rate 40kg/ha
Pack size 20kg

ORGANIC WILD BIRD SEED MIXTURE 2

1 - 2 Year Spring Sown

70%	Organic Spring Wheat/Barley
10%	Spring Triticale
7%	Kale
4%	Fodder Radish
4%	White Millet
3%	Quinoa
2%	Red Millet
100%	

Sowing rate 40kg/ha
Pack size 20kg

Other mixture that also may be suitable for AB9:

Decoy Mixture – page 35
Broadshot – page 35

For Higher Tier & HLS these mixtures must be agreed with the local Natural England Advisor before ordering seed.

Bespoke mixtures can be packed to order.

Feed & Cover Mixture




Wild Bird Seed Mixtures

Wild Bird Seed mixtures provide important food resources for farmland birds & insects

NORTHERN SPRING SOWN MIXTURES

Partridge Mixture (AB9)

45%	Spring Barley
35%	Spring Triticale
15%	Linseed
4%	Gold of Pleasure
1%	Kale
100%	

Sowing rate 62kg/ha
Pack size 25kg

Northern Shot Mixture (AB9)

30%	Spring Barley
25%	Spring Triticale
25%	Spring Wheat
10%	Kale
5%	Hybrid Brassica
2%	Perennial Chicory
2%	Yellow Blossom Clover
1%	Green Fennel
100%	

Sowing rate 50 - 60kg/ha
Pack size 20kg

Northern Star Game Mixture (AB9)

36%	Spring Beans
25%	Spring Triticale
25%	Spring Wheat
5%	Forage Rape
5%	Kale
2%	Quinoa
2%	Yellow Blossom Clover
100%	

Sowing rate 50kg/ha
Pack size 20kg


Northern Star Game Mixture

Treatment **Some species may be treated**

Northern WBS 1 (AB9)
1 Year Spring Sown

30%	Spring Triticale
25%	Spring Barley
25%	Spring Wheat
8%	Linseed
4%	White Mustard
4%	Forage Rape
3%	Phacelia
1%	Fodder Radish
100%	

Sowing rate 40kg/ha
Pack size 20kg

Northern WBS 2 (AB9)
2 Year Spring Sown

30%	Spring Triticale
20%	Spring Barley
20%	Spring Wheat
7%	Kale
7%	Quinoa
7%	Fodder Radish
4%	Yellow Blossom Clover
3%	Green Fennel
2%	Red Clover
100%	

Sowing rate 20kg/ha
Pack size 20kg

NON CEREAL MIXTURES

Northern WBS 2
Non Cereal

23%	Kale
23%	Quinoa
23%	Fodder Radish
14%	Yellow Blossom Clover
10%	Green Fennel
7%	Red Clover
100%	

Sowing rate 12kg/ha
Pack size 10kg

Farmland (Wild) Bird Seed Mixture
Non Cereal

45%	Linseed
25%	Buckwheat
17%	Fodder Radish
8%	White Millet
5%	Phacelia
100%	

Sowing rate 20kg/ha
Pack size 10kg

The small seed element of Northern WBS2 and Farmland (Wild) Bird Seed Mixture without cereals have been formulated for those who have access to home grown cereals.

AUTUMN SOWN MIXTURES

WBA 1
1 Year Autumn Sown

40%	Winter Triticale
28%	Winter Barley
10%	Fodder Radish
10%	Forage Rape
10%	Winter Vetch
2%	Gold of Pleasure
100%	

Sowing rate 40kg/ha
Pack size 20kg

WBA 2 Autumn Sown Bumblebird Mixture (AB16) 2 Year Autumn Sown

25%	Winter Triticale
15%	Winter Barley
15%	Winter Wheat
8%	Fodder Radish
6%	Winter Vetch
5%	Birdsfoot Trefoil
5%	Lucerne
5%	Crimson Clover
5%	Gold of Pleasure
5%	Kale
2.5%	Red Clover
2%	Phacelia
0.4%	Black Knapweed (N)
0.4%	Wild Carrot
0.4%	Oxeye Daisy
0.3%	Yarrow
100%	

Sowing rate 40kg/ha
Pack size 20kg

(N) = UK Native Seed

Flower Rich Grass Margins provide important habitat for invertebrates and birds

Buffer Strip Mixtures

Bumblebee Conservation Trust supporting wild pollinators on your land

Bumblebee Conservation Trust

Bumblebees and solitary bees are very important pollinators of both commercial agricultural crops and wild flowers. Many UK species have declined in recent years due to habitat loss. Bumblebees rely on flower rich habitats from March to September to provide essential nectar resources for colony growth. They also require undisturbed tussocky grassland for nesting.

There are a number of ways these habitats can be provided on arable and livestock farms, including planting pollen and nectar margins or wildflower buffer strips and implementing a more sensitive management regime; no/very light application of farm-yard manure, no chemical fertilizers, taking a late hay cut (Mid-July to August) allowing wildflowers to set seed and adopting a sensitive grazing regime.

Details on how you may improve your land for bumblebees and other pollinators can be found in our series of land management fact sheets: www.bumblebeeconservation.org/get-involved.We can also offer tailored advice in our target areas. Please contact advice@bumblebeeconservation.org.

BUFFER STRIPS MIXTURES

BGM 1 with Cocksfoot
- 30% Creeping Red Fescue
- 20% Hard Fescue
- 20% Tall Fescue
- 15% Cocksfoot
- 15% Timothy

100%

Sowing rate 20kg/ha
Pack size 20kg

BGM 1 RC Red Clover and Cocksfoot
- 25% Creeping Red Fescue
- 20% Hard Fescue
- 20% Tall Fescue
- 15% Timothy
- 15% Cocksfoot
- 5% Red Clover

100%

Sowing rate 20 kg/ha
Pack size 20kg

BGM 2 no Cocksfoot
- 25% Creeping Red Fescue
- 20% Hard Fescue
- 20% Chewings Fescue
- 20% Tall Fescue
- 15% Timothy

100%

Sowing rate 20kg/ha
Pack size 20kg

BGM 2 RC Red Clover no Cocksfoot
- 25% Creeping Red Fescue
- 20% Hard Fescue
- 20% Chewings Fescue
- 15% Timothy
- 15% Tall Fescue
- 5% Red Clover

100%

Sowing rate 20 kg/ha
Pack size 20kg

BGM 3 with Cocksfoot and Clover
- 25% Creeping Red Fescue
- 20% Tall Fescue
- 15% Timothy
- 15% Cocksfoot
- 15% Hard Fescue
- 5% Birdsfoot Trefoil
- 5% Small White Clover

100%

Sowing rate 20kg/ha
Pack size 20kg

BGM 5 with Ryegrass (GS3)

Ryegrass seed set as winter food for birds
- 40% Italian Ryegrass
- 30% Inter. Perennial Ryegrass
- 30% Late Perennial Ryegrass

100%

Sowing rate 35kg/ha
Pack size 20kg

Pollen & Nectar with Grass (GS4)
- 10% Meadow Fescue
- 10% Tall Oat Grass
- 10% Cocksfoot
- 10% Timothy
- 10% Tall Fescue
- 10% Sainfoin
- 8% Birdsfoot Trefoil
- 6% Alsike Clover
- 6% Winter Vetch
- 5% Creeping Red Fescue
- 5% Hard Fescue
- 5% Red Clover
- 4% Black Medick
- 0.25% Black Knapweed (N)
- 0.25% Musk Mallow
- 0.25% Oxeye Daisy
- 0.15% Yarrow
- 0.1% Sheeps Burnet

100%

Sowing rate 20kg/ha
Pack size 10kg

BGM 4 with Wildflowers & Fine Grasses (AB8)
- 25% Chewings Fescue
- 20% Hard Fescue
- 15% Slender Red Fescue
- 15% Creeping Red Fescue
- 5% Sainfoin
- 4% SSMG
- 4% Crested Dogstail
- 3.5% Winter Vetch
- 2.25% Red Clover
- 2% Browntop Bent
- 1% Birdsfoot Trefoil
- 1% Black Medick
- 0.5% Alsike Clover
- 0.4% Yarrow
- 0.4% Oxeye Daisy
- 0.4% Wild Carrot
- 0.3% Red Campion (N)
- 0.25% Ribwort Plantain

100%

Sowing rate 16 - 20kg/ha
Pack size 20kg

Flower Rich Margin Mixture (AB8)
- 25% Slender Red Fescue
- 15% Hard Fescue
- 12% Chewings Fescue
- 10% SSMG
- 10% Crested Dogstail
- 5% Smaller Cats Tail
- 3% Browntop Bent
- 3% Sainfoin
- 3% Winter Vetch
- 2.5% Birdsfoot Trefoil
- 2.5% Black Medick
- 2% Red Clover
- 1.25% Oxeye Daisy
- 1% Ribwort Plantain
- 1% Wild Carrot
- 1% Yarrow
- 0.5% Black Knapweed (N)
- 0.5% Musk Mallow
- 0.5% Red Campion (N)
- 0.5% Self Heal (N)
- 0.25% Lady's Bedstraw (N)
- 0.25% Meadow Buttercup (N)
- 0.25% Yellow Rattle (N)

100%

Sowing rate 16 - 20kg/ha
Pack size 10kg & 20kg

Species-Rich Wild Flowers (SRWF)* Native
- 15% Black Knapweed (N)
- 12% Selfheal (N)
- 10% Ribwort Plantain (N)
- 9% Meadow Buttercup (N)
- 8% Oxeye Daisy (N)
- 8% Common Sorrel (N)
- 8% Yellow Rattle (N)
- 8% Lady's Bedstraw (N)
- 6% Black Medick (N)
- 5% Field Scabious (N)
- 4% Meadow Vetchling (N)
- 3% Yarrow (N)
- 2% Ragged Robin (N)
- 2% Red Clover (N)

100%

Pack size 1kg

Species-Rich Grass (SRG)*
- 20% SSMG
- 20% Creeping Red Fescue
- 20% Browntop Bent
- 10% Meadow Fescue
- 10% Sheeps Fescue
- 10% Hard Fescue
- 10% Crested Dogstail

100%

Pack size 20kg

* Species-Rich Grass & Species-Rich Wild Flowers are available separately or as a mixture of grasses (SRG) & flowers (SRWF) together in the following ratios:

95% SRG with 5% SRWF
90% SRG with 10% SRWF
85% SRG with 15% SRWF

Sowing Rate 16kg/ha
Pack size 20kg

Legume Fallow Mixture (AB15) Two Year
- 66% Late Perennial Ryegrass
- 15% Red Clover
- 10% Winter Vetch
- 7% Birdsfoot Trefoil
- 0.8% Black Knapweed (N)
- 0.6% Yarrow
- 0.6% Oxeye Daisy

100%

Sowing rate 30 - 40kg/ha
Pack size 20kg

(N) = UK Native Seed

DLF Seeds Ltd. is a leading supplier of native provenance wild flowers. We liaise with selected producers and growers to ensure our seed is sourced to the highest possible standard.

Nectar Rich Mixtures

"Pro Flora 1 Flowers Only, provided a fantastic show of colour from July to October. The all native annual mixture has produced an abundance of nectar, attracting many species of pollinators and invertebrates."

Eamon McAllister,
Porgtlenone, Co. Antrim.
October 2018

NECTAR RICH MIXTURES

Butterfly & Bumblebee Mixture (AB8)
- 15% Creeping Red Fescue
- 15% Hard Fescue
- 10% Sheeps Fescue
- 10% Browntop Bent
- 9% SSMG
- 6% Lucerne (inoculated)
- 5% Rough Stalked Meadow Grass
- 5% Yorkshire Fog
- 4% Kidney Vetch **(N)**
- 3% Tufted Hair Grass
- 3% Birdsfoot Trefoil
- 2% Hairy Vetch
- 2% Red Clover
- 1.5% Ribwort Plantain
- 1% Agrimony **(N)**
- 1% Red Campion **(N)**
- 1% Phacelia
- 1% Field Pansy **(N)**
- 1% Alsike Clover
- 1% Musk Mallow
- 1% White Campion **(N)**
- 0.75% Goats Rue
- 0.6% Selfheal **(N)**
- 0.5% Oxeye Daisy
- 0.5% Wild Carrot
- 0.15% Betony **(N)**

100%

Sowing rate 16kg/ha
Pack size 1kg

WF1 (AB1)
- 42% Sainfoin
- 10% Red Clover
- 10% Birdsfoot Trefoil
- 8% Winter Vetch
- 6% Yarrow
- 5% Lucerne (inoculated)
- 4% Alsike Clover
- 4% Black Medick
- 2% Oxeye Daisy
- 1.25% Musk Mallow
- 1.25% Red Campion **(N)**
- 1.25% Wild Carrot
- 1% Corn Cockle **(N)**
- 1% Selfheal **(N)**
- 0.75% Cornflower **(N)**
- 0.75% Goats Rue
- 0.5% Corn Marigold **(N)**
- 0.5% Field Poppy **(N)**
- 0.5% Lady's Bedstraw **(N)**
- 0.25% Salad Burnet

100%

Sowing rate 5 - 10kg/ha
Pack size 1kg

Nectar Rich Bronze (AB1)
- 50% Sainfoin
- 20% Winter Vetch
- 10% Red Clover
- 8% Birdsfoot Trefoil
- 5% Alsike Clover
- 4% Crimson Clover
- 3% Lucerne (inoculated)

100%

Sowing rate 10 - 15kg/ha
Pack size 12kg

Annual Nectar Mixture
- 25% Buckwheat
- 22% Sainfoin
- 20% Phacelia
- 10% Crimson Clover
- 10% Lucerne (inoculated)
- 8% Red Clover
- 5% Alsike Clover

100%

Sowing rate 10kg /ha
Pack size 5kg

(N) = UK Native Seed

DLF Seeds Ltd. is a leading supplier of native provenance wild flowers.
We liaise with selected producers and growers to ensure our seed is sourced to the highest possible standard.

Nectar Rich Gold (AB1)

OUTSTANDING ★ 2018 ★ PRODUCT OF THE YEAR

- 40% Sainfoin
- 18% Winter Vetch
- 10% Alsike Clover
- 10% Red Clover
- 10% Birdsfoot Trefoil
- 10% Lucerne (inoculated)
- 1.5% Musk Mallow
- 0.5% Black Knapweed **(N)**

100%

Sowing rate 10 - 15kg /ha
Pack size 12kg

OUTSTANDING PRODUCT OF THE YEAR

Everyone's talking about it!

ORGANIC MIXTURE

Organic Nectar Flower Mixture
- 32.5% Organic Early English Winter Vetch
- 27.5% Organic Lucerne (inoculated)
- 18% Sainfoin
- 6% Organic Red Clover
- 6% Birdsfoot Trefoil
- 6% Alsike Clover
- 4% Organic Crimson Clover

100%

Sowing rate 10 - 15kg/ha
Pack size 10kg

SOLAR MIXTURES

Our range of Solar Mixtures will cater for most situations. We are always pleased to advise. Please call for more information. Specialised mixtures to suit individual requirements can be arranged.

NATIVE WILDFLOWER MIXTURES

Our range of Pro Flora Wild Flower mixtures will cater for most situations.
We are always pleased to advise upon and produce mixtures to suit individual specifications.

Pro Flora
- 1 Cornfield Annuals **(N)**
- 2 Acid Soils **(N)**
- 3 Damp Loamy Soils **(N)**
- 4 Calcareous Soils **(N)**
- 5 Wet Loamy Soils **(N)**
- 6 Dry Loamy Soils **(N)**
- 7 Hedgerow & Light Shade **(N)**
- 8 Legacy Country Meadow **(N)**
- 9 Heritage General Purpose **(N)**
- 10 General Purpose **(N)**
- 11 Woodland & Heavy Shade **(N)**
- 12 Water Margin & Pond Edges **(N)**
- 110 General Purpose Economy **(N)**

Pack size 1kg

COLOUR BOOST RANGE

A range of 100% wildflower mixtures providing colourful flowers, essential food source and habitat for many pollinating insects.

COLOUR BOOST 1
High Impact Annuals

Quick to establish, long flowering period, from 8 weeks to first frost

Sowing Rate 3-5gm/m²

COLOUR BOOST 2
High Impact Low-Grow Annuals

Low growing mixture. 100% Dwarf flower mixture.

Sowing Rate 3-5gm/m²

COLOUR BOOST 3
High Impact Perennials

Seasonal Perennial mixture, comprising 90% perennial species and 10% annual species.

Sowing Rate 3-5gm/m²

Legume & Herb Rich Mixtures provide reliable forage & beneficial pollinators & improve soil structure

"The last 3 years we have moved to herbal mixtures in our grass. They suit our light land and produce a very good quality grazing mixture for our sheep that we rear solely on grass. The main reason we moved to herbal leys is that they are deeper rooting and to provide more diversity to the grazing mix. The benefit of these herbal leys is clear, this year most of our grass leys had burnt up from the middle of June, but the herbal leys, plantain and chicory especially, stayed green and really provided us with quality grazing throughout the drought."

Nick Hulme, Easy Rams, Pikesend Farm, Shropshire. November 2018

Legume & Herb Rich Mixtures

Legume and herb-rich mixtures provide an abundance of productive grazing for livestock and a habitat and food source for invertebrates and pollinators, supporting biodiversity.

Herbal leys develop a beneficial soil structure through the increase of organic matter. This is due to the variety of species used and the length of time which they are left in the soil. These leys not only replace organic matter lost within a rotation but also supply a valuable forage crop for livestock as either grazing or taken for a cut of silage. Grasses offer the reliable, bulk forage of the ley.

The nitrogen fixing ability of the legumes reduce the necessity for artificial fertilisers as well as increasing forage protein content which directly enhances DLWG or milk production. Herbs with a deep rooting structure, such as sainfoin and chicory, break through damaged soil structure and provide livestock with access to vital minerals and nutrients. Herbs also act as a natural anthelmintic due to the tannins they contain which reduces reliance on wormers. Herbal leys supply vital trace elements to livestock without the necessity for large synthetic inputs.

HERBAL MIXTURES

Legume & Herb Rich Mixture (GS4)

25%	Late Perennial Ryegrass (Diploid)
20%	Meadow Fescue
15%	Timothy
10%	SSMG
10%	Creeping Red Fescue
10%	Red Clover
5.6%	Sainfoin
1.43%	Lucerne (inoculated)
1%	Birdsfoot Trefoil
1%	Sheeps Burnet
0.5%	Ribwort Plantain
0.25%	Yarrow
0.2%	Oxeye Daisy
0.02%	Sheeps Sorrel

100%

Sowing rate 32 - 37kg/ha
Pack size 20kg

OUTSTANDING ★ 2018 ★ PRODUCT OF THE YEAR

OUTSTANDING PRODUCT OF THE YEAR
Everyone's talking about it!

Herbal Meadow (GS4)

20%	Meadow Fescue
15%	Timothy
15%	Intermediate Perennial Ryegrass (Diploid)
13%	Late Perennial Ryegrasss (Diploid)
10%	Red Clover
7%	Creeping Red Fescue
5%	Lucerne (inoculated)
5%	Smooth Stalk Meadow Grass
4.5%	Sainfoin
2%	Birdsfoot Trefoil
1%	Fenugreek
1%	Perennial Chicory
0.7%	Ribwort Plantain
0.5%	Sheeps Burnet
0.25%	Yarrow
0.05%	Oxeye Daisy

100%

Sowing rate 25 - 35kg/ha
Pack size 20kg

Mixed Herbs

27%	Sheeps Burnet
27%	Sheeps Parsley
26%	Sainfoin
10%	Ribwort Plantain
5%	Chicory
5%	Yarrow

100%

Sowing rate Variable
Pack size 1kg

NITROGEN FIXING MIXTURES

EFA Nitrogen Rich Mixture

76%	Winter Vetch
12%	Crimson Clover
12%	Red Clover

100%

Sowing rate 32 -35 kg/ha
Pack size 20kg

EFA Nitrogen Fixing Ley

52%	Red Clover
30%	Late Perennial Ryegrass (T)
18%	Late Perennial Ryegrass (D)

100%

Sowing rate 22-25kg/ ha
Pack size 20kg

FALLOW MIXTURES

Fallow Mixture No.1

50%	Late Perennial Ryegrass (Tetraploid)
35%	Late Perennial Ryegrass (Diploid)
10%	Timothy
5%	White Clover Blend

100%

Sowing rate 30 - 35 kg/ha

Fallow Mixture No.2

50%	Late Perennial Ryegrass (Tetraploid)
40%	Late Perennial Ryegrass (Diploid)
10%	Timothy

100%

Sowing rate 30 - 35 kg/ha

Fallow Mixture No.3

55%	Late Perennial Ryegrass (Tetraploid)
40%	Late Perennial Ryegrass (Diploid)
5%	White Clover Blend

100%

Sowing rate 30 - 35 kg/ha

Pack size 20kg

Basic Guide to EFA's with Mixture Options

EFA Buffer Strips and Field Margins

Buffer Strips must be next to or run parallel with a water course or on a slope leading to a water course. In addition to buffer strips you can now claim field margins towards your EFA (beyond strips adjacent or parallel to water courses). Minimum width of 1 metre.
The same buffer strips can be used to meet both greening and cross compliance rules.

1m Length = 9m² (1112m = 1ha)

- BGM 1 & BGM 1 RC
- BGM 2 & BGM 2 RC
- BGM 3 BGM 4 & BGM 5
- Legume & Herb Rich Mixture
- Herbal Meadow
- Species Rich Grass Mixture
- Flower Rich Margin
- Nectar Rich Gold or Bronze
- Pollen & Nectar with Grass

EFA Fallow Land

Fallow Period 1st January to 30th June.

Minimum width 2m wide with a minimum area of 0.01ha. Wild Bird Mixtures & Nectar Rich Mixtures encouraged. Temporary grass & buffer strips can be managed as fallow. Grass can be sown during the fallow period as long as there is no production during the fallow period. Fallow land can be mown as long as the cuttings are left on the land. Can utilise grass after fallow period.

1m² (1ha = 1ha)

BGM 1 & BGM 1 RC	WBS 1 WBS 2 WBS 3 WBS 4
BGM 2 & BGM 2 RC	Decoy Mixture & Broadshot Mixture
BGM 3	Feed & Cover Mixture
BGM 4 & BGM 5	Partridge Mixture
Flower Rich Margin	Northern WBS 1 & WBS 2
Pollen & Nectar with Grass	Traditional Game Cover
Annual Nectar Mixture	Nectar Rich Gold
ForageMax® Grass Mixtures	Nectar Rich Bronze

EFA Catch crops / Cover crops

Catch crops established by 20th August and retained until at least 14th October. Cover crops established by 1st October and retained until 15th January. Must consist of a sown mix of at least 2 different cover types (1 cereal & 1 non-cereal) that establishes quickly, achieves good ground cover and has different root depths. Crops to choose from are rye, oats, barley, phacelia, mustard, vetch, radish and Lucerne. The list does not include crops that would usually be grazed. Minimum area 0.01ha. Grass can also be used, but it must be undersown in the previous crop and established.

0.3m² (3.3ha = 1ha)

- Revival Cover Mixture
- N-Rich Cover Mixture
- N-Hance Cover Mixture
- N-Retain

EFA Nitrogen Fixing Crops Mixture

An eligible list of leguminous crops has been published. In addition to pure stands of nitrogen fixing crop you will be allowed to sow a mixture of different nitrogen fixing crop species or mixtures of nitrogen fixing crops and other crops, as long as 50%+ is nitrogen fixing crops. Must be in the ground 1st May-30th June. Minimum plot size 0.01 ha.

0.7m² (1.4ha = 1ha)

- EFA Nitrogen Rich Mixture
- EFA Nitrogen Fixing Ley
- Nectar Rich Bronze & Gold
- Lucerne & Sainfoin
- Red & White Clover
- Vetch & Black Medick
- Peas & Beans
- Alsike & Crimson Clover
- Yellow Blossom Clover
- Birdsfoot Trefoil

EFA Hedges

Hedges need to be next to arable land. Minimum length 20 metres, with no minimum height or width. Newly planted hedges eligible.

1m Length = 10m² (1km = 1ha)

EFA Plant Protection Products Ban – A complete ban of use on:

- EFA Fallow Land – 1/1 to 30/6 six month period only
- EFA Catch and Cover Crops – 8 or 13 week period only
- EFA Nitrogen-fixing Crops – entire crop cycle

Scottish Rural Development
Agri-Environment Climate Scheme (AECS)

AECS Options

Unharvested conservation headland for wildlife

Wild Bird seed for Farmland Birds
Pages 6- 7. Page 7 - Non Cereal Mixtures specifically for those who wish to use their own cereal

Forage brassicas for Farmland Birds
Pages 37 - 43

Stubbles followed by green manure in an arable rotation
Pages 12, 16 - 19

Creation of Beetle Banks, Water Margins and Grass Strips
Pages 8 - 9

Creation of Species Rich Grassland
Pages 12 & 8

Pages 8 to 10 of this brochure contain many other mixtures designed for herbal meadows, fallow ground, pollen and nectar, nitrogen fixing and wild flowers, many of which suit AECS options.

AECS Green Cover Crops

Stubbles followed by Green Manure in an arable rotation

Where winter cereals are sown after green cover

SPRING GREEN COVER MIXTURE

60% Buckwheat
30% Crimson Clover
10% Egyptian Clover
100%

Sowing rate 12-15 kg/ha
Pack size 20 kg
Alternative mixtures
Annual Nectar Mixture and Kwik Fix

Where spring cereals are sown after green cover (overwintered GC)

OVER WINTER GREEN COVER MIXTURE

NEW RECIPE 2019

85% Forage Rye
15% Red Clover
100%

Sowing rate 25 kg/ha
Pack size 25 kg
Alternative mixtures N-Rich Cover Mixture

NORTHERN SPECIES RICH GRASS & 15% NATIVE WILD FLOWERS

NEW FOR 2019

25% Creeping Red Fescue
15% SSMG
10% Crested Dogstail
10% Hard Fescue
10% Meadow Fescue
10% Sheeps Fescue
5% Browntop Bent
2% Black Knapweed (N)
2% Lady's Bedstraw (N)
1.5% Common Sorrel (N)
1.5% Meadow Buttercup (N)
1.5% Oxeye Daisy (N)
1.5% Ribwort Plantain (N)
1.5% Selfheal (N)
1.5% Yarrow (N)
1.0% Red Clover (N)
1.0% Yellow Rattle (N)
100%

Sowing rate 16-20 kg/ha
Pack size 20 kg

(N) = UK Native Seed


Buckwheat

For the latest information see - www.gov.scot/topics/farmingrural/agriculture

BPS Scotland - Greening

A guide to Ecological Focus Area (EFA) Mixtures

EFA Fallow Land (EFAFAL) **Scottish Government Basic Payment Scheme – Greening** Fallow Period 15th January to 15th July . No agricultural production between these dates. Wild Bird Mixtures & Wild Flower mixtures are encouraged and may be sown during the fallow period. After the fallow period is over grass may be cut or grazed. After the 16th July, plan ahead for next year and establish a late heading mixture for 2019.	EFA Weighting 1.0	Fallow Mixture 1, 2 & 3 · BGM 1 & BGM 1 RC · BGM 2 & BGM 2 RC · BGM 3 & BGM 4 · Northern WBS 1 · WBS 1, 2 & 3 · Farmland Wild Bird Mixture
EFA Margins (EFAFM) **Scottish Government Basic Payment Scheme – Greening** Period is 1st January to 31st December. They should be around the margin of a field or split 2 crops within a field. Must be between 1m and 20 m wide . You are allowed to cut for hay or silage after 15th July. If not beside a watercourse it may be grazed. Wild flower, wild bird seed and normal grass mixtures may be established.	EFA Weighting 1.5	BGM 1 & BGM 1 RC · BGM 2 & BGM 2 RC · BGM 3 · BGM 4 · Species Rich Grass Mix · Northern WBS 1 · WBS 1, 2, 3 & 4 · Any Grass Mixture
EFA Catch Crops (EFACC) **Scottish Government Basic Payment Scheme – Greening** Establish the crop in spring. The only catch crop you can grow will be a cereal nurse crop with undersown grass. It should be a recognised grass seed mixture. The catch crop must be retained until at least the 31st December. You may graze the catch crop after harvest of the main crop.	EFA Weighting 0.3	Any Grass Mixture · Italian Catch Crop Mixture
EFA Green Cover (EFAGC) **Scottish Government Basic Payment Scheme – Greening** Establish the green cover crop by 1st November. Maintain the green cover up to 31st December inclusive. Do not graze during the maintenance period 1st November and 31st December. It must be a mixture of 2 or more of the following: Alfalfa, barley, red clover, white clover, mustard, oats, phacelia, radish, rye, triticale and vetch.	EFA Weighting 0.3	N – Rich Cover Mix · Spring Green Cover Mix · Over Winter Green Cover Mix
EFA Nitrogen Fixing Crops (EFANFIX) **Scottish Government Basic Payment Scheme – Greening** You must ensure that all EFA nitrogen-fixing crops are surrounded by a claimed EFA margin. You cannot harvest before 1st August to protect ground nesting birds. You must grow 2 of the following; Alfalfa, beans, birdsfoot trefoil, chickpea, red and white clover, lentils, lupins, peas and vetch. Mixtures are now allowed, but the nitrogen fixing species must be dominant by weight.	EFA Weighting 1.0	Alfalfa · Birdsfoot Trefoil · Peas & Beans · Red & White Clover · Vetch
EFA Hedges (EFAH) **EFA Agro-Forestry (EFAAF)** These are new EFA options for Scotland that do not require any seed	Various	




Glastir Welsh Environmental Scheme

Glastir is the All-Wales Agri-Environment Scheme introduced by the Welsh Assembly Government. It is a 5 year whole farm sustainable land management scheme available to farmers and land managers across Wales. Since 2012 it has replaced the four existing agri-environment schemes, Tir Gofal, Tir Cynnal, Tir Mynydd and the Organic Farming Schemes.

Glastir will ensure that future environmental challenges can be met by:

- COMBATING CLIMATE CHANGE
- IMPROVING WATER MANAGEMENT
- MAINTAINING AND ENHANCING BIODIVERSITY

It is designed to deliver measurable outcomes at both a farm and landscape level in a cost effective way.

Glastir consists of three elements:

1. ALL-WALES ELEMENT (AWE)
   A whole farm land management scheme which is open to application from all farmers and land managers throughout Wales. It is designed to provide support for the delivery of environmental benefits that meet today's challenges and priorities. Successful applicants will make a commitment to deliver environmental goods for five years under a legally binding contract.
2. TARGETED ELEMENT (TE)
   A part farm scheme intended to deliver significant improvements to the environmental status of a range of habitats, species, soils and water that might also require changes to current agricultural practices. In order to achieve these specific improvements and outcomes, financial support from the Welsh Government will be targeted at locations where action will lead to the required result.
3. COMMON LAND ELEMENT (CLE)
   Designed to provide support for the delivery of environmental benefits on common land.

Option 32 Plant unsprayed root crops on improved grass and arable land

- **White Turnips** - see stubble turnip varieties and green globe turnips on page 38
- **Swedes** - see page 41
- **Fodder Beet** - see page 40
- Soft yellow turnips
- Hardy yellow turnips

Option 33 Establish a wildlife cover crop on improved grass and arable land

For mixture option see WBS3 page 6.

These mixtures must include at least 80% cereal with at least with at least one of the following - mustard, linseed, rape.

These mixtures are designed to provide both nesting sites and a food source for overwintering species such as tree sparrow, finches, buntings, skylark, grey partridge, yellowhammer and barn owl.

Option 153 Red clover must make up at least 80% of the sward

Mixtures of red clover cultivars are permitted as is using a percentage of birdsfoot trefoil seed.

Biogas Crops

Over recent years interest has increased in the production of crops for Anaerobic digestion plants.

The advantages are:

- Replacement of fossil fuels
- Reduction of emissions of greenhouse gases
- Reduced impact of slurry
- Less leaching of nitrogen
- Less odour
- Conversion of waste and reducing the need for landfill

Production of Biogas is increased when an energy dense substrate is used to supplement slurry.

To this end crops can be used as an alternative to waste with the added advantage of not requiring a waste disposal licence.

For a farmer developing a biogas plant, high output crops are a necessity. Also, for the grower with a plant in the neighbourhood, biogas cropping represents a useful source of income.

The criteria for suitable crops are:

- High yield of DM per hectare
- High gas potential
- Low costs for growing and handling
- Ease of management and storage

MAIZE SILAGE

Maize is a well-known source of biogas, having the advantages of a high methane yield per acre and being relatively easy to store.

When choosing varieties, high dry matter and high yields are the major considerations; however yields of ME and starch should also be taken into account.

Dry matter at harvest is vitally important. For efficient ensiling the maize needs to achieve a dry matter content of between 30% and 32%. Some of the ultra high yielding varieties grown on the continent for Biogas may not reach this maturity in the UK climate.

RYE

Rye has become very popular in the UK in recent years. We have varieties being tested against hybrid, conventional and forage rye types.

BEET

Beet is the preferred option for 'feeding' anaerobic digesters adapting well to many soil and climate types. It has the highest yield potential amongst all other arable crops and also has the highest dry matter. Due to its higher levels of sugar it has a shorter retention time in the digester than other crops which have a higher lignin and cellulose content. However storage is more difficult for beet, than other crops.

When selecting a variety, yield is of primary importance but cleanliness of the roots should also be considered. Varieties with a smooth root and low dirt tare should be chosen and for this reason Enermax is the perfect choice.

Close cropping of energy beet should be avoided as a build up of rhizomania or beet cyst nematode can occur - the crop should not be grown more often than one in three years on the same ground.

DLF have a dedicated breeding programme for Energy Beets.

GRASS SILAGE

Grass is an extremely versatile crop; it is a good source of material for feeding anaerobic digesters, good for crop rotation, good for the environment and also adapts well to many different soil and climate types. It can be planted in the autumn after a beet or maize crop and be ready for a silage cut in the spring.

High yielding species such as tall fescue and festuloliums, together with red clover have a very high yield potential and they can in many situations compete with maize. Grass and grass with clover work very well in an anaerobic digester mixed with slurry, thus improving the yield of gas.

Grass is a perennial crop with a good environmental profile, improving crop rotation and bringing long term benefits to soil fertility.

Comparison of gas yield from different crops

	Maize silage	Beet	Grass silage
Yield, tonnes dry matter/ha	11	13	11,5
% dry matter	33	20	33
% ash in dry matter	3	8	10
Nm3 methane/tonnes organic matter	352	435	307

Comparison of gas yield from different crops. Based on budget estimates from VFL DK. Søren Ugilt Larsen, Agrotech DK 2010 and 2011

Growing a cover crop is a very effective way of controlling nematode populations

Green Manuring

"I have completely changed how I understand fertility in the past five years. Green Manure cropping has really helped my soil, I sow as soon as I can after the combine. Access to nutrients is exclusively driven by how dynamic your soil biology is.
I believe cover crops are one tool to really drive biological activity forward. Now we grow 7.5t/ha winter cereals and 4.9t/ha OSR with only 80kg/ha (and falling) of inorganic N in a low input, regenerative system."

Fred Price, Charlynch, Somerset. November 2018

Green Manuring can bring many advantages to the farmer by adding organic matter to the soil, increasing biological activity, improving soil structure, reducing erosion, increasing the supply of nutrients available to plants (particularly by adding nitrogen to the system by fixation), reducing leaching and weed suppression.

There are some disadvantages and whilst these are few they should also be noted - lost opportunities for cash cropping, exacerbated pest and disease problems (green bridge effect), and the potential for green manures to become weeds in their own right. These problems can be overcome with thought and measured usage, and the benefits to future crops cannot be dismissed lightly.

Green manures not only improve soil status, composition and nutrient balance but provide a basis for a more environmentally friendly approach to modern farming. We need to focus our minds on the twin problems of high artificial fertiliser prices and the soil's need for basic nutrients with these being available in a more sustainable form.

A wide range of plant species can be used as green manures. Different crops bring different benefits and the final choice is influenced by many considerations. If the most is to be made of green manuring crops, it is important that they are carefully integrated into the crop rotation and proper attention paid to their husbandry.

Green manures can be categorised as spring sown for summer usage and autumn sown for over-winter usage, intercropping and longer term fertility improvement.

Nitrogen (N) in legumes comes from uptake of soil N and the fixation of N from the atmosphere. The amount of N fixed by different legumes is determined by the inherent capacity of the crop/rhizobium symbiosis to fix N, modified by the crop's growing conditions (e.g. soil, climate, disease), crop management and length of time for which the crop is grown. Consequently, the influence of all these factors means that a wide range of values has been reported by different researchers. The presence of soil mineral N is generally thought to reduce fixation capacity. Factors that will increase the soil mineral N pool include manure application, cutting and mulching, and grazing. Fixation tends to decrease with legume age, mainly because the amount of soil N tends to increase.

Where growth of legumes is affected by nutrient deficiency (or acidity) the potential for soil N build up is reduced. Phosphorus, Sulphur and some trace elements (e.g. Molybdenum) are particularly important. Where there are large off-takes of soil nutrients as in silage crops both Phosphorus and Potash supplies need to be adequate for satisfactory legume growth. These should be replaced as they are essential to the legume to enable it to maximise the fixing of nitrogen.

NEMATODES IN UK FARMING

ROOT KNOT NEMATODES

- Produce galls and can severely damage plant health
- Crops most at risk are:- peas, onions, carrots, parsnips, and spring wheat

CYST NEMATODES

- Beard like objects which grow and live on root surfaces
- Widespread in Europe and many parts of the world
- Crops most at risk are:- potatoes, sugar beet, rape and beetroot

LESION NEMATODES

- Produce necrotic lesions throughout the cortex of infected roots
- Crops most at risk carrots, parsnips, maize and legumes

STUBBY ROOT NEMATODES

- Plant roots have a stunted stubby appearance
- Infected roots become less capable of supplying nutrients
- Crops most at risk:- potatoes, sugar beet, onions, carrots and parsnips

STEM NEMATODES

- Can cause distortion in the stems in winter beans and necrotic area on the plant leaves
- Crops most at risk :- potatoes, onions and winter beans

THEIR EFFECT ON AGRICULTURAL CROPPING

Nematodes behave in different ways: Ectoparasitic forms – feed externally on plant roots and Endoparasitic forms – invade the roots internally. Both forms cause damage, resulting in an overall reduction in yield or affect the marketability of the crop.

Nematodes, also known as eelworms and roundworms. There are over 28,000 distinguishable species, of which 16,000 are parasitic.

Approximately 50% are detrimental to plant health. Damage caused by nematodes can emerge differently from crop to crop. But there are a few symptoms which can appear, that are common to all.

- Stunted plants
- Plants wilt and appear to have no vigour
- Stem malformation
- Yellowing
- Root Galls
- Deformed roots and abnormal growth
- Plant death

Globally, parasitic species can reduce agricultural production by approximately 12%.

Crop	Pack size	Av sowing rate kg/ha	Treatment type	Sowing dates	Incorporation period	Root type/depth	Soil type	Nitrogen Fixing or Storing Plant	Useful information and growing tips
Short Term Crops	**Spring/Summer Sowing & Summer/Autumn Incorporation**								
White Mustard	10kg & 25kg	12 - 17	Untreated & Organic	Spring - Early Autumn	8 weeks after sowing	Fibrous root system	All types, best on light, sandy soils	Storing	Fast growing and good weed suppressor. Has biofumigation properties but not to same extent as brown mustard. Produces large quantities of biomass. Excellent scavenger of nitrogen. Requires fine seedbed. Susceptible to Club root. Plough in before flowering to prevent self-seeding.
Brown Mustard	5kg	5 - 7.5	Untreated	Spring - Autumn	Autumn - Spring	Taproot	All types, prefers moist ground	Storing	As white mustard, but contains high levels of glucosinolate which create biofumigation properties to reduce wireworm infestation. To maximise this benefit, crop must be finely chopped at flowering and thoroughly incorporated into moist soil. Brown mustard is winter hardy so is excellent for reducing soil erosion, water run-off and fertiliser leaching when grown after maize, potatoes & sugar beet.
Phacelia	2kg, 5kg & 10kg	7.5 - 10	Untreated & Organic	Spring - Summer	10 - 12 weeks after sowing	Shallow, fibrous	Most soil types, will tolerate dry conditions	Storing	Quick to establish and a good weed suppressor. Flowers loved by bees and butterflies. The crop must be incorporated into the soil before setting seed or it may reappear in subsequent crops as a weed. Said to release many minerals into soil as it decomposes, especially P, Ca and Mg.
Buckwheat	10kg & 25kg	50 - 70	Untreated & Organic	Spring - Summer	Summer - Autumn	Shallow, but with good penetration	Tolerates poor, but not wet soils	Storing	Fast growing and quick to mature, not winter hardy. Dislikes wet, heavy or compacted soil. Do not allow to set seed before incorporating into soil. Attractive to beneficial insects especially hoverflies. Good scavenger of phosphate.
Crimson Clover	1kg & 25kg	12.5 - 15	Untreated & Organic	Spring	Summer - Autumn	Taproot with fibrous branch roots	Prefers loam, will tolerate poor soils as long as alkaline and free draining	Fixing	Very attractive to insects. Excellent weed suppressor. Biomass degrades quickly into soil. Will over-winter in S England for autumn sowing/spring incorporation. Shade tolerant.
Aslike Clover	25kg	60	Untreated	Spring	Autumn	Branched taproot Deep rooting	Most types	Fixing	Less biomass than red and white clover but better adapted to wet, acid soils and cooler conditions. Requires shallow sowing and firm seedbed.
Fodder Radish	10kg & 25kg	10 - 20	Untreated & Organic	Summer - Autumn	Autumn - Spring	Deep rooting taproot	Most types	Storing	Good early vigour that gives quick soil coverage, with a large biomas and a large taproot. Excellent Nitrogen scavenger.
Daikon Radish	5kg & 25kg	8 - 10	Untreated	Summer - Autumn	Autumn - Spring	Deep penetrating taproot	Most types	Storing	Fast establishing, big biomas, long large white tubers. Excellent for breaking up compacted soil with its aggressive tap root. An excellent nitrogen scavenger.
Egyptian/ Berseem Clover	25kg	10 - 22	Untreated	Spring - Early Summer	Later Summer - Autumn	Taproot with fibrous root network	Needs deep fertile soils (uncompetitive)	Fixing	Annual clover. Grows aggressively throughout the summer and autumn. Likes deep fertile soils with plenty of moisture. Produces large amounts of biomass along with fixing large quantities of nitrogen. A good cover crop to put between two cereal crops.
Black Oats/ Japanese Oats (Avena strigosa)	25kg & 500kg	50 - 75	Untreated	Later Summer - Autumn	Winter - Early Spring	Fibrous root system	Grow in most soil types and conditions	Storing	Grows well under most conditions. Early vigour, quickly producing lots of biomass due to the plant rapidly tillering. Can flower early. The fast establishment helps to suppress weeds. Good at disrupting disease cycles. Not frost hardy.
Over Winter Crops	**Autumn Sowing & Spring Incorporation**								
Forage Winter Rye	25kg & 500kg	125 - 185	Untreated	Autumn	Spring	Extensive, fibrous root system	Grows well on light, sandy, free-draining soils	Storing	Produces large amounts of green material. Excellent nitrogen scavenger and for the prevention of nitrate leaching during winter months. Do not allow to run to seed as this will 'lock-up' available nitrogen. Very hardy.
Italian Ryegrass	25kg	35 - 38	Untreated & Organic	Autumn	Spring	Extensive, fibrous root system	Diploids better in wet areas and tetraploids in drier	Storing	As with forage rye, produces high yields of biomass. Good root system for improving soil structure. If seed heads are produced, crop must be cut before seed is shed to prevent infestation of following crop. Good 'mopper-up' of excess soil nitrogen.
Cocksfoot	15kg - 20kg	5 - 7.5	Untreated & Organic	Spring / Autumn	Autumn - Spring	Thick and fibrous with large energy reserves	Dry, free-draining	Storing	When undersown at a low seed rate into winter wheat, cocksfoot is an excellent soil improver for drought-prone soils.
Forage Rape	10kg & 25kg	6.5 - 10	Untreated & Organic	Spring / Autumn	Autumn - Spring	Deeply penetrating taproot	Most types, able to tolerate poor soil & exposed sites	Storing	Fast growing. Good alternative to mustard if using high glucosinolate varieties, as decomposition can release chemicals which produce a biofumigation effect if incorporated within 24 hours of cutting. Where club root is a problem, make sure a resistant variety is used.
Vetches	25kg	60 - 90	Untreated & Organic	Spring / Autumn	Autumn - Spring	Taproot	Prefers loams and clay. Will not thrive in wet or waterlogged conditions	Fixing	Good weed suppressor. Ensure a winter hardy variety is used. Due to its large seed size, will establish later than most other legumes. Requires fine, firm seed-bed.
Longer Term Crops									
Lucerne Pre-inoculated	25kg	20 - 25	Untreated & Organic	Spring - Early Autumn	Autumn - Spring	Very deep taproot	Light/chalky/free-draining	Fixing	Seed must be inoculated with rhizobium bacteria. Prefers dry growing conditions. Uncompetitive particularly in early stage of development so grow as pure stand or with non-aggressive companion grasses.
White Clover	1kg & 25kg	5 - 7.5	Untreated & Organic	Spring - Early Autumn	Autumn - Spring	Creeping stolons, Shallow rooting	Wide range. Tolerates dry conditions	Fixing	Continued defoliation stimulates root growth and nitrogen fixation. Smaller leaved varieties are more persistent than larger leaved. Good weed suppressor. Shallow sow into fine, firm seed bed.
Red Clover	1kg & 25kg	12.5 - 15	Untreated & Organic	Spring - Early Autumn	Autumn - Spring	Large, strong taproot	Wide range, avoid poorly drained, acid soils	Fixing	Aggressive plant, does not release N until crop is ploughed in. Shorter term than white clover. Good for improving and aerating soil structure & useful weed suppressor. Ensure fine, firm seed bed.
Yellow Blossom Clover	2kg & 25kg	12.5 - 15	Untreated	Spring	Summer - Autumn	Long taproot	Prefers poor soil and dry conditions. Dislikes wet, heavy ground	Fixing	Biennial. Quick to establish and grows vigorously. Improves soil structure. Plough in before flowering and before stems becomes woody. Attractive to bees and other insects if allowed to flower.

Green Manuring Crops

INCORPORATION OF GREEN MANURE

Incorporation is most effective when plants are young and succulent and the crop is cut and chopped to produce a mulch before turning it into the soil. This allows it to decompose quickly and release nutrients to be used by the following crop.

Some crops, however, require nitrogen to be available at a later stage, in which case they will benefit from the green manure crop being left to become more mature. Decomposition and the release of nutrients will take longer and will be more likely to be available at the right time in the crop's development.

It is very important not to sow too early because of the allelopathic effect of the decomposing plants on germinating seeds.

DAIKON RADISH

A rapid growing crop that produces a large amount of biomas. It has the ability to reduce nematodes and is also an excellent weed suppressor. It produces a long aggressive taproot that penetrates through many different soil types, improving drainage and air movement through the soil. A major benefit is that it captures and stores nutrients from deep in the soil over the winter period, which are released in the spring for the next crop. It can provide much needed cover throughout the winter months for game birds or can be used as an excellent fast growing, nutrient storing green manure crop.

Daikon Radish

Club Root Tolerant

Sowing Rate 8 - 10kg/ha
Pack Size 5kg & 25kg
Treatment Untreated

DISCLAIMER The table on page 17 is given in good faith and intended for general guidance only. Weather, local conditions and crop rotations must always be taken into account.

WHITE MUSTARD

Popular as a green manure crop. A relatively inexpensive and highly versatile cover crop either sown alone or as a companion to other species. It is a fast growing and good weed suppressor. Has bio fumigation properties but not to the same extent as brown mustard. It is ideal for early cover and produces large quantities of biomass although killed off by frost later. It an excellent scavenger of nitrogen. Destroy before flowering to prevent self-seeding. Some varieties are nematode resistant.

Sowing rate 12 - 17kg/ha
Pack size 10kg & 25kg
Treatment Untreated
Organic seed available in 25kg packs

BROWN MUSTARD

A fast growing green manure crop with bio fumigation properties, i.e. it suppresses soil-borne pests and diseases. It is an easy to establish 50 - 70 day crop that can be sown between April and September. Unlike white mustard, it is winter hardy. It will improve the health of the soil by increasing organic matter and acts as an excellent weed suppressant. It is also especially useful as over-wintering green cover after maize, potatoes and sugar beet crops, reducing soil erosion, fertiliser leaching and water run-off.

Sowing rate 5 - 7.5kg/ha
Pack size 5kg
Treatment Untreated

FODDER RADISH (OIL RADISH)

A fast growing cover crop, its speed of establishment aids weed suppression. It has a long tap root which will improve the soil structure and also has plenty of leaf that produces a large quantity of organic matter. An excellent nitrogen scavenger. Some varieties are nematode resistant.

Sowing rate 10 - 20kg/ha
Pack size 10kg & 25kg
Treatment Untreated
Organic seed available in 25kg packs

BLACK OATS / JAPANESE OATS - AVENA STRIGOSA

A rapid growing leafy cereal crop which has early vigour with good weed suppression. It will produce large amounts of organic matter. Destroy before flowering to prevent self-seeding. Not winter hardy.

Sowing rate 50 - 75kg/ha
Pack size 25kg & 500kg
Treatment Untreated

FORAGE RYE

A cereal crop that produces large amounts of organic matter and suppresses weeds. An excellent nitrogen scavenger that helps the prevention of nitrate leaching during the winter months. Winter hardy. Do not allow it to run to seed as this will lock up available nitrogen.

Sowing rate 125 - 185kg/ha
Pack size 25kg & 500kg
Treatment Untreated

AVALON LEAFY TURNIP

Avalon is a very leafy turnip that is late flowering, covers the soil very fast and is winter hardy. This variety can be sown in spring or autumn and for forage production these leafy turnips can be grazed after just 6-8 weeks. Avalon also has a very high dry matter yield and excellent resistance to Alternaria.

Sowing rate 5 - 7.5kg/ha
Pack size 10kg & 25kg
Treatment Untreated

ROCKET LETTUCE

This crop flowers rather late with an average early vigour. Rocket lettuce is like oil radish; a dual purpose in regards to diseases and pest control. This crop is suitable as a biological controller of cyst nematodes H. schachtii and betae, and fights root knot nematodes M. chitwoodi and incognita. This, combined with high levels of glucosinolate, makes Rocket a good biofumigant.

Sowing rate 10kg/ha
Pack size 5kg
Treatment Untreated

FOR SPRING SOWING AND SUMMER INCORPORATION

Spring sown, summer crops are usually annual crops that as a rule do not tolerate frost. They are quick growing and will suppress weeds by light deprivation as well as providing organic material to improve soil structure and organic status. As they are usually fleshy crops and do not contain high proportions of carbon when incorporated into the soil, they do not substantially reduce stocks of soil nitrogen in the breaking down of the plant structure.

AUTUMN SOWING & SPRING INCORPORATION

Autumn sown crops which go through the winter will scavenge nitrogen from soils thus preventing leaching which is taken much more seriously these days. They can be incorporated in the following spring or can provide a source of forage, prior to incorporation and also help to control erosion especially on late harvested maize stubbles. Certain species can be utilised to provide a nitrogen fixer which is then readily available to a spring sown crop.

LONGER TERM CROPS

Grass and clover leys for long term fertility building must by their nature form part of the rotation. The increased duration of the sward ensures that the grass element provides a very strong root system valuable for soil aeration, whilst the legumes with their deeper root system will improve water filtration through the soil structure whilst also providing increased soil nitrogen.

Green Manuring Mixtures

"Our farm is mainly arable on medium to light soil with winter barley and spring barley, so the need for a green manure to help build and maintain fertility and organic matter is essential.
N-Hance cover mix was planted after barley in early August, it was slow to grow at the start due to the dry weather but has now produced a lot of organic matter.

I have used green manure mixtures from 2015, 2 years using Revival mix and the last 2 years N-Hance cover mix. I am very pleased with the mixtures, this year is the biggest crop I have had so far and I feel my soil has benefited from the use of cover mixtures over the past few years."

Mr E Williamson, Tarporley, Cheshire. November 2018

Our range of green manure mixtures have been specially formulated to help you achieve the best from your soil by protecting and improving soil fertility and health between cash crops. Fast growing species have been chosen to help suppress weed growth and provide excellent cover producing huge quantities of organic matter and a variation of different rooting depths to ensure good soil penetration and utilisation of surplus nutrients. Bespoke mixtures to suit individual, specific requirements can also be arranged.

N-RICH COVER MIXTURE

The vetch and rye complement each other to provide an excellent cover crop mixture for the winter. Vetches are fast growing and they have a very prolonged growing season, combined with excellent winter hardiness and have the advantage of being able to fix nitrogen at lower temperatures than other legumes. Forage rye is deep rooting which provides a good underground network for the plant to scavenge most of the nitrogen left by the previous crop.

80%	Forage Rye
20%	Winter Vetch
100%	

COVER CROP for EFA

Sowing rate 50 - 75kg/ha
Pack size 25kg & 500kg
Untreated

REVIVAL COVER MIXTURE

Oats, white mustard and phacelia combined make a very effective catch crop. White mustard and phacelia are very fast growing and good at suppressing weeds, they are also easy to break down and incorporate into the soil because they are less frost hardy. The oats provide good ground cover further helping with weed suppression and produce a large quantity of organic matter.

90%	Oats
5%	White Mustard
5%	Phacelia
100%	

COVER CROP for EFA

Sowing rate 30 - 50kg/ha
Pack size 25kg & 500kg
Untreated

BUSTER COVER MIXTURE

A mixture containing species with aggressive deep roots that will help with difficult compacted soils and producing huge amounts of biomass. During the winter months this mixture can benefit the soil by providing vast quantities of organic matter, prevent nutrients being lost and penetrate through compacted soils.

85%	Forage Rye
6%	Daikon Radish
5%	Phacelia
4%	Fodder Radish
100%	

Sowing rate 30 - 40kg/ha
Pack size 25kg & 500kg
Untreated

N-HANCE COVER MIXTURE

This mixture will benefit the soil by the use of species that absorb the leaching nutrients and has the added advantage of the useful nitrogen fixing winter vetch. It produces a huge quantity of organic matter and has the benefit of radish's large roots that can utilise nutrients from the deeper layers of soil.

60%	Forage Rye
30%	Winter Vetch
7%	Fodder Radish
3%	White Mustard
100%	

COVER CROP for EFA

Sowing rate 35 - 50kg/ha
Pack size 25kg & 500kg
Untreated

N-RETAIN COVER MIXTURE

A balanced mixture that contains fast growing species which produce large amounts of bio-mass. The species used in the mixture offer a wide range of rooting depths some having a fibrous root system and others producing long taproots. Both types of roots help to soak up and retain any residual nutrients which may have been left behind by the previous crop.

60%	Fodder Radish
25%	Daikon Radish
10%	Black Oats
5%	Phacelia
100%	

Sowing rate 15 - 25kg/ha
Pack size 25kg & 500kg
Untreated

FAST GROWING NON CEREAL MIXTURES

RESCUE MIX

50%	Buckwheat
15%	Fodder Radish
15%	White Mustard
10%	Gold of Pleasure
10%	Texsel Greens
100%	

Sowing rate 12kg/ha
Pack size 10kg
Untreated

BOOST MIX

70%	Texsel Greens (B. carinata)
10%	Hybrid Brassica
10%	Fodder Radish
10%	Brown Mustard
100%	

Sowing rate 6kg/ha
Pack size 5kg
Untreated

KWIK FIX

80%	Fodder Radish
20%	White Mustard
100%	

Sowing rate 12 - 15kg/ha
Pack size 5kg
Untreated

LATE COVER MIX

60%	Forage Rape
30%	Stubble Turnips
7%	White Mustard
3%	Fodder Radish
100%	

Sowing rate 12 - 15kg/ha
Pack size 5kg
Untreated

Game Cover Selector

DISCLAIMER These tables are given in good faith and intended for general guidance only. Weather, local conditions and crop rotations must always be taken into account.

Crop	Page No.	Pack Size	Cover / Feed Crop		Nectar	Average Sowing Rate per Hectare		Sowing Date Guide	Utilisation Period	Duration of the Crop	Average Drill Depth cm	Average Row Width cm	Suggested Guide to Seedbed Fertiliser (kg) ha		
						Broadcast	Drill						N	P	K
Maize															
Maize	27	40,000/ 50,000 seeds	✓	✓			Precision drill 111,150 - 123,500 seeds/ha	April - June	September - February	1 Season	6	75	80	85	205
Brassicas															
Kale	28	1kg	✓			5 - 7.5kg	3 - 5kg	April - June	September - March	1 - 2yr	1 - 2	50	100	50	120
Surefire Kale Blend	28	2kg	✓			5 - 7.5kg	3 - 5kg	April - June	September - March	1 - 2yr	1 - 2	50	100	50	120
Avalon Leafy Turnip	29	10kg & 25kg	✓			5 - 7.5kg	3 - 6kg	Spring / Early Autumn	Autumn / Early Winter	1 Season	1 - 2	Various	110	55	55
Texsel Greens	29	2kg	✓			5 - 7.5kg	6kg	April - August	September - January	1 Season	1 - 2	Various	110	55	55
Forage Rape	29	10kg & 25kg	✓			10kg	6kg	May - end of September	July - December	1 Season	1 - 2.5	15 - 20	20	40	40
Spitfire Hybrid Brassica	29	5kg & 25kg	✓			10kg	6kg	May - end of September	July - December	1 Season	1 - 2.5	15 - 20	20	40	40
Zoom Brassica Mixture	29 & 36	5kg	✓			6 - 10kg	6kg	Spring / Autumn	September - March	1 Season	1 - 2	Various	110	55	55
Millets / Grasses															
Giant Sorghum	30	10kg	✓				30kg	May - June	September - February	1 Season	2.5 - 4	45 - 50	100	50	120
Sorghum - Intermediate & Dwarf	30	10kg	✓				20kg	May - June	September - February	1 Season	2.5 - 4	45 - 50	100	50	120
Over n' Under Sorghum Mixture	30	10kg	✓				20 - 25kg	May - June	September - February	1 Season	2.5 - 4	45 - 50	100	50	120
Millets	31	10kg	✓	✓		12kg	12kg	April - June	September - December	1 Season	1 - 1.5	35-45	60	30	30
Canary Grass (Phalaris aquatica)	34	2.5kg	✓				6kg	April - June	All Year	5 Years+	1.5	70 - 90	55	28	28
Reed Canary Grass (Phalaris arundinacea)	34	2.5kg	✓				6kg	April - June	All Year	5 Years+	1.5	70 - 90	55	28	28

Crop	Page No.	Pack Size	Cover / Feed Crop		Nectar	Average Sowing Rate per Hectare		Sowing Date Guide	Utilisation Period	Duration of the Crop	Average Drill Depth cm	Average Row Width cm	Suggested Guide to Seedbed Fertiliser (kg) ha		
						Broadcast	Drill						N	P	K
Game Cover Crops															
Sunflowers	Standard	32	10kg	✓	✓	✓		12kg	April - June	July - November	1 Season	4	75	Ensure adequate P but very little N	
	Dwarf	32	5kg	✓	✓	✓		12kg	April - June	July - November	1 Season	4	28	Ensure adequate P but very little N	
Quinoa		32	2kg	✓	✓		5kg+	5kg	April - June	September - December	1 Season	1.5	45	100	50	120
Triticale		32	25kg	✓	✓			125kg	Spring / Autumn	August - February	1 Season	2.5	12 - 16	125	0	0
Borage		32	5kg	✓		✓	12kg+	12kg	April - June	Autumn	1 Season	1 - 2	15 - 20			
Gold of Pleasure (Camelina)		33	5kg	✓	✓		12kg+	12kg	April - May	September - December	1 Season	1	8 - 18	40	75	65
Phacelia		33	2kg & 5kg	✓		✓	7.5 - 10kg		April - August	July - October	1 Season	1 - 2	Various			
Buckwheat		33	10kg & 25kg	✓	✓	✓	50kg+	50kg	April - May	August - December	1 Season	1 - 2.5	20 - 35	35	105	210
White Mustard		33	10kg & 25kg	✓			12 - 17kg	6 - 12kg	Spring - Autumn	August - December	1 Season	1 - 2.5	20 - 35			
Brown Mustard		33	5kg	✓			5 - 7.5kg	2.5 - 7.5kg	Spring - Autumn	Autumn / Spring	1 Season	1 - 2.5	20 - 35			
Fodder Radish		33	10kg & 25kg	✓	✓	✓	8kg	6kg	Spring / Autumn	July - December	1 Season	1 - 2.5	25 - 30	40	15	20
Linseed		33	25kg	✓	✓	✓		60kg	April - May	September - February	1 Season	1 - 2	8 - 18	40	75	65
Perennial Chicory		34	2kg	✓		✓	5kg+	5kg	Spring or Early Autumn	All Year	5yr+	1	15 - 20	100	50	120
Yellow Blossom Clover		34	2kg	✓		✓	6kg+	6kg	April - June	All Year	1 - 2yr	0.5	75	30	0	0
Game Cover Mixtures															
Feed and Cover Mixture		6	25kg	✓	✓	✓		40kg	Spring	September - February	1 Season	1 - 2.5	12 - 16	30	75	75
Partridge Mixture		7	25kg	✓	✓			62kg	Spring	September - February	1 Season	1 - 2.5	12 - 16	30	75	75
Northern Shot		7	20kg	✓	✓	✓		50 - 60kg	Spring	September - February	2 Season	1 - 2.5	12 - 16	75	40	40
Northern Star Game Mixture		7	20kg	✓	✓	✓	50kg	50kg	Spring	September - February	1 Season	2.5 - 3	15	75	37	37
Overdrive		28	2.5kg	✓	✓		6kg+	6kg	April - June	September - February	1 - 2yr	2.5	45 - 50	100	50	120
General Purpose Rearing Pen Mixture		34	15kg	✓			32 - 37kg	32kg+	Spring / Autumn	All Year	5yr+	1	15 - 20			
Broadshot		35	10kg	✓	✓	✓	15kg	15kg	Spring	September - February	1 Season	1 - 2	15 - 25	80	40	96
Four Ten Mixture		35	14kg	✓	✓			35kg	Spring	September - February	1 Season	6	75	185	90	220
Sundown Mixture		35	13kg	✓	✓	✓		32kg	April - June	September - February	1 Season	5 - 6	75 - 100	60	60	
Traditional Game Cover Mixture		35	10kg	✓	✓	✓	25kg	25kg	April - June	September - February	1 Season	B/C	B/C	80	40	96
Decoy Game Mixture		35	10kg	✓	✓	✓	20kg	20kg	Spring	September - February	1 Season	1 - 2	15 - 25	80	40	96
Boost Mixture		19 & 36	5kg	✓			6kg+	6kg	June - September	September - February	1 Season	1 - 2	45 - 50	100	50	50
Late Cover Mixture		19 & 36	5kg	✓			15kg+	12kg	Spring / Autumn	September - February	1 Season	1 - 2	20 - 35	55	28	28
Kwik Fix		19 & 36	5kg	✓			15kg+	12kg	July - End of September	September - December	1 Season	1 - 2	40	Lodging can occur with excess fertiliser		
Rescue Mixture		19 & 36	10kg	✓	✓		12kg+	12kg	June - September	September - December	1 Season	1 - 2	45 - 50	100	50	50




Establishing Game Cover Crops

Game cover crops will only reach their full potential if they are well managed right from the start. A successfully managed shoot is both profitable and rewarding to landowners and the local community, as it contributes positively to the countryside and the overall environment. It is hoped the following notes will help and guide you to the successful establishment of game cover crops. Any regional or particular soil conditions have not been taken into consideration as it is preferable to take advantage of local knowledge. If you would like more detailed information please contact your local seed specialist, who will be able to give advice for your own particular farm/situation.

CROP ROTATION

Rotations are essential to help reduce soil-borne diseases such as club root in brassicas. A rotational system will also help to improve soil fertility and structure as each crop can benefit the soil in different ways, each requiring different trace elements. Crop rotation is essential where weeds and/or disease have become a persistent problem.

CULTIVATIONS

A well prepared seed bed is essential for crop health and development, as a rapidly growing game cover crop has more chance of resisting pest attack. Generally, ploughing and rapid consolidation to conserve moisture is the ideal start for these crops. Ensure the seed bed is fine and firm to help reduce the risk of slug activity.

SOWING

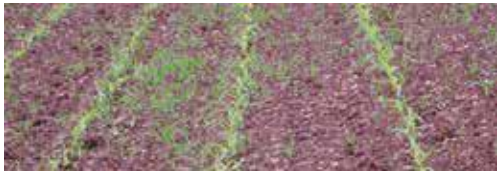
Where possible we recommend drilling game cover crops. This ensures accurate seed depth and row width and will provide maximum seed to soil contact that will encourage a speedy establishment. Sowing at the correct row width will also improve bird holding and driving capability. Each growing season is completely different, but try not to sow too early to ensure the soil temperature is warm enough to encourage a quick successful germination.

SOIL TESTS & FERTILISER

Soil testing is essential to determine the soil pH and fertility of the soil, which can then be managed accordingly to maximize its potential. Farmyard manure is an excellent way of improving soil structure and adding fertility. Fertiliser will also be required at the early stages of establishment to maximize the output of your game cover crop. Lime may be required for some acid soils to balance the soil pH.

WEED CONTROL

The stale seed bed technique is a well proven weed control system and allows early control of weeds. The technique involves spraying, ploughing and cultivating to encourage weed seeds to germinate in a first flush, then re-spraying; this can be repeated as often as necessary to help achieve a clean seed bed. This technique is very useful where mixtures are grown and no herbicide can be recommended. (For chemical weed control see tables on pages 24 and 25).




Pests & Diseases in Brassicas & Maize

PESTS

FLEA BEETLE MANAGEMENT

Brassicas (kale, rape, turnips, texsel greens, jonty) and linseed are vulnerable in hot weather conditions to attacks of flea beetle. Chemical insecticide treatment will be required immediately if 'shot holes' are seen in the young leaves. Increasing soil fertility and structure helps speed the crop through critical growth stages to minimize attack.


Flea Beetle

DIABROTICA BEETLE
(Western Corn Rootworm)

WIREWORM

FRIT FLY

EUROPEAN CORN BORER

OTHER PESTS

Game cover is often sown in the spring near to woods and trees and therefore is very attractive to crows, pigeons, slugs, rabbits, hares, deer, badgers and caterpillars. Game cover crops need to be checked regularly and relevant action needs to be taken quickly to prevent further attacks from these pests. Mesurol seed treatment, whilst still available, can help reduce corvid damage to maize crops.

DISEASES IN MAIZE

MAIZE SMUT
(Ustilago maydis)

EYE SPOT
(Kabatiella zeae)

RUST
(Puccinia sorghi)

STALK ROT
(Fusarium spp)

DISEASES IN BRASSICAS

CLUB ROOT
(Plasmodiophora brassicae)

Club Root is a serious and widespread disease of brassica plants. It is very difficult to control and once present in the soil, is virtually impossible to eradicate. Roots affected by club root are swollen and distorted thus reducing the flow of water and nutrients to the plant; leaves become yellow and wilt causing severe stunting of growth. Sowing crops in the autumn when the soil is cooler reduces the risk of attack. Increasing soil pH through liming, ensuring good drainage and maintaining long rotations between brassica crops (at least four years) are the best methods to manage the disease.

See our club root tolerant species:

Goldeneye Kale (page 28)
Sovereign Kale (page 28 & 42)
Daikon Radish (page 18)
Fodder Radish (page 18 & 33)

Game Cover Chemicals

KEY

- Considered 'crop safe' when correctly applied to healthy crop in good condition
- Considered to pose a risk to crop health, use with caution
- No information available

The chart below was kindly supplied by Agrovista UK Ltd

	STALE SEEDBED	PRE EMERGENCE HERBICIDES ONLY														
	ROUNDUP BIACTIVE (EAMU 2869/08)	RAPSAN SOLO (EAMU 1944/18)	ANTHEM (EAMU 1260/14)	AVADEX EXCEL 15G (EAMU 0468/17 & 1361/17)	CENTIUM 360CS (EAMU 2924/15)	CIRRUS CS (EAMU 2924/15)	CRYSTAL (AUTMN APPLICATION) (EAMU 0450/09)	DEBUT (EAMU 2535/14)	DEFY (EAMU 2535/14)	DUAL GOLD (1257/11 + 1260/11) 1ST MARCH - 31ST MAY	DEVRINOL (EAMU 0446/17)	GAMIT 36CS (EAMU 2813/15)	"KERB FLO (EAMU 2942/08)	PICONA (EAMU 2864/08)	STOMP AQUA (EAMU 2919/09) 2457/11	SPRINGBOL AUTUMN ONLY (EAMU 3006/14 1540/15)
Canary Grass	4			15KG	0.25		4				2.5	0.25	2.1	3	3.3	2.5
Chicory	4							30G		0.6			3.1			
Giant Sorghum	4															
Kale	4	1.5								1.4	2.8	0.33	1.75		3.3	2.5
Linseed	4			15KG					5		2.5					
Maize	4		3.75							1.4					3.3	
Ambush Millet Mix	4															
Millet White	4		3.3		0.25		4				2.5	0.25	2.1	3	3.3	2.5
Mustard	4	1.5									2.5					
Quinoa	4	1.5	3.3		0.25	0.25					2.5			3	3.3	2.5
Fodder Radish	4												1.75			
Sunflowers	4		3.3		0.25		4				2.5	0.25	2.1	3	3.3	2.5
Swede	4	1								1.4	1.25	0.25				2.5
Sweet Clover	4		3.3		0.25		4				2.5	0.25	2.1	3	3.3	2.5
Triticale	4		3.3	15KG										3	2.9	
Stuble Turnip	4															

	POST EMERGENCE HERBICIDES																													
	AGROXONE (2061/12)	ALLY SX (EAMU 1146/18)	AXIAL (EAMU 2815/08) Under Revocation Axial Pro will not have GameCover EAMU	BARTON WG (EAMU 0229/14)	BASAGRAN (EAMU 1620/13 + 2819/08)	BUTRYFLOW (EAMU 1620/13)	CALLISTO (EAMU 2830/08)	CENTURION MAX (EAMU 2728/17)	DEFY (EAMU 1430/13 + 1430/13)	DEPITOX (EAMU 2843/08)	DOW SHIELD 400 (EAMU 2012 2041)	DUPLOSAN KV (EAMU 1129/11)	DUAL GOLD (1257/11) 1ST MARCH - 31ST MAY	EAGLE EAMU (2508/14 + 2508/14)	FALCON (EAMU 1283/14)	FUSILADE MAX (EAMU 1320/12)	FOX (EAMU 2381/14)	GALERA (EMAU 2720/14)	HURRICANE (EAMU 1325/14)	JUBILEE SX (EAMU2859/08)	KERB FLO (EAMU2942/08)	LASER (EAMU 1266/17	LANTAGRAN WP (EAMU 0788/09 + 3230/09)	MAYA (EAMU 1044/17)	PEAK (EAMU 0906/12)	SAMSON (EAMU 0617/14)	STARANE HI-LOAD HL (1268/17)	STARANE XL (EAMU 2904/08)	THISTLEX (EAMU 2512/14) 1ST MARCH - 31ST OCTOBER ONLY	VIVENDI 200 (2057/17 + 1259/15)
Canary Grass	3.3		0.45		1.65KG	1	1.5		3	1.8	0.5	2.3		40G	1.5			0.35	0.2	30G	2.1		2KG		20G		0.6	1.8	1	1.5
Chicory													0.6			1.5					3.1	0.75								
Giant Sorghum																											0.6			
Kale											0.5										1.75		2KG			1	0.6			
Linseed					1.1KG			1			0.25			40G	1.5	1.5						2.25		1						
Maize						1	1.5				0.5									30G					20G		0.6			
Ambush Millet Mix			0.45		1.65KG	1	1.5		4	1.8	0.5	2.3		40G	1.5			0.35	0.2	30G	2.1		2KG		20G		0.6	1.8	1	1
Millet White			0.45	30G	1.65KG	1	1.5		4	1.8	0.5	2.3		40G	1.5			0.35	0.2	30G	2.1				20G	1	0.6	1.8	1	1
Mustard								0.8			0.5				1.5	1.5	1	0.35												
Quinoa	3.3	30G	0.45		1.65G	1			3	1.8	0.5	2.3		40G	1.5			0.35	0.2	30G	2.1		2	1	20G	1	0.6	1.8	1	1
Fodder Radish																1.5					1.75		2							
Sunflowers	3.3	30G	0.45	30G		1	1.5	0.8	3	1.8		2.3		40G	1.5			0.35	0.2	30G	2.1					1	0.6	1.8	1	1
Swede								0.8			0.5		1.4		1.5	1.5		YES				2.25								
Sweet Clover	3.3	30G	0.45		1.65KG	1	1.5		3	1.8	0.5	2.3		40G	1.5			0.35	0.2	30G	2.1		2KG			1	0.6	1.8	1	1
Triticale		30G									0.175	2.3								30G							0.45	1.8		
Stuble Turnip																											0.6			

DISCLAIMER: In some cases information is based on limited data so should be used with caution. EAMUs (formerly SOLAs) and LTAEU off-label uses are at Growers Own Risk.

Dow Shield, Thistlex & Vivendi contain Clopyralid which can remain in plant residues and affect following crops - ensure full incorporation of crop residues before planting treated areas with susceptible crops. When used on game cover crops the seed or any part of the treated plants must not be used for human or animal food or feed (except game birds).

Agrovista & DLF cannot accept any responsibility for any loss, damage or accident arising from the use of information in this report. Always read the label and the associated EAMU document prior to any application. Products are used entirely at the growers own risk.

Maize Herbicides

Key

Litre quantity indicates effective application rate
The chart below was kindly supplied by Agrovista UK Ltd
( ) = Based on trials

- Susceptible
- Moderately susceptible
- Moderately resistant
- Resistant

* @1.5l/ha
** at full rate
*** control can be variable

Herbicide	Crop Timing	a.ig/l or kg	Dose rate litre/ha	Sweetcorn under plastic	Sweetcorn	Grain Maize under plastic	Grain Maize	Forage Maize under plastic	Forage Maize
Pendimethalin	Pre-emergence up to 4 leaves	Most Micro 365g/l Anthem 400g/l Stomp Aqua 455g/l	3.3	Alpha pend330 Stomp 400	Alpha pend330 Cinder Stomp Aqua	YES ALL	YES ALL	YES ALL	YES ALL
Wing-P	Pre-emergence up to 4 leaves	Dimethenamid-p 212.5g/l + Pendimethalin 250g/l	4.0	NO	NO	YES (EAMU)	YES	YES (EAMU)	YES
Dual Gold	Pre-emergence	S-metolachlor 960g/l	1.4				YES		YES
Elumis	Post emergence 2-8lvs	Mesotrione 75g/l + Nicosulfuron 30g/l	1.5				YES		YES
Calaris	Post emergence 2-8lvs	Mesotrione 70 g/l + Terbuthylazine 330 g/l **REVOCATION FINAL USE 2019**	1.5		YES (EAMU)		YES		YES
Callisto	Post emergence 2-8lvs	Mesotrione 100g/l	1.5		YES (EAMU)		YES		YES
Entail	Post emergence 2-8lvs	Nicosulfuron 240g/l	0.17		13436		YES		YES
Maister + Mero #	Post emergence 2-6lvs	foramsulfuron 300g + iodosulfuron 100g/kg	150g + 1l/ha				YES		YES
Peak*	Post emergence 2-10lvs	Prosulfuron 750g/kg	20g				YES		YES
Buctril	Post emergence 1-9lvs	Bromoxynil 225g/l as octonanate ester	1.2				YES		YES
Maya	Post emergence 2-8lvs	Bromoxynil 401.58g/l	1.0		YES		YES		YES
Gal Gone	Post emergence	Fluroxypyr 200g/l	1.0						YES
Titus*	Post emergent before 4 collar	Rimsulfuron 25%	50g						YES check variety

Herbicide	Wild Radish	Volunteer Potato	Volunteer OSR	Thistle Creeping	Stinking Mayweed	Sow Thistles	Shepherd's Purse	Scentless Mayweed	Scented Mayweed	Scarlet Pimpernel	Small Nettle	Redshank	Red Dead Nettle	Pineappleweed	Pennycress	Parsley Piert	Pale Persicaria	Orache	Knotgrass
Pendimethalin																			
Wing-P																			
Dual Gold																			
Elumis																			
Calaris	*									*									*
Callisto	*		6-LF		*					*				*	*				*
Entail	**				**			**						**					
Maister + Mero #			6-LF	4-LF seeding	up to 6-LF		up to 6-LF		up to 6-LF		4-LF	4-LF	4-LF				4-LF	2-LF	up to 6-LF
Peak*																			
Buctril	2-LF					2-LF	2-LF	2-LF	2-LF			2-LF		2-LF			2-LF	2-LF	2-LF
Maya																			
Gal Gone																			
Titus*																			

Herbicide	Ivy-leaved Speedwell	Henbit Dead Nettle	Groundsel	Fumitory	Forget-me-not	Fool's Parsley	Field Pansy	Field Bindweed	Fat Hen	Dock	Creeping Buttercup	Corn Marigold	Crane's Bill	Common Poppy	C Hemp Nettle	C. Field Speedwell	C.Chickweed	Cleavers	Charlock
Pendimethalin																			
Wing-P													KEY BENEFIT						
Dual Gold																			
Elumis																			
Calaris		*								*			*					*	*
Callisto							6-LF			*								* 8 - 6 whorls	
Entail			**					**	**						**	**			
Maister + Mero #			4-LF	2-LF			4-LF		up to 8-LF	2-LF seeding			4-LF			2-LF	up to 5cm	2 whorls	4-LF
Peak*										seedling									
Buctril			2-LF		2-LF				2-LF					2-LF		2-LF			
Maya																			
Gal Gone																			
Titus*																			

Herbicide	Bugloss	Black Nightshade	Black Bindweed	Annual Mercury	Amaranthus	Wild Oats	Volunteer Cereals	Sorghum	Ryegrass	Millet	Loose Silky Bent	Creeping Bent	Crab/Hairy Finger gr/Digitaria	Couch	Brome	Barnyard Grass/ Cockspur	Blackgrass	RSMG	Annual Meadow Grass
Pendimethalin																			
Wing-P																			
Dual Gold																			
Elumis								2-LF				4-6 LF		*					
Calaris													*			*			
Callisto	4-6 LF		*	*	6-8 LF					*			*			GS21			
Entail				**				2-LF GS21		2-LF GS21		4-6 LF		4-6 LF					2-LF
Maister + Mero #		*** up to 8-LF	2-LF			4-LF	4-LF		4-LF seeding			4-LF		up to 15cm		3-LF	4-LF		up to GS 30
Peak*																			
Buctril	2-LF	2-LF	2-LF																
Maya																			
Gal Gone																			
Titus*																			

* Do not apply Peak in sequence with any other SU containing herbicide (Elumis, Entail, Milagro or Titus) Only one application of an SU herbicide with grassweed activity can be applied to the crop.

Forage Maize

DLF have been strong players in the forage maize market for many years. Our expertise in the grass seed market complements the maize portfolio when discussing total forage needs with our customers.

We are not breeders of maize so we work with breeders, which can have a distinct advantage when securing a well-rounded portfolio to suit all maize requirements.

The biogas sector for maize is growing and our varieties for this sector have performed extremely well this season and already have some repeat orders for next season (BIOGAS page 15).

This is a guide and taster to all our varieties, however comprehensive technical sheets are available for each variety.

ULTRA EARLY

EMMERSON

- Setting new standards for ultra early maize
- First choice on BSPB/NIAB Descriptive List 2019 for both Favourable and Less Favourable Sites
- Emmerson also features on the Maize for Anaerobic Digestion List 2019
- Ultra early short-season hybrid for earlier harvest or later sowing options

Individual technical sheets available for each variety.

These can be found at

www.dlf.co.uk/maize-and-arable.aspx

EARLY

ABILITY

NEW FOR 2019

- Superb yields of dry matter and energy
- New variety currently in official trials
- Suitable for anaerobic digestion

VERY EARLY

PEREZ

- Gain higher yields faster!
- First choice on BSPB/NIAB Descriptive List 2019 for Less Favoured sites
- Proven consistent performance
- Suitable for anaerobic digestion

EARLY MAINCROP

MARCARMO

NEW FOR 2019

- New variety currently in official trial
- Fills the clamp!
- Very high yields of dry matter and energy
- Suitable for anaerobic digestion

Game Maize

"Rapid Fire game maize works well on our shoot, it provides vital cover and excellent cobs to hold the pheasants. Last year it stood well until the end of the season. The hot summer hasn't affected it's growth, we are very pleased."

Charlie Matthews, Manor Farm, Dorset. October 2018

Game Maize is still one of the most popular crops used for cover and feed. Nearly all maize varieties used for game cover have at some stage been commercial forage or grain varieties. As these varieties are superseded by newer hybrids, stocks of those being replaced diminish and we carefully select the most suitable of these for our game cover purposes.

N.B. Height of maize may vary depending on seasonal and management variations. The later the sowing date the later the maturity of the maize.

RAPID FIRE

Rapid Fire is still our biggest selling brand of maize. Varieties are chosen which have very good standing ability, early vigour and a low cob carriage.

Pack size **50,000 seeds**
Treatment **Mesurol treated**

MAIZE BLEND

Maize Blend is a mixture of varieties with early, mid and late maturity. This will give differing rates of maturity as cobs ripen at different times, thus providing cover throughout the whole of the shooting season.

Pack size **50,000 seeds**
Treatment **Mesurol treated**

SILVER SHOT

Silver Shot has been grown by many large shoots for good stay green cover and standing ability through the season

Pack size **40,000 seeds**
Treatment **Mesurol treated**

LATE SHOT

Late Shot is selected for very late maturity and good standing ability. It produces an immature cob that only develops to the 'bright white' stage under normal UK autumn and winter conditions. Due to the late cob formation it tends to be of less interest to rats and badgers that can decimate more mature cobbed varieties through the shooting season.

Pack size **50,000 seeds**
Treatment **Mesurol treated**

Kale

Kale is still one of the most popular cover crops used today. The main advantage of kale is that it will provide cover for the whole shooting season. Pheasants particularly like the combination of a good canopy and bare ground which allows easy movement in a relatively dry environment.

Kale requires soil with a pH of around 6.5, so it is very important to conduct soil analysis prior to sowing. Kale is a very hungry crop and benefits from the application of farmyard manure/slurry prior to sowing. Care should be taken with continuous kale as the ground can become "brassica sick"; club root (finger and toe) will inhibit or prevent the growth of brassica crops but this can be prevented by growing kale and another crop such as maize in adjacent strips and alternating the strips.

Kale is frequently grown in conjunction with other crops such as quinoa and yellow blossom clover. Selection of any such mixture should take into account the required length of time for which the crop is grown and the potential weed control that may be required.

SOVEREIGN

Club Root Tolerant

Club Root Tolerant

Sovereign is a high yielding, medium-tall forage kale with good club root tolerance. In agronomic tests conducted by the Scottish Agricultural College in Aberdeen, Sovereign was shown to have good dry matter yields and excellent leaf-to-stem ratio and compared statistically very favourably on all counts with Caledonian kale. Successfully tested for winter hardiness and keeping ability, it has the potential to maintain good quality production over a longer usage period.

Sowing rate 3 - 7.5kg/ha
Pack size 1kg
Treatment Untreated

GOLDENEYE KALE

Club Root Tolerant

Club Root Tolerant

Goldeneye is a giant type kale especially bred for the game cover market, selected for the optimum combination of height and leaf production. It has a leafy top, strong stem, good winter hardiness and good field tolerance of disease, making it the ideal choice for game cover usage. Goldeneye achieved a higher vigour score than Caledonian kale and better club root tolerance in a trial conducted at the Scottish Agricultural College in Aberdeen.

Sowing rate 3 - 7.5kg/ha
Pack size 1kg
Treatment Untreated

GRÜNER ANGELITER

A very tall variety with good winter hardiness. Grüner Angeliter is proving to be a significant improvement in the game cover sector and has performed extremely well even in difficult growing conditions. It has a high leaf canopy and a thick strong stem with a branching, umbrella-shaped canopy giving plenty of space for the birds to move about underneath.

Sowing rate 3 - 7.5kg/ha
Pack size 1kg
Treatment Untreated

SUREFIRE KALE BLEND

A combination of three excellent game cover kale varieties, to provide a tall varied canopy. This blend will give superb cover over an extended period and will give second year growth with various bolting times. The flowering kale attracts insects and provides shed seed, all helping to draw both game and song birds.

45%	Goldeneye
30%	Grüner Angeliter
25%	Sovereign
100%	

Sowing rate 3 - 7.5kg/ha
Pack size 2kg
Treatment Untreated

OVERDRIVE

Club Root Tolerant

A superb combination of winter hardy cover provided by the kale and high quality feed provided by the quinoa. This mixture is excellent for holding birds.

50%	Quinoa
50%	Goldeneye Kale
100%	

Sowing rate 6kg/ha
Pack size 2.5kg
Treatment Untreated

Flea beetle damage may occur in the early stages of establishment, regular monitoring of the crop is required as action may be needed in the event of heavy attack.

Brassicas

ZOOM BRASSICA MIXTURE

Zoom is a blend of Winfred hybrid brassica and forage rape. This is a very vigorous and quick growing mixture which is ideal for replacing failed crops or patching spring sown crops. Good seedling vigour gives a reliable establishment of a high leaf to stem ratio crop using carefully selected varieties with good disease and bolting resistance.

Sowing rate **6 – 10kg/ha**
Pack size **5kg**
Treatment **Untreated**

AVALON LEAFY TURNIP

Avalon is a very leafy turnip that is late flowering, covers the soil very fast and is winter hardy. This variety can be sown in spring or autumn and for forage production these leafy turnips can be grazed after just 6-8 weeks. Avalon also has a very high dry matter yield and excellent resistance to Alternaria.

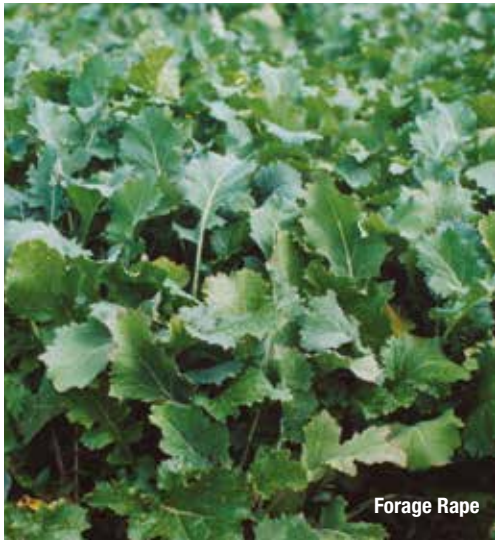
Sowing rate **5 - 7.5kg/ha**
Pack size **10kg & 25kg**
Treatment **Untreated**


Avalon Leafy Turnip

FORAGE RAPE

Forage Rape is particularly useful in that it can be used as a rescue or catch crop, continuing until the New Year when it flowers and goes to seed. A well grown crop with adequate spacing between rows will provide good cover for holding, driving and feeding. It is largely unaffected by frost and wet weather.

Sowing rate **6 - 10kg/ha**
Pack size **10kg & 25kg**
Treatment **Untreated**


Forage Rape

Spitfire

SPITFIRE HYBRID FORAGE BRASSICA

Spitfire is a modern hybrid rape created by crossing rape with kale and is a good companion to use with other fast establishing brassicas. It is a rapid growing brassica that can be used as a rescue or catch crop that will provide good cover for holding, driving and feeding game birds. It is a medium-tall variety with excellent aphid tolerance and rapid establishment to maturity.

Sowing rate **6 - 10kg/ha**
Pack size **5kg and 25kg**
Treatment **Untreated**

OUTSTANDING PRODUCT OF THE YEAR

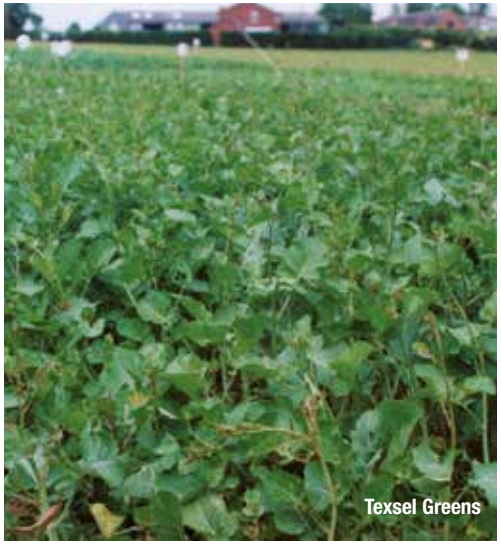
Everyone's talking about it!

TEXSEL GREENS

(Brassica carinata)

Texsel Greens are a fast growing, shiny leaved brassica developed from Ethiopian mustard. They are easy to establish and provide frost hardy cover, producing a broken canopy which is great for flushing birds. Their rapid growth is ideal for suppressing weeds and they are often used as a patching crop when spring crops have failed. Also see Boost mixture on pages 19 & 36.

Sowing rate **5 - 7.5kg/ha**
Pack size **2kg**
Treatment **Thiram & Sepiret treated**


Texsel Greens

Sorghums

Sorghum is a semi-tropical, non-cob producing, maize-like plant which will provide cover throughout the shooting season. It thrives best in warm, sunny growing conditions and therefore is suited to the more southerly regions of the UK. Sorghum is a very slow establishing plant that does not begin to flourish until late July.


Dwarf Sorghum

DWARF SORGHUM

Dwarf Sorghum has a short, sturdy, broad-leaved stem and a substantial seed-head, providing birds with warm cover throughout the shooting season. Often sown as a companion to maize with the bulkier, shorter sorghum plants giving protection to the birds below the taller growing maize plants (see Four Ten on p35) Average height 1 - 1.25m.

Sowing rate **20kg/ha**
Pack size **10kg**
Treatment **Treated & Untreated**

INTERMEDIATE SORGHUM

Intermediate Sorghum as suggested by its name, is in between giant and dwarf in height, approx 1.5m. Useful as a windbreak around other game cover crops, it provides pheasant and partridge with protection from overhead predators. Has an attractive seed-head.

Sowing rate **20kg/ha**
Pack size **10kg**
Treatment **Treated & Untreated**

GIANT SORGHUM

Giant Sorghum is a sorghum x sudan grass hybrid standing approximately 2 metres tall and therefore is extremely useful as a windbreak to protect more vulnerable crops. Its deep rooting system enables it to withstand drought conditions. Useful as a flushing crop even though it is prone to lodging later in the season.

Sowing rate **30kg/ha**
Pack size **10kg**
Treatment **Treated & Untreated**


Giant Sorghum

N.B. Height of Sorghum may vary depending on seasonal and management variations.


Over n' Under Sorghum Mixture

OVER N' UNDER SORGHUM MIXTURE

A combination of two differing heights of sorghum. The shorter dwarf sorghum will give the birds cover and protection from predators with the taller giant sorghum acting as a windbreak.

50%	Giant Sorghum
50%	Dwarf Sorghum
100%	

Sowing rate **20 - 25kg/ha**
Pack size **10kg**
Treatment **Treated & Untreated**

Millets


Red Millet


White & Red Millet


Millgame Millet Mix


White Millet

WHITE MILLET

White Millet is best suited to more southerly regions of the UK as it is a sunshine loving plant and is not frost hardy. It provides warmth, shelter and feed for game birds and will attract wild seed-eating birds such as finches. White millet is particularly attractive to grey and red-legged partridges and if sown alone can be used for early holding cover. When required to last longer into the season it performs well if sown with maize, but will combine well with a variety of other game cover crops.

Sowing rate 12kg/ha
Pack size 10kg
Treatment Untreated

RED MILLET

Red Millet is earlier maturing than white and does not stand well when sown alone. However it is a good partner to use with white millet as it extends the feeding period (see Millgame Millet Mix). As with other millets, it is susceptible to frost.

Sowing rate 12kg/ha
Pack size 10kg
Treatment Untreated

JAPANESE REED MILLET

Japanese Reed Millet is a stronger plant than other members of the millet family and is more winter hardy. When mixed with white and red millet it provides an excellent cover and feed crop (see Ambush Millet Mix).

Sowing rate 12kg/ha
Pack size 10kg
Treatment Untreated

AMBUSH MILLET MIX

Ambush Millet Mix is a combination of white, red and Japanese reed millet. The reed millet being a stronger plant and more winter hardy provides cover while the white and red millet produces plentiful seed to hold the birds in the cover. It is an ideal mixture for use as a wind-proof belt on the outside of a block of maize or as a flushing point at the end of maize.

40%	White Millet
40%	Red Millet
20%	Japanese Reed Millet
100%	

Sowing rate 12kg/ha
Pack size 10kg
Treatment Untreated

MILLGAME MILLET MIX

Millgame Millet Mix uses both red and white millet and is useful as the red matures earlier than the white, therefore extending the feeding period. This mixture can produce huge amounts of high protein feed per acre and when combined with maize creates an excellent cover and feed crop.

50%	Red Millet
50%	White Millet
100%	

Sowing rate 12kg/ha
Pack size 10kg
Treatment Untreated


White Millet


Japanesse Reed Millet


Millgame Millet Mix

Game Cover Crops

Sunflowers in flower is a colourful sight, the crop is of huge benefit to a wide range of wildlife. Sunflowers provide highly nutritious seed of a high oil content which is loved by all game and song birds and the nectar is of great importance to bees and other insects.

In most situations sunflowers are grown in conjunction with many other game crops such as game maize or kale, either in mixtures or in adjacent blocks. The young seedlings are very vulnerable to spring slug attack and to wireworm in ground that has previously been in grass, so a close eye must be kept on the newly planted crop. Cambridge rolling following drilling into a good seed bed will help to protect against rook damage.

STANDARD TYPE

Large attractive flowers of variable height, but generally tall. For best utilisation of this crop it should be "swiped down" to enable game birds to reach the nutritious seeds. They can be drilled with maize to brighten up your maize crop.

Sowing rate **12kg/ha**
Pack size **10kg**
Treatment **Untreated**

DWARF TYPE

A short hybrid variety with good standing ability. The seed-heads tend to be larger than those of the standard type. These are also best "swiped down" to enable birds to reach the large seed-heads, providing plenty of nutritious seeds.

Sowing rate **12kg/ha**
Pack size **5kg**
Treatment **Fungicide treated**

Sunflower

TRITICALE

A wheat/rye hybrid cereal providing good cover and feed in marginal low fertility areas where it will thrive with little input. Useful in situations where maize and millet are not options and where brassica sickness is a problem. Further important advantages are its ability to withstand rabbit attack, winter hardiness and good disease resistance. When sowing in the spring, a true spring type must be used which does not require a period of vernalisation, otherwise the plant will not produce grain.

Sowing rate **125kg/ha**
Pack size **25kg & 500kg**
Treatment **Untreated**

BORAGE

Borage, also known as starflower, is a quick growing annual herb, to a height of 2-3 feet with bright blue flowers; there is also a white flowered variation. The crop was traditionally grown for culinary and medicinal uses, although the crop is commercially grown today for its oil content. Borage's star shaped flower attracts bees all summer long. Borage is a self seeding plant and likely to reseed itself for many years to come.

Sowing rate **12kg/ha**
Pack size **5kg**
Treatment **Untreated**

Quinoa

QUINOA

Quinoa is capable of producing a plentiful amount of seed and therefore is a popular choice of crop for holding partridge and pheasant. Many species of seed-eating song-birds are also attracted to the crop. Commonly grown with kale, quinoa provides cover and feed until it begins to collapse in the first frosts with the kale providing more permanent cover.

Sowing rate **5kg/ha**
Pack size **2kg**
Treatment **Untreated**




Game Cover Crops

Phacelia | White Mustard | Brown Mustard | Buckwheat

PHACELIA

A prolific seeder, very fast to establish and a good weed suppressant. It produces a mass of sweet smelling purple flowers providing a good source of nectar, beneficial to a large variety of insects. It is not winter hardy and therefore for game cover it is best sown as part of a mixture. Phacelia is likely to set seed and reseed itself for many years to come.

Sowing rate **7.5 - 10kg/ha**
Pack size **2kg, 5kg & 10kg**
Treatment **Untreated**
Organic seed available in 25kg packs (Limited)

BUCKWHEAT

A rapidly growing short term crop highly attractive to pheasants, partridge and deer both as cover and feed. The large amount of nectar produced attracts bees and other beneficial insects which in turn provide added interest for game birds. It is a useful component to add to mixtures due to its bulkiness and its ability to continue to provide holding cover and feed after the first frosts when the crop has fallen. Buckwheat thrives best in sunny rather than shaded areas.

Sowing rate **50kg/ha**
Pack size **10kg & 25kg**
Treatment **Untreated**
Organic seed available in 25kg packs (Limited)

BROWN MUSTARD

A fast growing cover crop easy to establish 50 - 70 day crop that can be sown between April and September. Unlike white mustard, it is winter hardy. It will improve the health of the soil by increasing organic matter and acts as an excellent weed suppressant. It is also especially useful as over-wintering green cover after maize, potatoes and sugar beet crops, reducing soil erosion, fertiliser leaching and water run-off.

Sowing rate **5 - 7.5kg/ha**
Pack size **5kg & 25kg**
Treatment **Untreated**

WHITE MUSTARD

A relatively inexpensive and highly versatile cover crop either sown alone or as a companion to other species. It is ideal for early cover and although killed off by frost, the fallen woody stems will create shelter for the birds below. This is especially useful when sown with seed producing species which alone would provide no cover. Popular as a green manure crop (see green manure section page 16 - 19).

Sowing rate **6 - 17kg/ha**
Pack size **10kg & 25kg**
Treatment **Untreated**
Organic seed available in 25kg packs

FODDER RADISH

(Oil Radish)

A fast growing cover crop, its prime usefulness being where brassica sickness is a problem due to its immunity to the disease. Other qualities are its speed of establishment which aids weed suppression and its use as a green manure crop. It is useful as a catch crop in northern regions if sown in July as it will be ready to provide cover within six to eight weeks, just as birds are losing cover from the cereals being combined. Due to its fast growth it is valuable as a replacement for failed crops, and will continue to provide cover right through the season. In addition, it holds its seed in pods which shed in late winter/early spring, thus providing feed during that all important 'hungry gap'.

Sowing rate **6 - 8kg/ha**
Pack size **10kg & 25kg**
Treatment **Untreated**
Organic seed available in 25kg packs (Limited)

Fodder Radish

LINSEED

Traditionally grown for its oil, linseed has become popular in recent years as game cover and is particularly attractive to partridge. It is an easy to grow crop and is tolerant of many soil types, performing well on thinner soils e.g. Cotswold Brash. Although not frost hardy it will continue to provide cover and interest well into the winter especially if sown as part of a mixture. It is also another option where brassica sickness has been a problem.

Sowing rate **60kg/ha**
Pack size **25kg**
Treatment **Untreated**

GOLD OF PLEASURE - CAMELINA

Another crop well suited to poorer and nutrient deficient soils. It is a fast maturing, free-branching plant producing a seed very attractive to birds, especially partridge. A useful mixture for exposed areas is produced by combining gold of pleasure with triticale, barley and linseed (see Partridge mix page 7).

Sowing rate **12kg/ha**
Pack size **5kg**
Treatment **Untreated**

Game Cover Crops

Reed Canary Grass & Chicory

LONGER TERM CROPS

Perennial game cover crops provide valuable year round habitat for game and farmland wildlife. They help reduce workload during busy periods and reduce establishment costs.

Perennial Chicory

CANARY GRASS

(Phalaris aquatica)

Canary Grass provides excellent medium to long term nesting cover for pheasant and partridge and can be used to both hold and drive birds. It is useful in areas where annual planting is not an option, either because it is uneconomic or too difficult and is a good choice to use between tree rows in newly established woods. Care must be taken to drill in wide enough rows to prevent the canary grass becoming too dense and therefore impassable for the birds. Annual management should be undertaken to keep the rows clear and topping is beneficial if the grass becomes too tall, with the debris being removed.

Sowing rate 6kg/ha
Pack size 2.5kg
Treatment Untreated (Limited)

REED CANARY GRASS

(Phalaris arundinacea)

Reed Canary Grass is similar to Phalaris aquatica but is more suitable for use in exposed northern regions as it is a much hardier plant and will tolerate a wide range of soil types. It not only offers nesting and cover to pheasants but also provides wild birds with nesting sites. The crop is purely for cover and does not provide feed so bare patches may be left unplanted or later cut out to provide areas for artificial feeding. As with Phalaris aquatica drilling in wide rows is necessary rather than broadcasting or the crop will become too dense. Annual management should be undertaken to keep the rows clear. Topping is beneficial if it becomes too tall, with the debris removed.

Sowing rate 6kg/ha
Pack size 2.5kg
Treatment Untreated

GENERAL PURPOSE REARING PEN MIX

25%	Amenity Perennial Ryegrass
23%	Late Perennial Ryegrass (Diploid)
20%	Creeping Red Fescue
15%	Timothy
7%	Meadow Fescue
5%	Birdsfoot Trefoil
5%	White Clover
100%	

Sowing rate 32 - 37kg/ha
Pack size 15kg

YELLOW BLOSSOM CLOVER

A biennial plant which can persist for several years due to its self-regenerating properties. Owing to its sweet smell and copious production of nectar it is highly attractive to insects, which in turn attract game birds and wildlife. Sowing with kale will help to provide cover in the first year, with the tall, woody-stemmed clover taking over in the second year. Yellow Blossom Clover can thrive in the poorest of soils and being leguminous and deep rooting it is invaluable for improving soil structure and fertility.

Sowing rate 6kg/ha
Pack size 2kg
Treatment Untreated

PERENNIAL CHICORY

Creates tall, dense cover, bolting in its second year to create a 6 - 7ft flowering hedge, useful where a perimeter barrier is required. It has good tolerance to drought, acid soils and major pests (but does not like very wet ground) and has a high mineral content including Zinc, Potassium and Copper.

Sowing rate 5kg/ha
Pack size 2kg
Treatment Untreated

GREEN FENNEL

A perennial plant which provides excellent cover for both pheasant and partridge, its distinctive smell makes it highly attractive to both. When sown alongside other species it can create an excellent cover crop.

Sowing rate 6-8kg/ha
Pack size 1kg
Treatment Untreated


Game Cover Mixtures

Sundown Mixture

Traditional Game Cover Mixture

Northern Star Mixture

Our range of game cover mixtures are specially formulated to ensure you will be able to achieve the best from your cover crops. Combining different species into a mixture can extend the utilisation period, help to attract and hold specific types of game and provide feed and cover where both are required.

However, there are sometimes instances when none of the above will fit the bill for one reason or another. In these cases, specialised mixtures to suit individual specific requirements can be arranged.

FOUR TEN MIXTURE

This mixture will provide cover and feed throughout the season. Sorghum will provide added warmth and cover below the maize. These species have similar husbandry techniques.

70%	Game Maize
20%	Dwarf Sorghum
10%	Giant Sorghum
100%	

Sowing rate 35kg/ha
Pack size 14kg
Treatment Fungicide treatments

SUNDOWN MIXTURE

A carefully blended mixture of game cover maize, sorghum and sunflowers that combine fantastic feeding and cover potential of the species. This mixture provides full season cover and feed. It is not recommended for marginal areas.

75%	Game Maize
15%	Sunflower
10%	Giant Sorghum
100%	

Sowing rate 32kg/ha
Pack size 13kg
Treatment Fungicide treatments

For Wild Bird Mixtures see pages 6 & 7

BROADSHOT MIXTURE

A combination of species selected to provide feed and cover. This mixture can be left to regenerate for a second year. Species selected to facilitate economical weed control with chemicals such as Clorpyralid.

NEW FOR 2019

34%	Buckwheat
17%	Goldeneye Kale
10%	Phacelia
8%	Forage Rye
7%	Yellow Blossom Clover
8%	White Millet
7%	Red Millet
5%	Japanese Reed Millet
4%	Quinoa
100%	

Sowing rate 15kg/ha
Pack size 10kg
Treatment Untreated

DECOY GAME MIXTURE

A combination of eight small seed producing species which will provide excellent cover and feed and will last throughout the season. It is easy to sow and establish as all the seeds are of similar size.

25%	Linseed
21%	Buckwheat
18.5%	Red Millet
18.5%	White Millet
6.5%	Fodder Radish
6.5%	White Mustard
2.5%	Japaneese Reed Millet
1.5%	Gold of Pleasure
100%	

Sowing rate 20kg/ha
Pack size 10kg
Treatment Untreated

TRADITIONAL GAME COVER MIXTURE

A traditional mixture of species especially selected for their feed and cover qualities. This mixture is designed for a full season of cover that will provide holding, feed and cover for all game birds. The sunflowers add an attractive splash of colour. Due to the variance in seed size broadcast to achieve optimum establishment. Ensure that treated seed is covered by harrowing and rolling.

Sowing rate 25kg/ha
Pack size 10kg
Treatment Various treatments

30%	Game Maize
17.5%	White Millet
15%	Red Millet
14%	Buckwheat
9.5%	Kale
7.5%	Sunflower
2.5%	White Mustard
2.5%	Forage Rape
1%	Gold of Pleasure
0.5%	Phacelia
100%	

Game Cover Mixtures

Fast growing crops that have potential to provide cover & seed quickly

LATE COVER AND RESCUE MIXTURES

BOOST MIXTURE

A fast growing, quick to establish, frost hardy crop. Ideal to sow in late summer or early autumn to provide cover that will last throughout the winter. Excellent as a 'rescue' mixture for patching failed crops or when a later sown crop is required.

70%	Texsel Greens (B. carinata)
10%	Hybrid Brassica
10%	Fodder Radish
10%	Brown Mustard
100%	

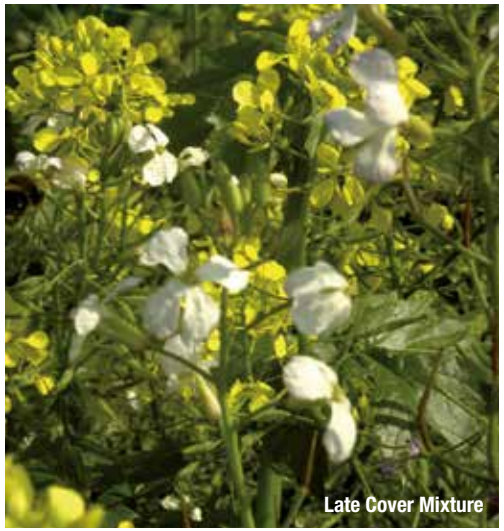
Sowing rate 6 - 10kg/ha
Pack size 5kg
Treatment Untreated

LATE COVER MIXTURE

A rapidly establishing and maturing mixture providing winter cover to the height of 2 - 3 feet. It is often used as a patching crop where spring crops have failed. This mixture will tolerate drought conditions.

60%	Forage Rape
30%	Stubble Turnips
7%	White Mustard
3%	Fodder Radish
100%	

Sowing rate 12 - 15kg/ha
Pack size 5kg
Treatment Untreated


Late Cover Mixture

KWIK FIX

This is a flexible cover crop which can be used to patch failed spring game covers. Mustard increases the cover element and fodder radish prolongs the cover period. This mixture will not provide full season cover, but it is more winter hardy than straight mustard.

80%	Fodder Radish
20%	White Mustard
100%	

Sowing rate 12 - 15kg/ha
Pack size 5kg
Treatment Untreated

RESCUE MIXTURE

NEW FOR 2019

A rapid establishing and maturing mixture providing cover and potentially seeds in 16 weeks from sowing. Excellent as a rescue mixture for patching failed crops or where a later sown crop is required.

50%	Buckwheat
15%	Fodder Radish
15%	White Mustard
10%	Gold of Pleasure
10%	Texsel Greens
100%	

Sowing rate 12kg/ha
Pack size 10kg
Treatment Untreated

ZOOM BRASSICA MIXTURE

Zoom is a mixture of Winfred hybrid brassica and forage rape. This is a very vigorous and quick growing mixture which is ideal for replacing failed crops or patching spring sown crops. High seedling vigour gives a reliable establishment of a high leaf to stem ratio crop with carefully selected varieties that have good disease and bolting resistance.

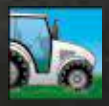
Sowing rate 6 - 10kg/ha
Pack size 5kg
Treatment Untreated


Zoom Brassica Mixture

Forage Crops Selector

Forage crops provide an extremely cost effective way of supplementing livestock rations during times when fodder may be scarce, during dry spells in summer and the cold winter months. They will supply substantial quantities of palatable material at relatively low production costs, balancing the amount of bought-in feed required.

ICON KEY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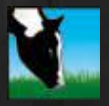
CATTLE GRAZING


SHEEP GRAZING


CULINARY USE

Stock should be introduced gradually over a two week period and an area of grassland should be available for animals to return to. Water and hay or straw should also be made available. Please contact your supplier for further guidance.

Crop	Page No.	Pack Size	Average Sowing Rate kg / Hectare		Sowing Date Guide	Utilisation Period	Average Drill Depth cm	Average Row Width cm	Suggested Guide to Seedbed Fertiliser (kg) ha			Days Sowing to Grazing	No of possible Grazings	Dry Matter (%)	Digestibility (D-Value)	CP (% DM)	ME (MJ/Jkg DM)
			Broadcast	Direct Drill					N	P	K						
Stubble Turnip	38	10kg & 25kg	7.5	5	Apr-mid Sept	Jun-Jan	1-2	n/a	75	40	40	60-100	1	12-15	85	17-18	10-11
Main Crop Turnip	38	2kg	5	2.5 - 3.5	May-Jul	Oct-Jan	1-2	n/a	40	80	100	60-100	2+	12-15	75	17-18	10-11
Forage Rape	39	10kg & 25kg	10	6	May-end Sept	Jun-Jan	1-2	n/a	20	40	40	90-100	2	10-12	80	19-20	10-11
Fodder Beet	40	1ac 50,000 seeds	-	Precision drill 100,000/ha	Mar-May	Oct-Mar	2.5-3	50-60	110	50	50	-	-	12-19	78	12-13	12-12.5
Swede	41	500g & 1kg	2.5 - 5	Precision drill 370-865 kg/ ha grade H Direct Drill 1	Apr-June	Aug-Mar	1-2	45-70 graded 40 natural	40	80	100	170-250	1	17-20	87	10-11	12-13
Kale	42	1kg	7.5	2.5 - 5	Apr-Jul	Sept-Mar	1-2	50	100	50	120	150-220	1	15-17	80	14-17	10-11
Spitfire	39	5kg & 25kg	10	6	May-end Sept	Jul-Dec	1-2.5	15-20	20	40	40	90-110	2	12-15	80	18-19	10-11
Zoom	39	5kg	10	6	April-Sep	Sept-Jan	1-2	various	110	55	55	90-110	2	12-15	80	18-19	10-11
Rapid Root Mixture	43	5kg	8.5	6	mid Apr-mid Sept	Jul-Dec	1-2	n/a	60	50	50	-	-	-	-	-	-
Winter Graze Mixture	43	5kg	8.5	6	mid Jul-mid Sept	Post Christmas	1-2	n/a	60	50	50	-	-	-	-	-	-

Source: NIAB

Turnips

Stubble Turnips are a fast growing catch crop, popular with livestock farmers. They may be sown after first cut silage for summer grazing or after winter cereals for autumn usage. When planting a large acreage it is advisable to stagger sowing dates, increasing the seed rate in dry conditions. If being used for dairy cow grazing it is important to take into consideration the distance between the field and the milking parlour. Strip grazing is advisable if possible to limit wastage.
There are two types of stubble turnip: bulbing (see Barkant and Vollenda) and non bulbing (see Tyfon and Avalon).

Organic Stubble Turnips available in 25kg packs (Limited)

Stubble Turnips Yield and Feed Quality	
Average Dry Matter Yield	3.5 - 4.5 tonnes/ha
Average Fresh Yields	38 – 45 tonnes/ha
Crude Protein	17 - 18% (mainly leaves)
Digestibility Value	68 - 70%
Dry Matter	8 - 9%
Metabolisable Energy	11MJ/kg DM
Sugars in DM	55%

Bulbing types

BARKANT

A winter hardy, highly digestible variety with high dry matter. Produces large tankard shaped roots which are palatable by both sheep and cattle. This is a proven and reliable stubble turnip.

Sowing rate **5 - 7.5kg/ha**
Pack sizes **10kg & 25kg**
Treatment **Untreated**

VOLLENDA (Tetraploid)

A large leafed, highly digestible variety with good early vigour and good disease resistance. It retains its palatability throughout the season, and is noted for its yield, speed of growth and bolting resistance.

Sowing rate **5 - 7.5kg/ha**
Pack sizes **10kg & 25kg**
Treatment **Untreated**

Non Bulbing types

TYFON

A leafy, fast growing cross between Chinese cabbage and stubble turnip. It exhibits high frost resistance and can be utilised within eight to ten weeks after sowing. There is potential for regrowth.

Sowing rate **5 - 7.5kg/ha**
Pack size **5kg**
Treatment **Thiram & Untreated**

AVALON LEAFY TURNIP

Avalon is a very leafy turnip that can be sown in spring or autumn for forage production these leafy turnips can be grazed after just 6-8 weeks. Avalon also has a very high dry matter yield.

Sowing rate **5 - 7.5kg/ha**
Pack size **10kg & 25kg**
Treatment **Untreated**

Variety	Barkant	Vollenda(T)	Tyfon
Relative Yield of Dry Matter	104	102	102
Dry Matter Content (%)	9.5	9.7	8.9
Root Size (9=large 1=small)	4	5	2
Root Anchorage (9=good 1=poor)	5	4	6
Bolting Resistance (early sown) (9=good 1=poor)	6	9	3
Winter Hardiness (9=good 1=poor)	7	7	5
Club Root (9=good 1=poor)	7	8	5
Powdery Mildew Resistance (9=good 1=poor)	5	5	3

Source: NIAB

Main Crop Turnip

Later maturing than stubble turnips and with higher dry matter, higher yields and better winter hardiness. They have a growing period of 12 – 15 weeks and provide excellent autumn and early winter feed for sheep and cattle.

GREEN GLOBE

Green Globe turnips produce soft, easily eaten roots that are well anchored into the ground, suitable for grazing by all types of stock. They will provide a very high fresh yield from large bulbs and are utilised between October and January, preferably strip grazed to reduce waste.

Sowing rate **Drill 2.5 - 3.5kg/ha Broadcast 5kg/ha**
Pack size **2kg**
Treatment **Thiram & Untreated**
Sow Late May to July

Variety	GREEN GLOBE 100% = Tonnes/ha
Total Dry Matter Yield (%)	(5.7t/ha) 100
Total Fresh Yield (%)	(70.6 t/ha) 100
Dry Matter (%)	8.2
Powdery Mildew Resistance (9 = Best)	4
Root Shape (9 = Best)	6

Source: Advanta & SCRI trials




Forage Rape

Forage Rape has the advantage of being a very fast growing crop suitable for grazing by sheep or cattle. It is an ideal catch crop for boosting midsummer forage production for livestock farmers when planted in the spring, it is also suitable for fattening lambs in the autumn/winter. Forage rape extends the grazing season in the autumn and is superb for flushing ewes. It is better to strip graze to avoid excessive wastage.

Forage Rape can be mixed with stubble turnips and kale to combine the many benefits of these crops (see page 43 for root mixtures).

Stock should be introduced gradually over a two week period and an area of grassland should be available for animals to return to; water and hay or straw should also be made available. Please contact your supplier for further guidance.

EMERALD

Emerald is a proven, well known variety producing rapidly establishing, medium to tall leafy plants maturing in 10-12 weeks after sowing. It is fast growing with average dry matter yields and good general disease resistance. Importantly, it has very good feeding quality, being high in protein and easily digestible, remaining palatable well into the winter. An added benefit is its widely branched root system for improvement of soil structure.

Sowing rate **6 - 10kg/ha**
Pack size **10kg & 25kg**
Treatment **Untreated**

Forage Rape Yield and Feed Quality	
Average dry matter yield	3.5 - 4 tonnes/ha
Average fresh yields	24 - 35 tonnes/ha
Crude protein	19 - 20% (mainly leaves)
Digestibility value	65D
Dry matter	12 - 14%
Metabolisable energy	10 - 11 MJ/kg DM

ORGANIC FORAGE RAPE

Widely grown in Europe, Sparta forage rape is a leafy palatable plant with high protein content, high dry matter yield and good winter hardiness. It is a very late flowering variety which performs well whether sown for summer, autumn or winter use.

Sowing rate **6 - 10kg/ha**
Pack size **25kg**
Untreated organic seed **(Very Limited)**

ZOOM BRASSICA MIXTURE

Zoom is a blend of Winfred hybrid brassica and forage rape. This is a very vigorous and quick growing mixture which is ideal for replacing failed crops or patching spring sown crops. High seedling vigour gives a reliable establishment of a high leaf to stem ratio crop with carefully selected varieties that have good disease and bolting resistance.

Sowing rate **6 - 10kg/ha**
Pack size **5kg**
Treatment **Untreated**

SPITFIRE HYBRID FORAGE BRASSICA

Spitfire is a modern hybrid rape created by crossing rape with kale and is a good companion to use with other fast establishing brassicas. It is a medium-tall variety with high dry matter yield, excellent aphid tolerance, good stock palatability and rapid establishment to maturity. It also has very good re-growth potential but needs to be carefully managed to avoid damage to stems. Spitfire is a multi–purpose rape suitable for planting in spring for excellent summer and autumn feed or in early autumn for quality winter feed. The main strengths of Spitfire are excellent yield, insect tolerance, and a low dry matter (DM%) stem. The very low DM% content of the stem produces high quality forage with good utilisation at grazing.

Sowing rate **6 - 10kg/ha**
Pack size **5kg & 25kg**
Treatment **Untreated**

OUTSTANDING PRODUCT OF THE YEAR

Everyone's talking about it!

Fodder Beet

Fodder Beet is grown as a main root crop, which requires similar husbandry to sugar beet. It can produce substantial yields of high quality fodder and is an excellent supplement to grass silage. The roots are very palatable to stock and have superb feed quality. Specialist harvesting equipment is required to lift the roots and storage is required unless they are strip grazed in situ.

Medium dry matter varieties tend to have a higher percentage of root above ground and can be lifted with a top lifter and therefore have a relatively low dirt tare. These highly palatable roots can be fed whole to stock. High dry matter varieties tend to sit further in the ground and require a sugar beet harvester to lift them. Due to the higher dirt tare and hardness of the root, these varieties may need to be chopped and washed before feeding. After wilting, the tops may be fed to stock and can contribute a further yield of 3-4 tonnes of protein-rich dry matter per hectare.

Pack size - 50,000 seeds per acre

Seed Treatment - Force 10 & Pelleted Untreated seed (Limited)

Fodder Beet Yield and Feed Quality	
Average dry matter yield	17 - 22 tonnes/ha
Average fresh yields	95 - 110 tonnes/ha
Crude protein	12 - 13%
Digestibility value	78D
Dry matter	12 - 19%
Metabolisable energy	12 - 12.5MJ/kg DM
Sugars in DM	65%

ALPES

The ultimate fodder beet variety from the world leading DLF plant breeding programme. It has exceptional all round characteristics, thus ensuring less waste and more profit. Alpes benefits from large top size and has 33% of its yellow root above ground which allows for easy lifting. Good resistance to bolting.

BANGOR

Bangor is an improvement on the illustrious/ long-time-acknowledged varieties Kyros and Troya – resulting in a yield increase and uniform roots. Bangor is easily lifted on all soil types, due to the regular shape of the root and its high position above the ground. With a medium DM in the root it results in a very high yield of 105%.

KYROS

A very consistent, high yielding variety producing a clean, highly palatable and easily digestible yellow root at harvest. Kyros will provide a high energy feed whole or chopped.

JAMON

A very consistent variety producing a clean highly palatable orange root with average dry matter yields. It has good resistance to leaf disease and bolting. Jamon benefits from large top size and has 33% of its root above the ground which allows for easy lifting.

MAGNUM

Magnum has a consistent root size and reliable high dry matter yields. It is a very palatable variety therefore increasing appetite and dry matter intake in all stock. Higher dry matter fodder beet has been shown to increase milk yield and daily live weight gain. Due to its high dry matter content it is more frost resistant than other varieties with a high proportion of clean, white root in the ground.

ENERMAX

An exciting dual purpose variety for both fodder and bio-energy production. High yielding with a low dirt tare.

Enermax has a clean, white, smooth-skinned root and is shallow rooting, resulting in a cleaner end product particularly important for the bio-fuel market.

It has a higher root yield when compared with the well-known and popular variety Magnum. Official variety testing (Denmark 2010 - 2011), has shown that Enermax can produce 21 tonnes/DM/ha from the root only, with the beet tops adding approximately 5 tonnes DM/ha.

Enermax has the additional benefit of being Rhizomania tolerant and so is suitable for growing in the east of the country where sugarbeet is a widely grown crop, as well as in the west and other areas.

MONRO

Rhizomania Tolerant

An ideal variety for grazing with its low dry matter of 14.6%. It has exceptional high fresh yields from red roots that are mostly above ground.

Swedes

Swedes are a full season root crop which are mainly fed in situ, but can also be lifted and stored in a clamp. They are an excellent high energy winter feed. It is advisable to use an electric fence to reduce wastage. They do best in areas of high rainfall, so are generally grown in the more northerly and western areas of the UK. Swedes can be grown in a wide range of soil types with good drainage as they are sensitive to compaction and poor drainage; they do best in soils with a pH of approximately 6.5. The majority of swede crops are now sown with precision drills which require a level seed bed. Varieties are generally classed as fodder or culinary types; however there are some dual purpose types.

All natural seed is packed in 1 kg packs Untreated

All graded seed is packed in 0.5 kg packs Untreated

AIRLIE

Airlie is a low to medium dry matter variety with a very high fresh yield and good disease resistance. It is a dual purpose variety suitable for fodder and culinary use with purple skin and creamy white flesh. Airlie is an early to intermediate use variety.

MARIAN

Marian is a medium dry matter variety with moderate resistance to club root. It is a dual purpose variety suitable for fodder and culinary use with yellow coloured flesh and purple skin.

RUTA OTOFTE

Ruta Otofte is a medium dry matter variety with good mildew resistance. It is a dual purpose variety suitable for fodder and culinary use with purple skin and cream coloured flesh. Ruta Otofte is a popular variety with sheep farmers.

KENMORE

Kenmore is an early maturing variety with medium dry matter, best suited as stock feed not culinary use. It has good winter hardiness which means it has a very wide utilisation window. Kenmore has bronze skin with white flesh.

Variety	Airlie	Marian	Ruta Otofte	Kenmore
Fodder	✓	✓	✓	✓
Culinary	✓	✓	✓	
Root shape (9=globe 1=tankard)	6	4	5	5
Skin colour	Light purple	Purple	Dark purple	Bronze
Flesh colour	Creamy white	Yellow	Cream	White

Swede Yield and Feed Quality	
Average dry matter yield	7 - 10 tonnes/ha
Average fresh yields	70 - 80 tonnes/ha
Crude protein	10 - 11%
Digestibility value	82D
Dry matter	9 - 13%
Metabolisable energy	12.8 - 13.1 MJ/kg DM
Sugars in DM	59%

Seed Rate Calculator Guide - No. of Seeds X 1000

Spacings	Row Width					
	18”	20”	22”	24”	26”	28”
Spacings 2”	174	157	143	131	121	112
Spacings 3”	116	105	95	87	80	75
Spacings 4”	87	78	71	65	60	56
Spacings 5”	70	63	57	52	48	45
Spacings 6”	58	52	48	44	40	37

(For seed size grade H (1.75 - 2.00mm) 1000 seed weight grade H approx 3.2g)

Kale

Kale is a brassica traditionally grown for grazing by cattle in the autumn and winter. It can also be cut and fed to stock 'in house' or as an alternative can be ensiled as big bale kaleage. Kale is very useful as it can extend the grazing season. This crop is best strip grazed to avoid excessive wastage and ensure both leaf and stem are eaten. It is advisable to stagger sowing dates to ensure it does not over-mature. It is very adaptable and can grow on most sites throughout the UK. Kale can also be used as game cover (See page 28).

Sowing rate **2.5 - 7.5kg/ha**
Pack size **1 kg**
Treatment **Untreated**

SOVEREIGN

Club Root Tolerant

Sovereign is a high yielding, medium-tall forage kale with good club root tolerance. In agronomic tests conducted by the SAC in Aberdeen, Sovereign was shown to have good dry matter yields and excellent leaf-to-stem ratio, thereby increasing stock utilisation and animal performance. Successfully tested for winter hardiness and keeping ability, it has the potential to maintain good quality production over a longer usage period.

Sovereign does not produce the large thick stems common to giant kales even when planted at lower density, therefore increasing palatability.

Kale Yield and Feed Quality	
Average dry matter yield	8 - 10 tonnes/ha
Average fresh yields	60 – 65 tonnes/ha
Crude protein	16 - 17% fresh, 19 - 25% ensiled
Digestibility value	68D
Dry matter	14 - 16%
Metabolisable energy	10 - 11 MJ/kg DM
Sugars in DM	17%

GRÜNER ANGELITER

A very high yielding variety with good winter hardiness and excellent feeding quality with fresh yields 15% higher than Caledonian kale and 10% higher than Bittern in German trials. Grüner Angeliter has been the mainstay forage variety of kale in New Zealand for many years and since its introduction to the UK has become equally popular over here. Its high yields make it ideal for utilisation by dairy and beef cattle and as winter feed for sheep.


Sovereign




Root Mixtures & Arable Silage

Root Mixtures

The following two catch crop mixtures combine the benefits of stubble turnips and forage rape, excellent for fattening lambs during autumn and winter providing winter keep for all stock. These mixtures have been in great demand over recent years and the results from stock utilisation have been excellent.

RAPID ROOT (pre December use)

The forage rape element of this mixture ensures quick establishment and high protein yields, whilst the stubble turnips provide energy and stockholding capacity. The mixture is ideal for fattening stock and will provide grazing from July through to December. Sow mid April - mid September

60% Forage Rape
35% Stubble Turnip
5% Kale

100%

Sowing rate **6 - 8.5kg/ha**
Pack size **5kg**
Treatment **Untreated**

WINTER GRAZE (post Christmas use)

A mixture of palatable, proven varieties ideal for sowing after winter cereals. The mixture is suitable for post Christmas grazing as it exhibits very good winter hardiness, which is improved by the addition of the kale. Sow mid July - mid September

60% Stubble Turnip
35% Forage Rape
5% Kale

100%

Sowing rate **6 - 8.5kg/ha**
Pack size **5kg**
Treatment **Untreated**

Stock should be introduced gradually over a two week period and an area of grassland should be available for animals to return to. Water, hay or straw should also be made available. Please contact your supplier for further guidance.

Arable Silage Mixtures offer an alternative or additional feed to grass or maize silage and are particularly suitable for farmers wishing to increase their levels of home-produced protein and reduce their reliance on purchased feed and fertiliser. They produce a cost-effective, high quality forage of consistent quality and palatability, with high yields of dry matter even in dry seasons and cold weather. They can be self-fed from the silage-face or as bales and their early harvest allows for earlier drilling of other autumn combinable crops or reseeding of grass.

CONVENTIONAL MIXTURES

Pea & Barley No.1
66% Spring Peas
34% Spring Barley

Barley Pro Plus No.2
50% Spring Barley
30% Spring Peas
10% Maple Peas
10% Spring Vetch

Oat Pro Plus No.3
36% Spring Peas
32% Spring Barley
32% Spring Oats

ORGANIC MIXTURES

Organic Pea & Barley No.1
70% Organic Spring Peas
30% Spring Barley

Organic Barley Pro Plus No.2
50% Organic Spring Barley
20% Organic Spring Peas
20% Maple Peas
10% Spring Vetch

Organic Oat Pro Plus No.3
35% Organic Spring Barley
35% Organic Spring Oats
30% Spring Peas

STRAIGHTS

Rather than grow a mixture, some growers prefer to grow a single crop on it's own. We can offer Vetch and Lucerne for these situations.

Spring or Winter Vetch
Packed in 25kg bags

Organic Vetch
Packed in 25kg bags

Lucerne (inoculated)
Packed in 25kg bags

Organic Lucerne (inoculated)
Packed in 25kg bags

All mixtures are available packed in 500kg bags. Treatment: Various and Organic Untreated
The suggested sowing rate for all mixtures is 150kg - 225kg per hectare. Book early to avoid disappointment.

A PRACTICAL GUIDE TO GAME COVER, ENVIRONMENTAL, GREEN MANURE AND FORAGE SEEDS

Openfield™

Seed, fertiliser, grain, storage.

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