THE ESSENTIAL GUIDE TO FORAGE CROPS

Home grown feeding solutions

Limagrain

THE ESSENTIAL GUIDE TO FORAGE CROPS

With feeding costs typically making up a significant proportion of production costs, introducing a selection of forage crops can help to reduce these costs and improve your profitability.

Although grass must be the priority for most enterprises, forage crops can have a key role to play, especially in drought years, when grass growth and recovery after cutting decreases significantly.

There are many crop options to consider; from high yielding harvested crops such as fodder beet, to grazed crops like stubble turnips. Whichever option you choose will help enable you to reduce feeding costs, extend the grazing season, and provide an excellent break crop.

Whether you're a lamb, beef or dairy producer, this brochure will help you with the decision-making process. It provides in-depth information about the potential benefits of each forage crop option and how these species can be used in planning your forage cropping programme.

We hope you find our brochure useful.

The LG Team

Why Grow Forage Crops?

- Improved profitability
- Reduced reliance on purchased feed
- Full traceability
- Flexible cropping options
- An excellent break crop & entry back to grass
- Extended grazing season
- Outwintering options
- Low inputs

OUR EXPERTISE

Plant Breeding

Our plant breeding programme is currently developing new varieties of forage rape, fodder beet, kale and swedes specifically adapted for the UK climate and markets. This is a long term commitment and will ensure that new varieties and the benefits associated with them, are available to farmers in the future.

Seed Production

Some of the forage crop seed is produced in the UK and monitored by our own contracts staff. Seed crops are grown to certification standards and seed is cleaned, processed and tested for germination and purity by our licensed seed testing team.

Trials and Demonstrations

We believe that testing and producing meaningful UK trial data is vitally important. Variety selection can play an important role in maximising forage production. We can guarantee that products bred and marketed by LG, have been through a vigorous testing regime before commercialisation.

Distribution

Seed is cleaned, treated, packed and distributed to farms from our warehouse at Holton le Clay near Grimsby.

INDEX

CROP ROTATIONS

Using the chart opposite, you can easily introduce forage crops into your rotation.

Just look at the options in the column marked **"What do you want to achieve?"**. For instance – Cereal to Grass, and then select the year 1 and 2 crop options.

Forage crops provide a fantastic break crop and entry back into grass – they allow you to control any serious weed problems and will add vital animal manures back into your soil.

WHAT DO YOU WANT TO ACHIEVE?	YEAR 1 CROP SUGGESTIONS		YEAR 2 CROP SUGGESTIONS	
	SPRING	AUTUMN/WINTER	SPRING	AUTUMN/WINTER
Cereal to Grass	Spring Barley	Stubble Turnips	Spring Grass Reseed	
High Energy	Fodder Beet		Forage Maize	Feed Wheat
Profitable Sheep	Swede		Spring Barley	Forage Rape
Protein Boost	Arable Silage	Lucerne (sow no later than July)		
New Grass	Worn Out Grass Ley (after 1st cut silage)	Kale	Spring Sown Grass Ley	
Milk Yield	Maize	Forage Rye	Fodder Beet	
Outwintering	Fodder Beet		Kale	Kale
Grass Revival	Low Yielding Ley	Stitch In Grass/Clover	Revitalised Grass	
Triple Cereal	Spring Barley	Forage Rye	Forage Maize	

EXPERT ADVICE

If you have any questions, our seed specialists are here to help, see **page 32** for details

CHOOSING THE RIGHT FORAGE CROP

The chart below summarises essential information about the forage crops featured in this guide; from sowing times and rates, to growing costs, yield and feed quality data.

Use this guide to select the forage crop which best suits your system and objectives.

SPECIES	SOWING TIME	SOWING RATE per hectare	GROWING COSTS per hectare*	FRESH YIELD tonnes per hectare	DRY MATTER tonnes per hectare	CRUDE PROTEIN %	ME MJ/KG DM	ME MJ per hectare
Fodder Beet	March - April	100,000 seeds	£1,452	80 - 100	15 - 18	12 - 13	12.5 - 13	162,500 - 202,500
Kale	April - Early July	4 - 5 kg	£496	60 - 70	8 - 10	16 - 17	10 - 11	80,000 - 110,000
Stubble Turnip	May - August	4 - 5 kg	£305	40 - 50	4 - 5.5	17 - 18	11	38,500 - 44,000
Forage Rape	May - August	5 - 6 kg	£408	24 - 35	3.5 - 4	19 - 20	10 - 11	35,000 - 49,500
Swedes	April - June	3 - 5 kg Direct 350g - 850g Precision	£403	70 - 90	7 - 10	10 - 11	12.8 - 13.1	89,600 - 131,000
Lucerne ▲	April - Mid August	20 - 30 kg	£1,459	35 - 40	10 - 12	17 - 22	10	100,000 - 120,000
Forage Peas	March - Early June	125 - 150 kg	£708	20 - 30	4 - 6	16 - 20	10.5	42,000 - 63,000
Forage Rye	Sept - October	185 kg	£339	20 - 24	5 - 6	11 - 12	10	50,000 - 60,000
Maincrop Turnip	May - July	4 - 5 kg	£340	50 - 60	5.5 - 6	17 - 18	10 - 11	55,000 - 60,000

*Kingshay Farming Trust 'Forage Costings Report' 2010 ▲ 3 cuts per year

FEEDING GUIDELINES

Strip Grazing

- Using an electric fence will help reduce wastage in the field
- Long narrow strips are best to allow full animal access
- Introduce the animals to the crop slowly
- Move the electric fence daily if possible
- Providing a dry run back will keep the animals clean

The chart below will allow you to calculate how many grazing days each forage crop will provide

Many of the forages that appear in this brochure are grazed and utilised in the field (grazed in situ).
To get the best from your crops, a few simple steps can make all the difference in maximising animal performance and profitability.

The following are some of the key management tools you may consider:

- Recommended inclusion rates should be between 35 - 50% of total dry matter intake
- Access to straw or hay as well as the forage brassica is important
- Ensure a good water supply

How Much Should I Grow

SPECIES	AVERAGE FRESH YIELD	LESS WASTAGE FACTOR	UTILISABLE YIELD	GRAZING DAYS PER HECTARE		
				SHEEP RATION		DAIRY OR BEEF RATION
	Tonnes per hectare	Grazing wastage %	Tonnes per hectare	7.5kg per day	10kg per day	22kg/2-3 hour grazing period
Kale	60	25	45	6,000	4,500	2,045
Stubble Turnip	40	25	30	4,000	3,000	1,364
Forage Rape	35	25	26.25	3,500	2,625	1,193
Swede	80	25	60	8,000	6,000	2,727
Forage Peas	35	20	28	3,733	2,800	1,273
Forage Rye	20	15	17	2,266	1,700	772

FEEDING SAFETY

EXPERT ADVICE

- Always feed with a fibrous forage like straw or hay
- Ensure a good water supply
- Introduce stock to the crop gradually
- Produce a grass 'run back' area
- Strip graze using an electric fence to maximise crop use

Potential Health Issues When Feeding Forage Brassicas

Always speak to your vet about the risks of using brassicas and how to incorporate risk prevention techniques into the farm health plan.

PHOTO-SENSITISATION

Cause: Compounds within the brassica cause the skin to be sensitive to sunlight, which can result in skin damage. This usually occurs when crops are grazed too early when they are still growing and is more common with rape and kale.

NITRATE POISONING

Cause: Nitrates accumulating in the leaves of brassica crops, usually occurs when fast growing crops are grown in soil with high nitrate levels after rain, which has followed a dry spell. Cool, overcast conditions and high N fertiliser use will also increase the risk.

GOITRE

Cause: Brassicas, especially root crops, contain glucosinolates, which block the uptake of iodine from the diet. Brassicas are also low in iodine, which may increase the risk of iodine deficiency, affecting the thyroid gland and the hormones it produces.

KALE ANAEMIA (REDWATER)

Cause: Excess levels of amino acid compound S-methyl cysteine sulfoxide (SMCO) in the plants, can cause anaemia and appetite loss. The levels of SMCO are worse when soil phosphate levels are low and nitrogen and sulphur levels are high. SMCO levels also increase when crops are flowering.

BLOAT

Consider the risk of bloat, as brassicas can be rapidly degraded in the rumen. It is essential to feed fibre alongside the crops, and introduce non-hungry stock gradually.

FEEDING FLOWERING BRASSICAS

Cause: Some species of brassica are biennials and therefore will flower in the following spring season if they are sown in the summer or autumn period and left ungrazed. Early sown brassica can also vernalise and flower in a short period of time (10-12 weeks).

The plant is most toxic when in flower. It contains sulphur-based heterosides (thiocosides): gluconapine and progoitrin, which when hydrolysed will yield isothiocyanates (mustard oil) and goitrin. These toxic compounds are irritant, haemolytic, goitrogenic and can cause malnutrition.

FODDER BEET

EXPERT ADVICE
Avoid lifting too early. Crops continue to grow until the end of October.

SOIL TYPE/SITE SELECTION:
A crop of fodder beet can thrive on a wide range of soils, but a light to medium, free draining field is ideal. A soil pH of 7 is the target and good accessibility is vital for heavy harvesting machinery.

SEEDBED & SOWING METHODS:
Aim for firm, fine tilth with pre-Christmas ploughing. Keep moisture loss to a minimum in the spring. Monogerm seed has eliminated the need for labour intensive singling. However, allow for some field losses if seedbed conditions are poor. As a general guide, soil temperatures need to be at least 5°C before sowing. Early April is a typical drilling date in the south. Sowing earlier in cold conditions can lead to bolting.

Delayed drilling leads to yield losses. Ensure that the seed is drilled to a depth of 2.5/3cm - use the deeper depth for dry seedbeds. A precision drill is essential.

FERTILISER:
This is a demanding crop in terms of nutrients. All the fertiliser, except the nitrogen, is best applied in the autumn. The nitrogen can be applied immediately after drilling. The use of slurry/farmyard manure will be beneficial, as is the application of sodium on appropriate soil types. Trace elements (especially manganese and boron) are important to fodder beet.

WEEDS, DISEASES & PEST CONTROL:
Some farmers may be prepared to undertake inter-row cultivations, but good herbicide control is possible to control weeds. It is vitally important to control weeds as their presence can severely reduce yields. Weed beets are very undesirable and every effort must be made to eliminate them.

Our seed is treated with both fungicide and insecticidal products to provide protection during the establishment phase. The crop can be attacked by several pests, including slugs and wireworms, as well as symphylids.

HARVESTING:
Although the crop continues to put on yield into the autumn, this has to be balanced against the potential problems associated with a late harvest. Some farmers have their own lifting equipment, while others will use a contractor. Machines can be divided into 'leaf' or 'root lifters' – whichever is used, the tops must be removed down to the base of the leaf petioles. Keep soil contamination to a minimum.

ROOT STORAGE:
A pre-cleaner is recommended to remove soil contamination. Clamps should be checked regularly for signs of any hot spots. The high DM varieties tend to store better on a long-term basis and are less prone to damage.

FEEDING:
Fodder beet may be fed chopped or whole. Chopped beet should provide a better liveweight gain in beef animals. Feeding the roots at ground level can reduce the risk of choking. The roots have a high energy but low protein content and make a good substitute for grain in rations for dairy, beef, sheep, pigs and deer. Crops can also be strip-grazed in outwintering systems.

Why Grow Fodder Beet?

- Huge yields
- Ideal replacement for cereals
- High energy feed
- Clamp and store over winter
- Improved milk yields
- Palatable and nutritious
- Can be grazed in situ for outwintering systems

SOWING INFORMATION

Sowing period Late March – late April	**Direct drill** 100,000 seeds/ha	Seed sold in 50,000 seed units

YIELD & FEED QUALITY

Average dry matter yield 15-18 tonnes/ha	**Dry matter** 15-22%	**Digestibility value** 78%
Average fresh yield 80-100 tonnes/ha	**Crude protein** 12-13% [mainly leaves]	**Metabolisable energy** 12.5-13 MJ/kg DM

GROWING COSTS

£1452 per hectare	**Fresh weight** £16 per tonne	**Dry matter** £115 per tonne

Variety Profiles

FOSYMA
A new variety that has performed well in our UK trials. Fosyma can deliver high dry matter yields, usually seen with varieties that grow deep in the ground. Fosyma grows approx 60% in the ground and will produce clean red/rose skinned roots. The variety has good tolerance to bolting and is *Rhizomania* tolerant.

BRICK
New, high yielding variety, ideal for growers looking to produce a high quality feed with a higher DM content %. Brick is a true fodder beet and therefore exhibits cleaner roots, but will still deliver very high dry matter yields for maximum feed potential. *Rhizomania* tolerant.

ROBBOS
Robbos has been a consistent performer in the UK & Ireland. High dry matter yields from a medium DM content means Robbos is ideally suited for first time fodder beet growers and its clean yellow roots are easily harvested and can be fed whole or chopped.

BLAZE
Blaze has the potential to produce excellent dry matter yields with very clean, bright red roots. Blaze is a medium dry matter variety which enables the roots to be fed whole or chopped. Low dirt contamination ensures high intakes with no scouring.

Variety Selection

Fodder Beet

High DM %
Big DM yields but dirtier roots. Ideal for harvesting with sugar beet machinery

Medium DM%
Clean roots ideal for leaf lifting harvesting equipment

Fosyma
High yields from clean red/rose coloured roots

Brick
Very high dry matter yields for maximum feed potential

Robbos
Clean yellow roots, very consistent performance

Blaze
Clean, red roots ideal for first time growers

Blizzard
White roots with big dry matter yields

Trial Results

VARIETY	RELATIVE DM YIELD %	RELATIVE FRESH YIELD %	DM CONTENT %	SKIN COLOUR	% OF ROOT IN GROUND	MEAN BOLTER COUNT
100% = Tonnes/Ha	18.55	89.98				
Fosyma RT	**116**	**108**	**22.1**	**Red**	**65.0**	**0.0**
Brick RT	**110**	**99**	**22.9**	**White**	**76.3**	**0.0**
Tadorne	**109**	**100**	**22.4**	**White**	**74.0**	**0.0**
Tarine RT	**103**	**103**	**20.6**	**Pink**	**64.4**	**0.0**
Enermax	102	100	21.1	White	67.3	0.2
Blizzard	**101**	**94**	**22.2**	**White**	**72.3**	**0.8**
Robbos	**100**	**104**	**19.9**	**Yellow**	**60.0**	**0.8**
Magnum (c)	100	100	20.6	White	65.1	0.2
Blaze	**96**	**105**	**18.7**	**Red**	**57.1**	**0.5**
Jamon	94	108	17.9	Orange	57.0	0.5
Kyros	93	104	18.4	Yellow	58.0	0.9
Geronimo	89	106	17.4	Orange	*	*
Feldherr	**89**	**116**	**15.8**	**Orange**	**49.6**	**1.7**
Brigadier	76	108	14.4	Orange	47.9	2.0

Data Source: Limagrain UK Trials 1998 - 2018 (c) = Control, RT = Rhizomania Tolerant * No data available Note: not all varieties are trialled every year, not all scores taken every year.

Crop Suitability

Dairy	■	Sheep	■	Graze in Situ	■	Zero Grazing	■
Beef	■	Pigs	■	Ensile		Lift and Store	■

KALE

Why Grow Kale?

- Higher yields than rape/kale hybrids
- Buffer feed for dairy cows during dry summers
- Flexible utilisation period
- Excellent crude protein content
- High yields and economical to grow
- Outwintering systems

SOWING INFORMATION

Sowing period
April – early July

Direct drill
4-5kg/ha (1-2kg/acre), Natural seed

Broadcast
8kg/ha (3kg/acre), Natural seed

YIELD & FEED QUALITY

Average dry matter yield
8-10 tonnes/ha

Average fresh yield
60-70 tonnes/ha

Dry matter
14-16%

Crude protein
16-17% fresh

Digestibility value
70-75%

Metabolisable energy
10-11 MJ/kg DM

GROWING COSTS

£496 per hectare

Fresh weight
£7 per tonne

Dry matter
£67 per tonne

SOIL TYPE/SITE SELECTION:

Kale grows best on a medium loam soil with a pH of around 6.5. It needs a well-drained soil which is not compacted. If you grow kale on a very heavy soil, remember that you might have problems strip-grazing in a very wet autumn/winter.

SEEDBED & SOWING METHODS:

A firm, fine and level seedbed is required and this needs to be achieved with minimum moisture loss (especially on dry soils).

Kale seed should be sown between mid-April and early-July. Early-sown crops, which establish well, are more likely to give the highest yields. The seed can be broadcast or sown with a precision or root drill. Under normal conditions, a seed rate of 4-5kg/ha should be adequate. If seedbed conditions are very dry, or the crop is broadcast, then the rate can be increased slightly as an insurance. The target population is 70 plants/m^2 whichever sowing method is used.

FERTILISER:

Kale is a fast-growing crop which will thrive well when provided with plenty of organic material like slurry or farmyard manure.

For a soil index of 1, apply 80 units/ha of P and 230 units/ha of K to the seedbed (see page 30).

The amount of nitrogen required will depend on the previous cropping and up to 120kg/ha may be needed after a run of cereals. After intensely grazed grass, the rate may fall back to 60kg/ha.

The application may be split for early sown crops – 65% in the seedbed and the balance when the crop has reached a height of 15/16cm. For direct-drilled crops, it is wise to increase the nitrogen by up to 25% to boost the crop in the establishment phase. See page 26.

WEEDS, DISEASES & PEST CONTROL:

Several pre-emergence sprays are effective in kale and products are also available for post-emergence control of broad-leaved weeds. In dry years, flea beetles can cause considerable damage to young seedlings. Crops should be monitored regularly. Slugs can be a problem in direct-drilled crops – slug pellets should be considered if appropriate. Rabbits and pigeons can also pose a threat and again, some specific attempts at control may be necessary.

Clubroot represents the main disease threat. It is soil-borne, so control is by the use of good rotations. Try and avoid growing kale on any fields which have a history of clubroot, however, the availability of the clubroot tolerant variety Caledonian is a major breakthrough. Alternaria and mildew can affect crops, but attacks are seldom too serious.

FEEDING:

The traditional method is to utilise the crop fresh, either by strip or zero grazing. Strip graze behind an electric fence which is best moved once or twice a day. Allow a space of 3 metres per cow and an area of grass for the animals to run-back on.

Zero grazing – cutting the crop with a forage harvester will help secure the maximum use of this excellent green feed with minimal waste. The kale can then be fed from a forage box or from behind a barrier. Experts suggest that kale should provide no more than 30-35% of the daily dry matter intake for dairy cows.

Outerwintering – kale has been used very successfully in outwintering systems.

Variety Profiles

BOMBARDIER

A new variety with the potential to deliver high dry matter yields ideal for dairy, beef or lamb production. Bombardier will maximise the yield potential per hectare, but this variety has been bred to ensure that the feed produced will be of a higher quality. Bombardier is also clubroot tolerant.

CALEDONIAN

Caledonian is the highest yielding kale in our trials. It is clubroot tolerant, which now enables growers to continually sow kale on clubroot infected sites. Caledonian's huge yield makes it ideal for utilisation by dairy and beef cattle.

KEEPER

Keeper is very winter hardy and exhibits good lodging resistance. It is a medium/short type, ideal for finishing lambs and providing high quality winter keep. It has low SMCO levels (anti-nutritional chemical).

PINFOLD

Pinfold is an excellent variety with thin stems and can be untilised by sheep, beef or dairy. Pinfold is winter hardy, but because of its rapid growth it can be used as a late summer/early autumn buffer feed.

Variety Selection

Kale

- **Dairy & Beef** — Taller, thick-stemmed varieties with maximum yield potential
  - **Bombardier** — High quality feed, ideal for autumn or winter use
  - **Caledonian** — Highest yielding in UK trials with clubroot tolerance
- **Sheep & Lambs** — Leafy types with a shorter growing season
  - **Keeper** — Short, leafy type ideal for lamb production
  - **Pinfold** — Intermediate height with fast growth potential

Trial Results

VARIETY	TYPE	RELATIVE DM YIELD %	RELATIVE FRESH YIELD %	DM CONTENT %	LEAF : STEM RATIO HIGH = LEAFY	PLANT HEIGHT (CM)	DIGESTIBILITY VALUE %	WINTER HARDINESS 9 = BEST
100% = Tonnes/Ha		9.7	70.2					
Caledonian (CR)	**Marrow Stem**	**122**	**123**	**13.8**	**0.6**	**105**	**71.2**	**5**
Bombardier (CR)	**Marrow Stem**	**118**	**121**	**13.5**	**0.5**	**102**	**72.2**	**5**
Grampian (CR)	**Marrow Stem**	**115**	**113**	**14.1**	**0.6**	**101**	**73.7**	**4**
Pinfold (C)	**Intermediate**	**112**	**100**	**15.6**	**1.0**	**101**	**71.1**	**6**
Bittern	Intermediate	112	101	15.5	0.8	94	74.0	*
Voltage	Intermediate	104	93	15.7	0.9	97	70.6	5
Keeper	**Short**	**104**	**92**	**15.7**	**1.2**	**85**	**74.2**	**5**
Maris Kestrel (c)	Short	100	100	13.9	1.1	74	75.6	3
Thousand Head	Older Standard	100	83	16.6	1.2	99	70.1	*

Data Source: Limagrain UK & James Hutton Institute Trials 1991 - 2013 (c) = Control, Winter hardiness scored Jan 2011 * No data available CR = Clubroot Tolerant
Note: not all varieties are trialled every year, not all scores taken every year.

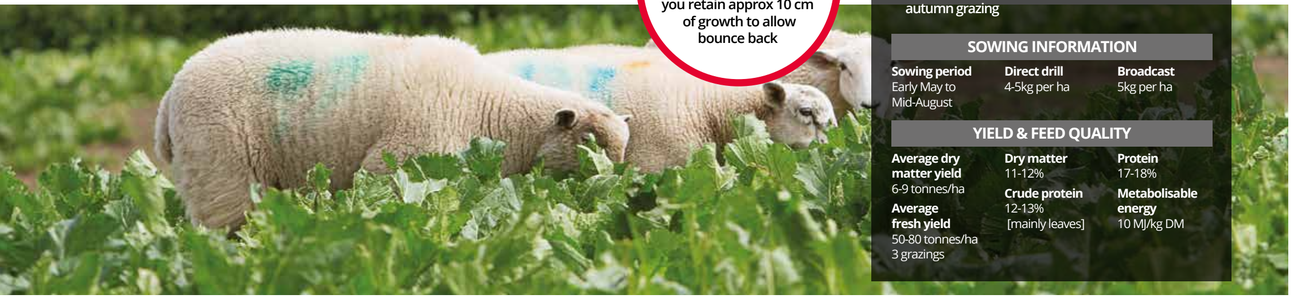
Crop Suitability

Dairy	■	Sheep	■	Graze in Situ	■	Zero Grazing	■
Beef	■	Pigs		Ensile		Lift and Store	

Limagrain

BOUNCE BACK BRASSICA

EXPERT ADVICE
Ensure that after grazing you retain approx 10 cm of growth to allow bounce back



Why Grow Bounce Back Brassica?

- Multiple grazings from a single crop
- Fast growing, just 8-10 weeks
- Summer or autumn grazing
- Flexible sowing options
- Lamb, Beef or Dairy production
- Tolerance to dry soil conditions

SOWING INFORMATION

Sowing period
Early May to Mid-August

Direct drill
4-5kg per ha

Broadcast
5kg per ha

YIELD & FEED QUALITY

Average dry matter yield
6-9 tonnes/ha

Average fresh yield
50-80 tonnes/ha
3 grazings

Dry matter
11-12%

Crude protein
12-13%
[mainly leaves]

Protein
17-18%

Metabolisable energy
10 MJ/kg DM

SOIL TYPE/SITE SELECTION:

As Bounce Back Brassica crops are grazed in situ, a free draining loam or brash with a pH of 6.5 is ideal.

SEEDBED & SOWING METHODS:

Drill mid-May onwards for the best results. Skyfall can be sown into a firm fine seedbed. A light roll to conserve moisture after sowing, will benefit establishment.

Bounce Back Brassica can also be drilled after first cut silage. Spray off the grass with Glyphosate and lightly cultivate the soil once the grass is dead. Then, slot seed or drill the seed at the rate shown above.

FERTILISER:

Check your soil indices and previous cropping but for guidance, please use the fertiliser recommendations on page 30.

After the first graze and to encourage bounce back regrowth, we suggest the application of 30-35kg of N per hectare after each grazing.

ESTABLISHMENT:

You can expect that plant establishment will take place in 5-7 days and that the crop should be ready for grazing within 5-7 weeks. In 2020, our demonstration plots averaged 6 weeks from sowing to grazing.

FEEDING:

Bounce Back Brassicas will produce a very leafy, highly palatable crop in a short period of time. The leafy forage should be grazed to a height of approximately 10 cm (below this height bounce back regrowth will take longer). Fencing should be used to ensure efficient use of the crop, with back fencing allowing the areas grazed to begin to regrow.

Bounce back regrowth can be expected in approximately 4 – 6 weeks from your first grazing. An application of 30-35kg N per hectare will encourage faster growth and recovery. Our trials show that Skyfall has the potential for up to 3-4 grazings from crops sown in end May/early June.

Variety Profile

SKYFALL

It's not very often that a completely new forage crop comes along, especially one that can deliver high feed yields with regrowth potential!

Skyfall is a leafy brassica ideally suited for grazing. The large strap leaves are soft and very easily eaten by dairy, beef or sheep livestock. Its leaves have the appearance of a stubble turnip leaf, whilst the root is more like forage rape, deeper and elongated and able to penetrate the soil. With this root system, Skyfall can regrow and has improved tolerance to dry situations and soils.

Sowing, Grazing and Regrowth Periods

END MAY	5-7 WEEKS	MID JULY	4-6 WEEKS	MID-END AUGUST	4-6 WEEKS	SEPTEMBER/ OCTOBER
Sow	Growth	1st Graze	Bounce Back	2nd Graze	Bounce Back	3rd Graze

Yield Potential

Our 2020 demonstration trial plots, drilled on the 19th May, produced the following fresh yields:

	1ST GRAZE	2ND GRAZE	3RD GRAZE	4TH GRAZE	TOTAL
FRESH YIELD TONNES/HECTARE	33.58	19.25	12.50	13.85	79.18

Skyfall's regrowth

Deep roots help penetrate the soil

Crop Suitability

Dairy	■	Sheep	■	Graze in Situ	■	Zero Grazing	
Beef	■	Pigs	■	Ensile		Lift and Store	

STUBBLE TURNIP

SOIL TYPE/SITE SELECTION:

As most crops are grazed in situ, a free draining light loam or brash with a pH of 6.5 is ideal.

SEEDBED & SOWING METHODS:

If stubble turnips are to be sown after grass, a firm, fine seedbed will be required and traditional, plough-based cultivations will be fine. If stubble turnips are drilled following an arable crop, a cereal for example, then tined cultivations, discing or rotovation can often replace the plough. In all cases, it is vital that soil moisture is not lost. Stubble turnips should be sown approximately 12-14 weeks before they are to be utilised. If sown in April, after forage rye, Italian ryegrass or an early spring fallow, turnips are very useful for finishing off spring lambs or feeding other stock.

Stubble turnips also fit in well when sown in mid- June after an early hay/silage cut for autumn feeding, but they are now increasingly being used for autumn sowing on cereal stubbles.

Autumn sowings in the northern half of the country and on all uplands, should be completed by the end of July. In the south, stubble turnips should be sown by mid-August, with early September the latest date to consider.

For crops drilled into broken stubbles, sowing rates will vary from 4-5kg/ha depending on soil conditions and time of drilling. Seed which is broadcast should go in at no less than 6-7kg/ha.

FERTILISER:

An application of 80kg of nitrogen, 25kg of phosphate and 25kg of potash per ha is usually sufficient for this crop. Certainly, a dressing of between 60-90kg of nitrogen/ha is especially important when the crop is being sown after a cereal. The fertiliser should be worked well into the seedbed. A top dressing of nitrogen, (see page 30) 3-4 weeks after sowing, can boost crop growth.

FEEDING:

The stubble turnip crop is an attractive source of very palatable and easy to digest fodder. Both cattle and sheep should be introduced gradually to the crop and between grazings, be able to run-back on grass or have access to grass silage. It is also advisable to have hay or straw on offer prior to each grazing, particularly in the case of dairy cows. It is a good idea to introduce animals to the crop gradually, allow stock about three weeks to fully adjust to stubble turnips.

Throughout the grazing period, adequate mineral supplements should be fed to all stock.

Although the DM content of both the root and the leaf is low, the quality of this DM is very good.

LIVESTOCK INTAKE:

A dairy cow will eat approximately 22kg in a 2-3 hour grazing period and a lowland ewe about half that amount in a day. So an average autumn crop of 40 tonnes/ha (after allowing for wastage) should provide one day of grazing for 500 cows or 1000 ewes. With beef animals, an intake of 25 kg/head/day should give liveweight gains in the region of 0.5 to 0.75 kg/head. As a precaution against taint, dairy cows should be fed stubble turnips immediately after milking – and remove them from the crop at least three hours before the next milking. Cattle should strip graze the crop behind an electric fence to reduce wastage. With sheep, good quality netting can be used to achieve the same aim.

Why Grow Stubble Turnip?

- Fast growing catch crop
- Autumn or winter feed
- Finishing lambs
- Summer buffer feed for dairy cows
- Economical to grow
- Flexible sowing options
- Helps reduce winter feed costs

SOWING INFORMATION

Sowing period	Direct drill	Broadcast
(1) May to June (2) July to August	4-5kg/ha (2kg/acre), Natural seed	5-6kg/ha (3kg/acre), Natural seed

YIELD & FEED QUALITY

Average dry matter yield	Dry matter	Digestibility value
4-5.5 tonnes/ha	8-9%	68-70%
Average fresh yield	**Crude protein**	**Metabolisable energy**
40-50 tonnes/ha	17-18% (mainly leaves)	11 MJ/kg DM

GROWING COSTS

£305 per hectare	Fresh weight	Dry matter
	£5 per tonne	£66 per tonne

Variety Profiles

SAMSON

Samson can produce huge tankard shaped purple bulbs which are very palatable to both sheep and cattle. In trials, Samson has shown to be preferentially grazed, which can lead to higher intake and liveweight gains.

DELILAH

This exciting cultivar has outperformed many existing varieties in our trials for a number of years. Delilah is ideal for finishing lambs and will produce huge, white tankard shaped bulbs. Good resistance to mildew.

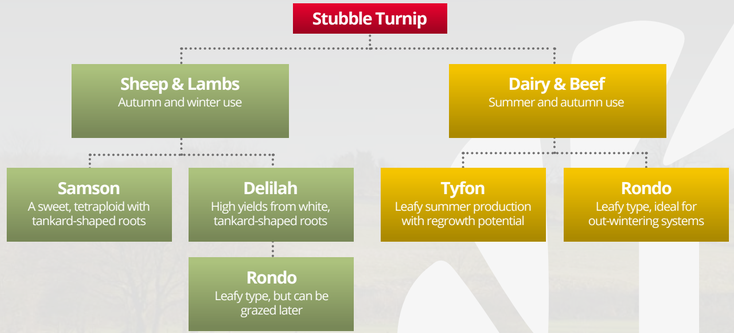
TYFON

Tyfon is a hybrid turnip crossed with Chinese cabbage. It will produce a smaller bulb but a mass of palatable leaves that can be used for summer or autumn grazing. Tyfon is very fast growing (10-12 weeks) and has some regrowth potential, providing sufficient leaf coverage is maintained.

RONDO

Rondo is a green skinned variety, suitable for sheep or cattle. It has a very leafy growth habit with excellent disease resistance and can be utilised from September to early February. Rondo has excellent root anchorage which helps reduce wastage in the field.

Variety Selection



Trial Results

VARIETY	TYPE	RELATIVE DM YIELD %	RELATIVE FRESH YIELD %	RELATIVE ROOT DM YIELD %	RELATIVE LEAF DM YIELD %	MILDEW RESISTANCE 9 = BEST	ALTERNARIA RESISTANCE 9 = BEST
100% = Tonnes/Ha		5.54	51.8	3.04	2.51		
Samson (Tet)	Purple Tankard	104	109	120	84	5	6
Delilah	White Tankard	100	102	118	78	8	7
Barkant (c)	Purple Tankard	100	100	100	100	*	*
Rondo	Green Globe	94	89	97	90	8	7
Dynamo	Purple Globe	89	91	99	76	5	8
Whitestar	White Globe	84	81	79	91	*	*
Tyfon	Leafy	78	74	56	105	3	7

Data Source: Limagrain UK Trials 1998 - 2021 (c) = Control Tet = Tetraploid * No data available Disease scores taken: December 2017
Note: Not all varieties tested every year, not all scores taken every year

Crop Suitability

Dairy	■	Sheep	■	Graze in Situ	■	Zero Grazing	
Beef	■	Pigs	■	Ensile		Lift and Store	

FORAGE RAPE & HYBRIDS

EXPERT ADVICE
Only choose varieties that have good disease resistance, which will lead to higher intakes.

Why Grow Forage Rape?

- Fast growing, leafy catch crop
- High protein content
- Longer lasting than stubble turnips
- Winter hardy hybrids available
- Finishing lambs
- Flexible sowing period
- Sheep, dairy or beef production

SOWING INFORMATION

Sowing period
May to end August

Direct drill
5-6kg/ha (2.5kg/acre), Natural seed

Broadcast
6-7kg/ha (4kg/acre), Natural seed

YIELD & FEED QUALITY

Average dry matter yield
3.5-4 tonnes/ha

Average fresh yield
24-35 tonnes/ha

Dry matter
12-13%

Crude protein
19-20%

Digestibility value
65%

Metabolisable energy
10-11 MJ/kg DM

GROWING COSTS

£408 per hectare

Fresh weight
£12 per tonne

Dry matter
£107 per tonne

SOIL TYPE/SITE SELECTION:

As most crops are grazed in situ, a free draining, light loam with a pH of 6-6.5 is ideal. Forage rape has a very vigorous growth habit and is very often used in upland reclamation projects where its ability to survive and grow on relatively poor soils and exposed sites is well known.

SEEDBED & SOWING METHODS:

Forage rape makes an excellent break crop between grass leys; if this rotation is used, a firm, fine seedbed is required. Forage rape can also be sown after cereal harvest where tined cultivations, discing or rotavation will suffice.

Whichever method you choose, rolling after sowing will consolidate the seedbed and help reduce moisture loss. Seed should be drilled at 6kg/ha or broadcast at 8kg/ha.

FERTILISER:

Forage rape will benefit from applications of farmyard manure or slurry before sowing. If this is unavailable, then 60-90kg of nitrogen, 25kg P and 25kg K per hectare into the seedbed should be sufficient for the crop. If the crop looks 'hungry' after 4-5 weeks from sowing, then a top dressing of 75kg/ha of nitrogen can be applied. A high application of N can be detrimental to stock intakes (see page 30).

FEEDING:

Forage rape crops can be ready to utilise between 12-14 weeks from sowing. They are ideally used for finishing lambs or flushing ewes and can be lightly grazed by cattle. As with any brassica crop, feeding should be introduced gradually over a 2-week period. Ideally there should be an area of grassland to allow stock to 'run back' onto, along with access to hay or straw and water.

Forage rape is also the ideal companion to stubble turnips. The two sown together can be fed successfully with the forage rape, adding extra crude protein content and winter hardiness.

Many farmers have successfully mixed approximately 250-500g of forage rape seed into their grass seed mixtures, allowing them to be grazed whilst the young grass seedlings continue to establish underneath.

Forage rape can also be mixed with Italian ryegrass to create a cleaner autumn keep.

Variety Profiles

INTERVAL (Rape/Kale Hybrid)

When it comes to filling the gap in your winter feed programme, Interval rape/kale hybrid can really boost your profits. Interval's exceptional yield potential, disease resistance and palatability is ideal for finishing lambs or dairy cows. Interval is very fast to establish, with some crops ready to utilise within 12-14 weeks of sowing.

UNICORN (Rape/Kale Hybrid)

A brand-new variety which can provide a highly palatable forage for autumn and winter grazing. Unicorn has some re-growth potential providing the stems are not fully grazed, and with this additional growth, dry matter yields per hectare can be boosted.

RAMPART

A new generation of forage rape, Rampart has been bred with feed quality enhancements and with its high yield potential and winter hardiness, it will enable growers to find extra flexibility when feeding the crops. Rampart is suitable for both dairy and lamb production and is ready to feed 12 -14 weeks after sowing.

HOBSON

Fully proven on livestock farms throughout the UK. Ideal for finishing lambs with good winter-hardiness and disease resistance.

Variety Selection

Forage Rape & Hybrids

- **Sheep & Lambs** — Autumn and winter use
  - **Rampart** — Bred for feeding quality and grazing flexibility
  - **Interval** — Rape/kale hybrid with fast establishment
  - **Hobson** — Reliable forage with good winter hardiness
  - **Unicorn** — Rape/kale hybrid bred for high protein and rapid growth
- **Dairy & Beef** — Summer and autumn use
  - **Interval** — Rape/kale hybrid producing a quality feed

Trial Results

VARIETY	RELATIVE DM YIELD %	RELATIVE FRESH YIELD %	DM CONTENT %	MILDEW RESISTANCE 9 = BEST	ALTERNARIA RESISTANCE 9 = BEST	WINTER HARDINESS 9 = BEST
100% = Tonnes/Ha	4.04	30.98	13.2			
Interval (Hybrid)	**116**	**125**	**12.3**	**9**	**8**	**2**
Unicorn (Hybrid)	**110**	**114**	**12.8**	**8**	**8**	**2**
Swift (Hybrid)	108	113	12.6	8	8	2
Hobson	**107**	**101**	**13.9**	**8**	**8**	**5**
Gorilla	103	95	14.2	6	7	*
Rampart	**100**	**104**	**12.7**	**8**	**8**	*****
Emerald (c)	100	100	13.2	6	8	4
Stego	99	96	13.6	*	*	4
Winfred	95	92	13.6	*	*	5
Redstart (Hybrid)	94	95	13.1	7	7	4
Avon	93	97	12.7	7	8	*
Hungry Gap	**82**	**80**	**13.6**	**9**	**8**	**4**

Data Source: Limagrain UK Trials 1998 - 2021 (c) = Control Winter Hardiness Scored: January 2011 * No data available. Note: Not all varieties tested every year, not all scores taken every year

Crop Suitability

Dairy	■	Sheep	■	Graze in Situ	■	Zero Grazing	□
Beef	■	Pigs	■	Ensile	□	Lift and Store	□

SWEDE

Why Grow Swede?

- Excellent high energy winter feed
- Low production costs
- Finishing lambs or winter maintenance
- High dry matter yields
- Cost effective (even where yields are only moderate)

SOWING INFORMATION

Sowing period April-June

(150g-350g/acre) Grade H

Broadcast 4-5kg/ha (2kg/acre), Natural seed

Precision drill 350g-850g/ha

Direct drill 3kg/ha (1kg/acre), Natural seed

YIELD & FEED QUALITY

Average dry matter yield 7-10 tonnes/ha

Dry matter 10-13%

Digestibility value 82%

Average fresh yield 70-90 tonnes/ha

Crude protein 10-11%

Metabolisable energy 12.8-13.1 MJ/kg DM

GROWING COSTS

£403 per hectare

Fresh weight £5 per tonne

Dry matter £62 per tonne

SOIL TYPE/SITE SELECTION:

Swedes can be grown on a wide range of soils including sandy loams, silts, peat or clay loams. The desirable soil properties needed are; ease of working, good aeration, good structure and sound drainage. Avoid soils with pans and ensure a pH of around 6.5.

SEEDBED & SOWING METHODS:

The majority of swede crops are now sown with precision drills, which require a level seedbed. Early drilling in April should be made with minimal cultivation passes to reduce compaction. Later drillings in May/June are often made in hot, dry conditions so try to undertake the seedbed cultivations in early spring to reduce soil moisture loss. Weeds should be eliminated between seedbed preparation and sowing.

Seed should be sown at 1-2cm depth and left well firmed on the top.

Precision or space drills are capable of accurate placement of individual seeds (e.g. Stanhay Webb). Swede seeds are naturally spherical, however, they are graded in size using a nationally agreed code letter system of 'H' (1.75mm-2mm).

Rows should be 38-42cm apart. The ideal spacing within the row is generally assumed to be 15cm. Spacings for varieties may vary to achieve the ideal marketable size of the roots.

Early varieties (low DM) can be sown from early April to late May. The varieties for utilisation in late winter should be sown in April to June.

FERTILISER:

Fertiliser should be applied into the seedbed. Swedes are responsive to Boron, which should be applied to soils with a deficiency (see page 30).

WEEDS, DISEASES & PEST CONTROL:

There are a number of pests which attack the swede crop from sowing, through to maturity. In order to maximise crop establishment and minimise crop damage, it is advisable to sow treated seed. If swedes are sown for culinary use, it is essential that superficial mining or tunnelling from cabbage root fly is controlled, as is the internal damage from turnip root fly.

The major disease to watch for is clubroot, which affects the root system – the misshapen roots can be completely unsaleable in culinary situations.

Attacks of mildew on the leaves will reduce yield and may affect the crops palatability during in situ grazing.

FEEDING:

Most fodder swede crops are grazed in situ. However, it is important to remember to select a variety (or varieties) to cover the period you wish to graze. It is advisable to use an electric fence to reduce wastage. Forage swedes can be lifted and the roots stored in a clamp. The roots need to be clean and free from soil. Try not to store any damaged roots as this will encourage fungal diseases.

Variety Profiles

GOWRIE

Gowrie is a variety bred in Scotland and can be utilised pre or post-Christmas. It can produce high dry matter yields and exhibits good tolerance to both clubroot and powdery mildew.

LOMOND

High, fresh and dry matter yields make this variety ideal for finishing lambs post Christmas. Lomond has both powdery mildew and clubroot tolerance and trials show it suffers less from rots and splits in its root.

INVITATION

Invitation is a very uniform, clubroot tolerant variety, ideal for utilisation after Christmas. It also has excellent tolerance to powdery mildew and will produce large leaves for extra grazing potential. Invitation is winter hardy and is suitable for sheep or cattle.

MAGRES

Magres is the variety to grow for culinary and the fresh markets. Its fine purple skin and yellow flesh makes it ideally suited for supermarket specifications.
Magres has good storage capabilities, giving greater harvest flexibility.

Variety Selection

Swede

- **High DM%** — Better winter hardiness, suitable for long keep systems (Jan - Feb)
  - **Invitation** — Winter hardy with large leaves for extra grazing potential
  - **Lomond** — Big yields & a consistent performance
- **Medium DM%** — High DM yields & easy to eat (Nov - Jan)
  - **Gowrie** — Excellent yields paired with high disease tolerance
- **Low to Medium DM%** — For culinary and farm shop use
  - **Magres** — Consistent culinary variety with smooth purple skin

Trial Results

VARIETY	RELATIVE DM YIELD %	RELATIVE FRESH YIELD %	DM CONTENT %	MILDEW RESISTANCE 9 = BEST	ROOT SHAPE 9 = BEST	NECK LENGTH HIGH SCORE = LONGER NECK
100% = Tonnes/Ha	9.78	89.6				
Gowrie	**118**	**119**	**11.0**	**9**	**7**	**1.4**
Lomond	**111**	**109**	**11.3**	**9**	**7**	**1.4**
Ruby	107	102	11.7	7	5	2.0
Invitation	**106**	**94**	**12.6**	**8**	**6**	**3.5**
Brora	**100**	**106**	**10.4**	**3**	**7**	**1.6**
Ruta Otofte (c)	100	100	11.0	4	5	2.4
Magres	100	93	12.2	7	6	1.7
Helenor	96	99	11.0	3	7	4.0
Marian	96	97	11.0	5	5	1.5

Data Source: Limagrain and James Hutton Institute Trials 1990 - 2010 (c) = Control
Note: Not all varieties tested every year, not all scores taken every year

Crop Suitability

Dairy	■	Sheep	■	Graze in Situ	■	Zero Grazing	■
Beef	■	Pigs	□	Ensile	■	Lift and Store	■

Limagrain

FORAGE PEAS & ARABLE SILAGE

EXPERT ADVICE
Forage peas can be undersown with a grass ley, saving establishment time

SOIL TYPE/SITE SELECTION:
Generally speaking, forage peas can be grown on a very wide range of soils. Fields need to be very well drained (peas do not like 'wet feet') and soils should have a pH of 6.0 or above.

SEEDBED & SOWING METHODS:
Sowing date is somewhat flexible, as it depends on where the crop is to fit in the rotation. It can be sown as early as March/early April in the south and a little later in the north. The minimum (stable) soil tolerance temperature required is 8°C. Bear in mind that late sowings (after mid summer) are unlikely to yield as well as early crops.

FERTILISER:
Forage peas are leguminous, so will fix their own nitrogen. However, a small dressing of nitrogen will often be beneficial at the establishment phase, depending on the existing nutrient status of the soil.

WEEDS, DISEASES & PEST CONTROL:
In good conditions, forage peas will produce a dense canopy which will smother weeds very efficiently. However, it is good husbandry to ensure that the field is as weed-free as possible from the outset.

Bird damage (mainly pigeons and rooks) can be substantial where fields are in a high-risk area. Damage will be minimised by the speedy establishment of the crop, therefore sowing into optimum seedbed conditions is vital. The use of bird scaring devices may well be essential on sites prone to bird strikes.

HARVESTING:
Forage peas can be cut and clamped, cut and baled or grazed in situ. For crops destined for cutting, the peas should be harvested when they are still flowering and the plants have formed but not filled their first pods. Wilting for 24/48 hours is recommended and precision chopping is essential. The use of an appropriate additive is a very sound move to help ensure good fermentation in the clamp or the bale.

Generally speaking, silage made from a mixture of peas and cereals will be less prone to poor preservation – the disadvantage is that such a mixture is more likely to deteriorate faster at the silo face during feeding. This will certainly be the case if the material has not been chopped very short or consolidated efficiently.

A good crop of forage peas will yield between 20-30 tonnes of green matter per ha (at 20% DM) and this is, of course, achieved with a single cut.

If you plan to strip graze your crop, then make sure the whole process is controlled by an electric fence, to reduce wastage and control intake.

FEEDING:
Although some experts believe that forage peas are a 'bloat free' crop (due to their content of tannin) it will be sensible to introduce stock to the crop gradually and, for safety, it is important to monitor animals regularly whilst they are grazing.

Like all legumes, forage peas are very palatable and their judicious use in the diet should promote a higher voluntary intake.

Why Forage Peas?

- Very high protein content (16-20%)
- Easy to harvest using forage machinery
- Suitable for undersowing with new grass leys
- Impressive field performance
- Great for organic situations
- Some nitrogen fixation to enhance soil and next crop
- Excellent break crop

SOWING INFORMATION

Sowing period	Direct drill	Broadcast
March to early-June	125kg/ha (50kg/acre)	150kg/ha (60kg/acre)

YIELD & FEED QUALITY

Average dry matter yield	Dry matter	Metabolisable energy
4-6 tonnes/ha	20-25%	10.5 MJ/kg DM
Average fresh yield	**Crude protein**	
20-30 tonnes/ha	16-20%	
	Digestibility value	
	62-64%	

GROWING COSTS

£708 per hectare	Fresh weight	Dry matter
	£27 per tonne	£102 per tonne

Variety Profile

MAGNUS

Magnus is a semi-leafless forage pea variety, which ensures the crop is self-supporting, reducing the damaging effect of lodging, often seen in traditional full-leaved varieties.

Magnus is very fast growing and can be harvested between 11-14 weeks after sowing. Because of its growth habit (semi-leafless and open to the light), Magnus crops are ideally suited to undersowing with a new grass ley.

Magnus is a true catch crop with tremendous flexibility and is UK proven.

Arable Silage Mixture

An arable silage mixture contains different combinations of both cereals and peas that can provide a valuable source of protein and starch. The ensiled crop can provide excellent winter feed rations for dairy, beef and sheep.

The crop can produce excellent yields from a short growing period of approximately 13 –16 weeks. The silage combines high intake potential and can be used as part of a mixed forage diet. The pea content of these mixtures can help increase the protein content of the ration. Arable silage mixtures can be undersown with a new grass ley to further maximise the use of your land.

PROSILE:
A proven blend of Magnus forage peas and spring barley, which can produce a quality silage that is high in protein content.
Contains: 60% Magnus pea & 40% spring barley

Sow at:
125 - 150 kilos per hectare - undersown with grass
175 - 200 kilos per hectare - for best results

Trial Results

VARIETY	DRY MATTER YIELD	FRESH YIELD	DRY MATTER CONTENT %	PROTEIN CONTENT %	PROTEIN YIELD	LEAF TYPE	FLOWER COLOUR
	Tonnes/Ha	Tonnes/Ha			Tonnes/Ha		
Audit	7.15	25.69	27.8	14.7	1.05	Semi Leafless	White
Javlo	6.44	23.61	27.3	16.3	1.05	Semi Leafless	White
Magnus	**8.14**	**28.96**	**28.1**	**14.0**	**1.14**	**Semi Leafless**	**Coloured**
Mantara	7.18	26.91	27.7	13.5	0.97	Semi Leafless	White
Prophet	6.98	24.68	28.3	14.7	1.02	Semi Leafless	White
Tiberius	7.49	26.87	27.9	12.7	0.95	Semi Leafless	White
LG Agnetha	**7.91**	**28.76**	**27.5**	**15.8**	**1.25**	**Leafy**	**Coloured**
ARABLE SILAGE MIXTURE							
Prosile	**124**	**87**	**32.9**	**12.0**		**-**	**-**

Crop Suitability

Dairy	■	Sheep		Graze in Situ		Zero Grazing	■
Beef	■	Pigs		Ensile	■	Lift and Store	

WHOLECROP AND CRIMPED CEREALS

Why Grow Wholecrop Cereals?

- Consistent quality feed
- Ideal for non-maize growing areas
- Earlier harvest/cutting - less weather dependant
- Starch rich
- Cost effective
- Opportunity to follow with other summer sown forages

SOWING INFORMATION

Usually sown Sept-Nov from winter wheat or winter barley at 185-200kg per hectare.

Spring crops can be whole cropped, but expect a later harvest.

YIELD & FEED QUALITY

WINTER WHEAT WHOLE CROP SILAGE	WINTER WHEAT CRIMPED
Fresh yield: 30 – 35 tonnes per hectare	**Fresh yield**: 13- 15 tonnes per ha
Dry matter: 35-45%	**Dry matter**: 55-65%
Energy: 10.4 - 10.6 MJ/kg DM	**Energy**: 13.0 MJ/kg DM
Starch: 25%	**Starch**: 70%

GROWING COSTS

£1055 per ha	**£1166 per ha**

SOIL TYPE/SITE SELECTION:

Winter wheats and barleys have the potential to produce the highest wholecrop yields. Choose a fertile field - well drained clays and loams are ideal. Rectify any compaction issues and ensure pH is above 6.

SEEDBED & SOWING METHODS:

Cultivate the field to achieve a moderately coarse seedbed. This should be done as early as possible and whilst the soil is dry. If the summer has dried the soil too much, wait for some moisture. Early sown crops establish quicker and have more time to establish roots and leaves, as well as improved tillering.

Aim to establish approximately 200 plants/m^2 with a target of 500-600 seed heads per m^2 after tillering.

FERTILISER:

Check soil indices and refer to DEFRA's RB209 for further details.

Alongside nitrogen, potassium and manganese, phosphate is particularly important for early growth and development.

WEEDS, DISEASES & PEST CONTROL:

A pre-emergence herbicide programme is essential, but ensure sufficient moisture is available prior to application to allow for the chemistry to work. Wheat can have a competitive effect against blackgrass, provided established plant populations are high enough, at around 250-300/m2

HARVESTING & ENSILING:

Wholecrop

Harvesting/cutting is usually made using a forage harvester or a disc mower then picked up by a forager, soon after mowing. Harvest at approximately 35-45% dry matter (Soft cheddar cheese stage). See guide opposite.

Consolidating wholecrop in the clamp can be problematic, we suggest applying an additive to help the fermentation process and to reduce spoilage.

Crimped

Conventional cereal harvester.

Harvest at around 50-55% moisture, crimp the grain and use an acid-based preservative and store it in a clamp.

FEEDING:

Fermented wholecrop is a very flexible feed that can be fed to dry and lactating cows, beef finishing systems, breeding ewes.

Crimped grains are usually fed to lactating cows, and for finishing.

Variety Profiles

Winter wheat ideal variety profile for wholecrop:

High yielding feed wheats, bold grain, good standing and tall strawed with excellent disease resistance.

LG ILLUMINATE WINTER WHEAT

A variety with consistent high yield potential across regions & farm situations. High yield potential from early drilling, LG Illuminate has good resistance to rusts, *Septoria tritici* and has orange wheat blossom midge resistance.
LG Illuminate has a very high untreated yield potential, giving growers assurance of its performance, should fungicide spray timings be delayed.

Ideal for wholecrop or crimping.

LG SKYSCRAPER WINTER WHEAT

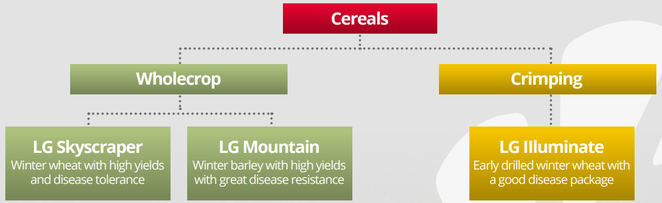
LG Skyscraper is the highest yielding winter wheat on the AHDB Recommended List 2021/22. It offers a combination of strong agronomic merits and grain quality attributes, giving growers maximum return on their investment.

LG Skyscraper has a strong disease package with tall straw, ideal for whole cropping.

LG MOUNTAIN WINTER BARLEY

LG Mountain is one of the highest yielding 2 row feed varieties available. The variety performs consistently across all regions, combined with the good agronomic characteristics of short straw, great disease resistance and good grain quality.

Variety Selection



Cereals Harvest Guide

CROP COLOUR	GREEN	GREEN TURNING YELLOW	YELLOW/GREEN	YELLOW WITH SOME GREEN ON STEMS	YELLOW/BROWN PRE HARVEST
% DM AT HARVEST	30-35%	40-45%	45-50%	55-65%	70-85%

Crop Suitability

Dairy	■	Sheep	■	Graze in Situ	□	Zero Grazing	□
Beef	■	Pigs	□	Ensile	■	Lift and Store	□

FORAGE RYE

EXPERT ADVICE
Some crops can be grazed lightly pre-Christmas to provide extra forage.

Why Grow Forage Rye?

- Early spring turnout (reducing overwintering costs)
- Winter sheep keep
- Flexible sowing option after maize or cereals
- Zero grazing and big bale options
- Helps mop up residual nitrogen and prevents soil erosion

SOWING INFORMATION

Sowing period
September to October

Direct drill
185kg/ha (75kg/acre)

Forage Rye & Italian Ryegrass
17 kg Italian ryegrass with 125 kg Forage rye per ha

YIELD & FEED QUALITY

Average dry matter yield
5-6 tonnes/ha

Dry matter
25%

Digestibility value
67%

Average fresh yield
20-24 tonnes/ha

Crude protein
11-12%

Metabolisable energy
10 MJ/kg DM

GROWING COSTS

£339 per hectare

Fresh weight
£12 per tonne

Dry matter
£78 per tonne

SOIL TYPE/SITE SELECTION:

As forage rye is primarily grown for its ability to deliver very early grazing in early spring, it is essential to make sure that the right field is selected. A weed-free, sheltered, well-drained field is ideal and if it has a southerly facing aspect then even better. Although forage rye will grow on a very wide range of soil types, it is best to avoid very exposed or badly drained fields.

SEEDBED & SOWING METHODS:

The seedbed for the forage rye should be reasonably firm and well consolidated. A seed rate of between 160-185kg/ha (65-75 kg/acre) is adequate under most circumstances and the seed should be drilled to a depth of 3.5-5cm.

Cross drilling the forage rye usually helps to promote a thicker stand and direct drilling is an option if required. Direct drilling will eliminate soil disturbance and will give a much firmer footing for the stock in the spring.

Forage rye is a catch crop so it can slot in between a cereal crop and then be followed by a crop of forage peas, fodder beet or kale.

Drilling date can vary with the locality, but in general, aim to get the seed in the ground between mid-August and late September. This ensures that the crop gets well established before the winter sets in.

Some farmers mix Italian ryegrass with their forage rye, so that the spring grazing programme can be prolonged. If you adopt this option, use a sowing rate of 17kg/125kg/ha respectively.
Some farmers have also direct drilled forage rye into a permanent pasture. However, if you use forage rye it will enable you to squeeze extra production out of your land.

WEEDS, DISEASES & PEST CONTROL:

No herbicides should be needed as the crop suffers from few pests and diseases.

Any leatherjackets, wireworms or slugs which are seen should be controlled using the appropriate chemical.

FEEDING:

Forage rye should not be allowed to enter the winter in a very proud state. In a mild autumn, crops sown in good time can be lightly grazed in late November or early December. Providing the grazing is not too severe, this operation (carried out when the crop has around 10-12 cm of growth) will encourage tillering, increase winter hardiness and boost the amount of green matter produced in the spring.

If you are grazing dairy cows on forage rye, then the crop height needs to be about 30-35cm. For sheep, the crop can be a little shorter.

If you graze early enough then you may well get a second flush of growth before you need to plough out the field for the following crop.

Controlled grazing, using an electric fence is very important to avoid excessive wastage.

Another option which some farmers exploit, is to zero graze the crop. This avoids having to take the stock onto the field – which in wet weather can help reduce poaching.

To help you plan your feed requirements, you should work on the basis that one hectare has the potential to provide two weeks of grazing for 25 cows or 50 lactating ewes.

Variety Profile

HUMBOLT

Humbolt was purpose bred to produce an 'early bite'; in fact, its spring growth can be up to three weeks earlier than Italian ryegrass. Humbolt's excellent tillering capacity and early vegetative growth ensures maximum intakes and palatability. Humbolt has excellent winter hardiness and can recover quickly after grazing or cutting.

Humbolt is UK proven and can thrive on a wide range of soil types.

Using Forage Rye to Improve your Soil

ROTATION:

Growing a cover crop will start to benefit your soil straight away. Many crops, such as; Humbolt Winter Rye, can produce huge amounts of organic matter that will enrich your soil.

Cover crops are best sown in the late summer and early autumn to ensure that they have the time to grow to their maximum potential.

Making the decision to grow a cover crop couldn't be simpler as there are so many benefits available. The advantages listed below will give you multiple financial reasons to include a cover crop in your rotation:

- Improved soil structure
- Better drainage
- Reduced compaction
- Improved fertilizer efficiency
- N uptake and released for use by following crop
- Reduced leaching of N
- Improved soil health
- Increased organic matter
- Weed suppression
- Retained moisture
- Erosion reduction

If you are using Humbolt forage rye as a cover crop, sow at 150-175kg/ha in September or October.

ENVIRONMENTAL LAND MANAGEMENT SCHEME (ELM):

The new ELM scheme is due to start 2023-24 with soil improvement at its heart. The use of crops, such as forage rye, will become even more important.

Crop Suitability

Dairy	■	Sheep	■	Graze in Situ	■	Zero Grazing	■
Beef	■	Pigs		Ensile	■	Lift and Store	

LUCERNE

EXPERT ADVICE
Lucerne is best cut pre-flowering, in the bud stage.

Why Grow Lucerne?

- High protein forage
- Drought tolerant
- Four cuts per year possible
- 3-5 year potential
- Clamp, big bale or hay
- Nitrogen benefit for subsequent crop

SOWING INFORMATION

Sowing period	Direct drill	Broadcast
April to mid-August	20-30kg/ha (8-12kg/acre)	25-30 kg/ha (10-12 kg/acre)

YIELD & FEED QUALITY

Average dry matter yield	Dry matter	Digestibility value
10-12 tonnes/ha	25-30%	62-64%
Average fresh yield	**Crude protein**	**Metabolisable energy**
35-40 tonnes/ha	17-22%	10 - 10.5 MJ/kg DM

GROWING COSTS

£1459 per hectare	Fresh weight	Dry matter
	£37 per tonne	£140 per tonne

SOIL TYPE/SITE SELECTION:

Lucerne can be grown on a wide variety of sites and soil types. The main criteria is to establish it on a site where a fine and firm seedbed can be produced. Lucerne will not, in general, tolerate a waterlogged soil, and this is commonly the cause of die-out over winter. For this reason, heavy sites tend to be avoided. Well-draining, heavier soils however, can provide very successful sites where good seedbeds can be best established and compaction is avoided.

SOWING DATE:

Lucerne can be sown from April right through the spring and summer. Sowings in the late summer will result in heavier crops the following spring. However, the later sowings carry a greater risk of establishment failure due to the onset of cooler growing conditions in the autumn. Failure to enter the winter with strong plants is likely to result in excess winterkill. For this reason, crops in the midlands and further north are better sown in the spring. Crops in the southern half of England however, can be established with great benefit in the summer.

The latest safe sowing date which should be considered is mid-August. Remember, sufficient soil moisture is essential for generating successful establishment, and this can be a problem with summer sowings.

pH:

Lucerne is one of the few crops which will thrive on a soil with a high pH. Adequate lime levels are essential for a successful crop and liming to pH 7 is advised. Acidity will not be tolerated.

FERTILISER:

In general, lucerne requires no nitrogen either in the establishment phase or subsequently afterwards. Lucerne is a legume and as such is able, by association with bacteria, to fix nitrogen into the soil for its own use. It will leave residual nitrogen for use by subsequent crops. However, if the lucerne is following a particularly nitrogen hungry rotation (e.g. cereals) a small quantity of nitrogen may be beneficial in the seedbed (50kg/ha maximum). If slurry is applied before drilling, this usually provides sufficient nitrogen in organic form. Excess nitrogen application will inhibit root nodulation and reduce lucerne's ability to fix nitrogen into the soil.

A strongly growing crop of lucerne will remove approximately 150kg/ha Phosphate and Potash annually. This should be replaced to maintain soil levels by smaller applications after each cut, or a single application after the last cut of summer. Apply fertiliser immediately after cutting to avoid leaf scorch on the new leaf growth.

All fertiliser should be applied according to requirements based upon soil analysis prior to sowing. Trace elements may be deficient on light soils and attention should be paid to the availability of Magnesium, Sulphur, Molybdenum, and Boron. These can be particularly important at the establishment phase.

INOCULATION:

Treatment of lucerne seed with Rhizobium bacteria is essential prior to sowing, in order to ensure successful root nodulation and efficient nitrogen fixing. Inoculation is a simple process involving mixing the seed with a powder and water.

The mixture is allowed to quickly dry before drilling. Some varieties are now supplied pre-inoculated.

SOWING RATE/DEPTH:

Sowing rates vary from 8-12kg per acre (20-30kg/ha). Lucerne has very tiny seed and is best drilled at no more than 1cm depth. Drill into moisture in 10cm rows. Sowing too deep will result in failed emergence. Fine, firm seedbeds are essential and rolling after drilling is advised. Broadcasting seed is an option and has the advantage of ensuring seed is not placed too deep.

WEED CONTROL:

Lucerne is a very uncompetitive crop in its early growth stages. It will not tolerate weeds and control is essential if infestation is serious.

Summer sowings are likely to have less weed competition than sowings in spring. They also enable cost-effective, sterile seedbed techniques to be used.

Light infestations are likely to be removed in the first cut and smothered by the re-growth. This however, is very dependent upon successful initial population establishment.

Approved chemicals for use on lucerne are limited and advice should be sought upon those with clearance for use.

Perennial weeds should be controlled as far in advance of the crop as possible.

PESTS AND DISEASES:

There are very few chemicals which can be used on lucerne to control any pests or diseases. The problem is compounded by the inability to enter and travel through the crop once it is actively growing, unless tramlines are used at establishment.

Weevils - may attack at an early stage in establishment, biting off young shoots.

Aphids - may infest later but no chemical approval exists for control at present.

Slugs - a potential problem at initial establishment. Slugs should be monitored and slug pellets used where required.

Eelworm - (Ditylenchus dipsaci) can cause persistency problems and where infestations in the soil are known to occur, varietal resistance is the only practical solution. Eelworm is more prevalent in heavier soils.

Always use fumigated seed to avoid importing Eelworm into your soil and crop.

Verticillium wilt - There are no chemicals available for the control of this disease. Varietal resistance is the only option.

ROTATION:

For crop cleanliness purposes, a rotation of five years is advised between lucerne crops. Crops may be down for 3-5 years, depending upon the durability of the stand.

HARVEST:

The first cut will usually be in late April/May, depending upon season and location. The cutting cycle will be approximately 40 days and cuts should be taken at the set of the flower buds. Delaying cutting will result in lower quality, more fibrous material being harvested and a lower feed value. Cutting pre-flowering will yield 20-22% protein. This reduces to 17-18% when cut, once flowers have emerged.

Lucerne has low soluble carbohydrate levels and when ensiled, this can lead to fermentation problems. A silage additive is therefore recommended to assist conservation preservation. Because of these difficulties, ensiling as a big bale often proves easier and more successful. If clamp silage is to be made, then a good wilt is even more essential, raising the soluble carbohydrate concentration in the remaining sap.

Cut at about an 8cm stubble length, the lucerne should be swathed and wilted. Excess drying will result in loss of leaves and nothing but stalk will remain. Insufficient wilting may lead to effluent problems. A compromise may be reached by waiting until the material on the top of the swath is dry, whilst the middle is still green and moist.

Baling at this stage will conserve the valuable leaf material but minimise effluent.

Lucerne is not entirely suitable for grazing, as treading causes excessive wastage, and damages the plants too severely. Excess grazed intake can also cause bloat.

Light grazing is less likely to cause damage if practiced once the crop has stopped growing into the autumn.

Care should be taken to avoid damaging the plant crown growing points, as this can induce lucerne crown rot. This disease can also be a problem if excess slurry is applied.

Variety Profiles

MEZZO

The top-rated variety in France with a dormancy rating of 3.6 making it worth considering for more northerly areas of the UK & Ireland, previously considered unsuitable for growing Lucerne.

Exceptionally fast growth rate and outstandingly high yields of protein rich forage. High resistance to all the main diseases and nematodes.

Crop Suitability

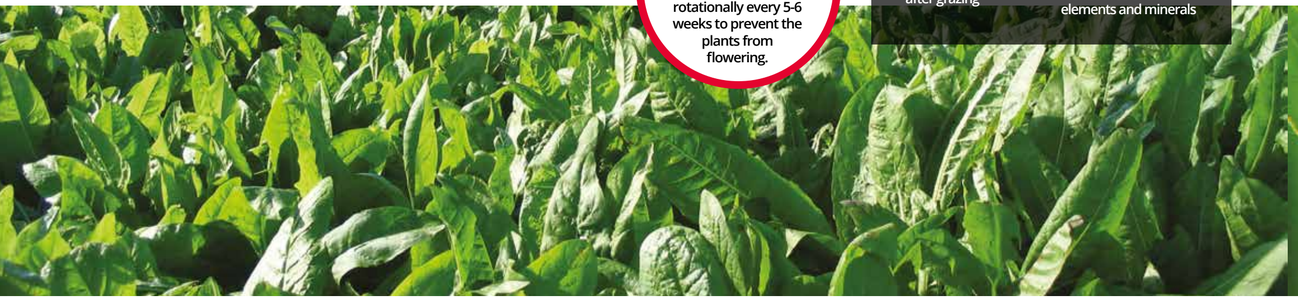
Dairy	■	Sheep	■	Graze in Situ	■	Zero Grazing	
Beef	■	Pigs		Ensile	■	Lift and Store	

FORAGE CHICORY

EXPERT ADVICE
Graze the crop rotationally every 5-6 weeks to prevent the plants from flowering.

Why Grow Chicory?

- Highly palatable
- Summer production
- Drought tolerant
- Quick recovery after grazing
- No bloat problems
- Grown on its own or mixed with a grass seed ley mixture
- Rich source of trace elements and minerals



Chicory is a perennial forage herb which is capable of producing very high quality feed in early spring to late autumn. The plant needs approximately 14-16 weeks of growth before full production is achieved. The plant will produce leafy top growth with a deep tap root, that can stand drought and will even tolerate low pH soils of 5.0.

SOIL TYPE/SITE SELECTION:

Chicory prefers well-drained soils with moderate to high fertility. pH should ideally be above 5.5, however some crops have been grown successfully below 5.

SEEDBED AND SOWING METHODS:

Chicory is best sown in the spring, into a firm, fine seedbed. The seed can be broadcast or drilled at 5kg/ha (2kg/acre). Sowing depth is approximately 1cm. Chicory can also be added to grass & clover seed mixtures at 1 kilo per acre. Slug pellets can be used to aid establishment.

FERTILISER:

Like any crop, chicory will benefit from some fertiliser applied into the seedbed. If you have done a recent soil test, check the indices.

As a guideline, apply phosphate at 20kg/ha, potash at 30kg/ha and nitrogen at 30kg/ha.

FEEDING:

Chicory is dormant during the winter months but will grow quickly from April onwards. The crop is ready for grazing when it reaches a height of 8 inches.

The crop is best rotationally grazed every 5-6 weeks to prevent the plants from flowering. Try not to graze after flowering or after wet conditions when the crowns are more susceptible to damage.

Variety Profile

GRASSLANDS CHOICE

Grasslands Choice chicory is UK proven and has the ability to deliver high quality forage for finishing lambs. Choice can also be mixed with Forage Plantain to help increase the copper and selenium content.

FORAGE PLANTAIN

Why Grow Plantain?

- Very palatable
- Excellent source of calcium, sodium, copper & selenium
- Drought tolerant
- Positive impact on animal performance

WHAT IS PLANTAIN? (PLANTAGO)

Plantain is a ribbed, leafy perennial herb with a fibrous root system. It can produce a forage crop that can be fed to both cows and sheep. The forage produced is extremely palatable and provides an excellent source of calcium, sodium, copper and selenium.

The growth pattern of Tuatara plantain shows that it can be particularly useful for summer and autumn grazing.

Plantain is more persistent than chicory and can remain productive for 2-3 years. It can be grown on its own as a pure stand or mixed with a grass and clover ley. Plant numbers will decline over time depending on weed control, fertiliser applications and grazing management.

ESTABLISHING THE CROP

Plantain can be established on a range of soil types, however it will persist longer if grown on free-draining soils. Avoid fields that are prone to waterlogging. A firm, fine seedbed is required and should be as weed-free as possible. Weed control is best carried out before sowing as post-emergence control is limited. Plantain likes to be sown into warm soils (10-12°C if possible) the seed is small, so sowing depth should be no greater than 10mm in depth. If you are sowing Plantain as a straight stand, a sowing rate of 8-10kg per hectare is recommended. Drilling the seed is best, but broadcasting the seed and then rolling can also be successful.

You can also incorporate plantain into grass and clover ley mixtures at a rate of 2-4kg per hectare depending on the content you require. Spring sowing is preferred but the latest sowing date is July.

You can treat fertiliser applications as you do with grass and clover leys. 70kg of N per hectare can improve establishment.

GRAZING

Plantain should not be grazed until the plant has six fully grown leaves and the root system is fully developed. Once the plant is at this stage it can be rotationally grazed and will have a faster re-growth potential. In New Zealand, plantain is used to extend grazing periods, improve the supply of trace elements and improve forage quality, especially in the summer months.

Plantain can be mixed with grass seed

Variety Profile

TUATARA

Tuatara has a deep, coarse rooting system, giving it a degree of drought tolerance and is able to be persistant in a wide range of soil types. It is also highly palatable to stock.

Tuatara has shown, in our UK trials, to have exceptional late spring growth and faster recovery after grazing.

MAINCROP TURNIP

Why Grow Maincrop Turnip?

- Very high fresh yields
- Autumn or winter feed
- Finishing lambs
- Economical to grow
- Flexible sowing options
- Slower growth than stubble turnips

SOWING INFORMATION

Sowing period
June to July

Direct drill
4-5kg/ha (2kg/acre), Natural seed

Broadcast
5-6kg/ha (3kg/acre), Natural seed

YIELD & FEED QUALITY

Average dry matter yield
5.5 – 6.0 tonnes/ha

Dry matter
9-10%

Digestibility value
68-70%

Average fresh yield
50 – 60 tonnes/ha

Crude protein
17-18% [mainly leaves]

Metabolisable energy
10-11 MJ/kg DM

GROWING COSTS

£300 - £340 per hectare

Fresh weight
£5-£6 per tonne

Dry matter
£55-£57 per tonne

SOIL TYPE/SITE SELECTION:

As most crops are grazed in situ, a free draining light loam or brash with a pH of 6.5 is ideal.

SEEDBED AND SOWING METHODS:

If maincrop turnips are to be sown after grass, a firm, fine seedbed will be required and traditional, plough-based cultivations will be fine. If maincrop turnips are drilled following an arable crop, a cereal for example, then tined cultivations, discing or rotovation can often replace the plough. In all cases it is vital that soil moisture is not lost.

Turnips also fit in well when sown in mid- June after an early hay/silage cut for autumn feeding.

Summer sowings in the northern half of the country and on all uplands should be completed by the end of July. In the south, turnips should be sown by early August.

FERTILISER:

An application of 80kg of nitrogen, 25kg of phosphate and 25kg of potash per ha is usually sufficient for this crop. Certainly, a dressing of between 60-90kg of nitrogen/ha is especially important when the crop is being sown after a cereal. The fertiliser should be worked well into the seedbed. A top dressing of nitrogen (see page 30) 3-4 weeks after sowing can boost crop growth.

FEEDING:

The maincrop turnip crop is an attractive source of very palatable and easy to digest fodder. Both cattle and sheep should be introduced gradually to the crop and between grazings be able to run-back on grass or have access to grass silage. It is also advisable to have hay or straw on offer prior to each grazing, particularly in the case of dairy cows. Allow stock about three weeks to fully adjust to turnips.

Throughout the grazing period, adequate mineral supplements should be fed to all stock.

Although the DM content of both the root and the leaf is low, the quality of this DM is very good.

Variety Profiles

MASSIF

A traditional yellow fleshed turnip that can be sown from May to August. Huge yields from a short growing period and a good alternative to swedes.

IMPERIAL GREEN GLOBE

A white-fleshed turnip that can be sown from May to August. Useful dry matter yields from a short growing season.

CATCH CROP MIXTURES

EXPERT ADVICE

Sowing a combination of stubble turnip and forage rape has two benefits; it improves the protein content of the crop and the forage rape also improves winter hardiness and extends the utilisation period.

Catch crop mixtures are becoming increasingly popular as a way of providing a balanced feed, that can be grazed in-situ. Most of these concepts involve the blending of catch crop species, such as stubble turnips, forage rape and kale.The high protein contents of both forage rape and kale complement the high energy stubble turnip bulbs and provide an excellent, well-balanced autumn or winter feed.

Preferred Mixtures

LAMB TONIC

1.25kg White Clover
3kg Chicory Choice
0.75kg Plantain

Sow at 5kg per 0.5 ha

Lamb Tonic can be sown in strips or added to grass which will provide a nutritious leafy food with high mineral content.
This mixture is perennial and should last 3-4 years.

AUTUMN KEEP

1.2kg Forage Rape *Rampart*
0.9kg Stubble Turnip *Rondo*
0.6kg Stubble Turnip *Samson*
0.3kg Kale

Sow at 3kg per 0.5 ha

Very fast establishment for autumn use. Autumn Keep will produce a quality crop with good disease resistance.

MEAT MAKER

1.95kg Forage Rape *Rampart*
0.3kg Kale Pinfold
0.75kg Stubble Turnip *Rondo*

Sow at 3kg per 0.5 ha

An excellent blend designed to produce autumn or winter keep with minimal effort.
The higher inclusion of forage rape helps to protect the turnips if crops are to be used later.

LATE LAMB

1.25kg Forage Rape *Interval*
6.5kg Italian Ryegrass Blend
1.25kg Stubble Turnip *Rondo*

Sow at 9 kg per 0.5 ha

The inclusion of varieties with improved winter hardiness make this mixture ideal for later use. Italian Ryegrass ensures the crop has improved density to help keep animals cleaner.

FERTILISER GUIDELINES FOR FORAGE CROPS

	SNS INDEX						
	0	1	2	3	4	5	6
	KILOS PER HECTARE						
SWEDE							
Nitrogen (N)	100	80	60	40	0-40	0	0
Phosphate (P_2O_5)	105	75	45	0	0	0	0
Potash (K_2O)	215	185	155 (2-) 125 (2+)	80	0	0	0
FORAGE RAPE AND STUBBLE TURNIP							
Nitrogen (N)	100	90	80	60	40	0-40	0
Phosphate (P_2O_5)	85	55	25	0	0	0	0
Potash (K_2O)	110	80	50 (2-) 20 (2+)	0	0	0	0
FODDER BEET							
Nitrogen (N)	130	120	110	90	60	0-40	0
Phosphate (P_2O_5)	110	80	50	0	0	0	0
Potash (K_2O)	170	140	110 (2-) 80 (2+)	40	0	0	0
KALE							
Nitrogen (N)	130	120	110	90	60	0-40	0
Phosphate (P_2O_5)	110	80	50	0	0	0	0
Potash (K_2O)	260	230	200 (2-) 170 (2+)	130	0	0	0
FORAGE RYE							
Nitrogen (N)	80	60	40	20	0	0	0
Phosphate (P_2O_5)	95	65	35	0	0	0	0
Potash (K_2O)	180	150	120 (2-) 90 (2+)	50	0	0	0

Extract from DEFRA Fertiliser Manual (RB209)

PRECISION DRILL RECOMMENDATIONS

Precision Crill Recommendations

SEED GRADING	GRADE	SIZE (mm)	STANHAY BELT SIZE	SPRING BASE	CHOKE	WEBBS SELECTOR WHEEL
Fodder Beet Pelleted	Q - U	3.5 - 4.75	15 or 16	C	A	EP
Swede	H	1.75 - 2.00	8	A	T	B
Turnip	G	1.50 - 1.75	7	A	T	A
Kale	J	2.00 - 2.25	8.5	A	T	C

Approximate Number of Seeds by Pack Size Supplied

SWEDE	KALE	TURNIP	FODDER BEET
Natural seed packed in 1 kilo packs (310,000 seeds approx.)	Natural seed packed in 1 kilo packs (150,000 seeds approx.)	Natural seed packed in 1 kilo packs (430,000 seeds approx.)	Genetic monogerm 1 acre (50,000 seeds)
Graded seed packed in 500g packs (150,000 seeds approx.)	Graded seed packed in 500g packs (75,000 seeds approx.)	Graded seed packed in 500g packs (220,000 seeds approx.)	Grade Q-U (3.5 - 4.75mm)
Grade H (1.75 - 2mm) (Approx 300 - 370 seeds per gram	Grade J (2 - 2.25mm) (Approx 150 - 175 seeds per gram)	Grade G (1.50 - 1.75mm) (Approx 420 - 510 seeds per gram)	

CONTACTS

For technical advice and details of your nearest LG Stockist:

SCOTLAND & N IRELAND
John Heaphy
t: 07774 929742
e: john.heaphy@limagrain.co.uk

SOUTH & S ISLES
Graham Parnell
t: 07795 037959
e: graham.parnell@limagrain.co.uk

NORTHERN ENGLAND & MIDLANDS
Henry Louth
t: 07870 488359
e: henry.louth@limagrain.co.uk

WEST & SOUTH
Rick Swait
t: 07885 775965
e: rick.swait@limagrain.co.uk

WEST & NORTH WALES
Brian Copestake
t: 07702 681366
e: brian.copestake@limagrain.co.uk

EASTERN COUNTIES
Toby Green
t: 07899 661864
e: toby.green@limagrain.co.uk

TERMS AND CONDITIONS OF SALE

All varieties and products listed in this catalogue are offered strictly subject to safe harvest, final certification and remaining unsold on receipt of orders. All other terms & conditions of sale will be advised by your individual LG Forage Crop distributor or stockist.

Printed 2022

YOUR CROP AND ROTATION PLANNER

Forage Crop Planner

FORAGE CROP	PREVIOUS CROP	AREA SOWN	DRILLING DATE	UTILISATION DATE

Forage Rotation Planner

FORAGE CROP	FIELD NAME	YEAR 1	YEAR 2	YEAR 3	YEAR 4

These forage crop options are available from:

Limagrain UK

01472 371471 @ enquiries@limagrain.co.uk

@LGSeedsUK
lgseeds.co.uk

Printed: Feb 2022

Limagrain