



THE ESSENTIAL GUIDE TO FORAGE CROPS



HOME GROWN FEEDING SOLUTIONS



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 rigorous testing regime before commercialisation.



DISTRIBUTION

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



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CROP ROTATIONS



EXPERT ADVICE
If you have any questions, our Seed Specialists are here to help, see page 32 for details

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	→

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	125,000 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 Tonnes per hectare	LESS WASTAGE FACTOR Grazing wastage %	UTILISABLE YIELD Tonnes per hectare	GRAZING DAYS PER HECTARE		
				SHEEP RATION		DAIRY OR BEEF RATION
				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

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.



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





FODDER BEET

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

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 125,000 seeds/ha (50,000 seeds/acre)	Seed sold in 50,000 seed units
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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
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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. A sowing rate of 125,000 seeds per hectare will achieve the target plant population of 100,000 plants per hectare, assuming 80% establishment. 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.

VARIETY PROFILES

FOSYMA

A new variety that has performed well in our UK trials. Fosyima can deliver high dry matter yields, usually seen with varieties that grow deep in the ground. Fosyima 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. Fosyima seed is primed for rapid establishment.



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. Brick is available primed or unprimed.



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. Robbos is available primed or unprimed.

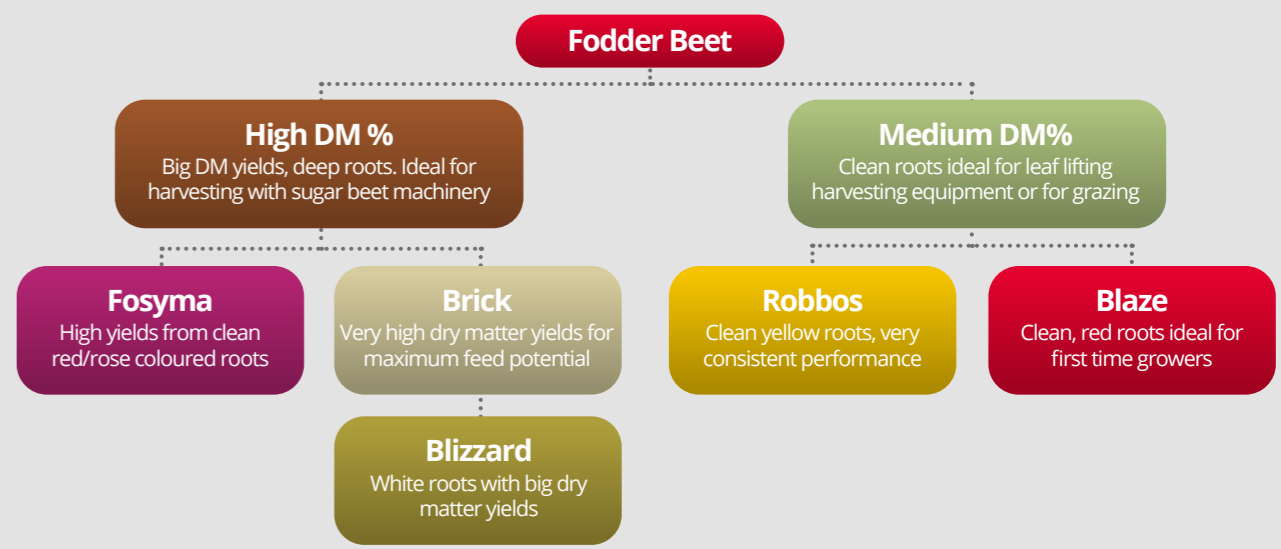


BLAZE

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



TRIAL RESULTS

VARIETY	RELATIVE DM YIELD %	RELATIVE FRESH YIELD %	DM CONTENT %	SKIN COLOUR	% OF ROOT IN GROUND	MEAN BOLTER COUNT
100%=Tonnes/Ha	18.82	91.71				
Fosyima RT (P)	112	111	20.8	Pink	65.0	0.0
Tadorne	107	97	22.7	White	74.0	0.0
Brick RT	107	98	22.5	White	76.3	0.0
Tarine RT	103	103	20.5	Pink	64.4	0.0
Enemax	101	99	20.9	White	67.3	0.2
Blizzard	100	94	21.9	White	72.3	0.8
Magnum (c)	100	100	20.5	White	65.1	0.2
Robbos	98	103	19.5	Yellow	60.0	0.8
Blaze	94	104	18.4	Red	57.1	0.5
Jamon	93	107	17.8	Orange	57.0	0.5
Geronimo	91	107	17.5	Orange	60.0	*
Kyros	91	103	18.2	Yellow	58.0	0.9
Lactimo	88	100	18.1	Yellow	60.0	*
Feldherr	88	113	15.9	Orange	49.6	1.7
Brigadier	74	107	14.2	Orange	47.9	2.0

Data Source: Limagrain UK Trials 1998 - 2025 (c) = Control, P = Primed seed, 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



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/m² 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 50kg/ha of P and 170kg/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.

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.

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
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YIELD & FEED QUALITY

Average dry matter yield 8-10 tonnes/ha	Dry matter 14-16%	Metabolisable energy 10-11 MJ/kg DM
Average fresh yield 60-70 tonnes/ha	Crude protein 16-17% fresh	
	Digestibility value 70-75%	

GROWING COSTS

£496 per hectare	Fresh weight £7 per tonne	Dry matter £67 per tonne
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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. Kale can be used very successfully in out wintering 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).

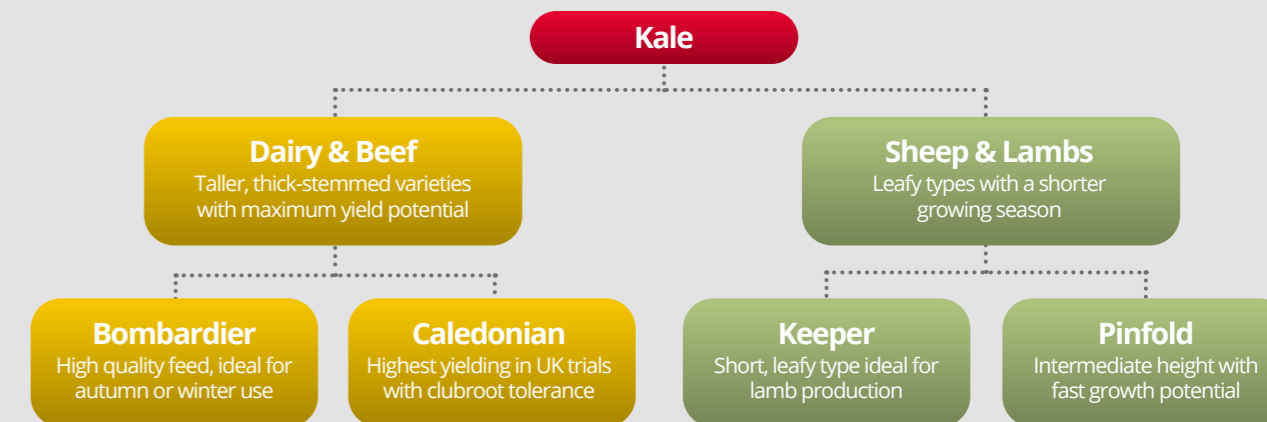


PINFOLD

Pinfold is an excellent variety with thin stems and can be utilised 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



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
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

<input checked="" type="checkbox"/> Dairy	<input checked="" type="checkbox"/> Sheep	<input checked="" type="checkbox"/> Graze in-situ	<input checked="" type="checkbox"/> Zero Grazing
<input checked="" type="checkbox"/> Beef	<input type="checkbox"/> Pigs	<input type="checkbox"/> Ensilage	<input type="checkbox"/> Lift and Store



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
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YIELD & FEED QUALITY

Average dry matter yield 6-9 tonnes/ha	Dry matter 11-12%	Protein 17-18%
Average fresh yield 50-80 tonnes/ha 3 grazings	Crude protein 12-13% [mainly leaves]	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.

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 PROFILES

SKYFALL

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

Skyfall will typically produce the below fresh yields

	1 ST GRAZE	2 ND GRAZE	3 RD GRAZE	4 TH GRAZE	TOTAL
FRESH YIELD TONNES/HECTARE	30.0	20.0	15.0	15.0	80.0



Skyfall's regrowth



Deep roots help penetrate the soil

CROP SUITABILITY

- Dairy
- Sheep
- Graze in-situ
- Zero Grazing
- Beef
- Pigs
- Ensilage
- 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, disking 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 60kg of nitrogen, 25kg of phosphate and 25kg of potash per ha is usually sufficient for this crop. Certainly, a dressing of between 40-80kg 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

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

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.

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.



HECTOR

Hector is a new variety with purple elongated roots which grow out of the ground more than other varieties. Trial results have shown Hector to be preferentially grazed and with higher utilisation than other varieties.



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.

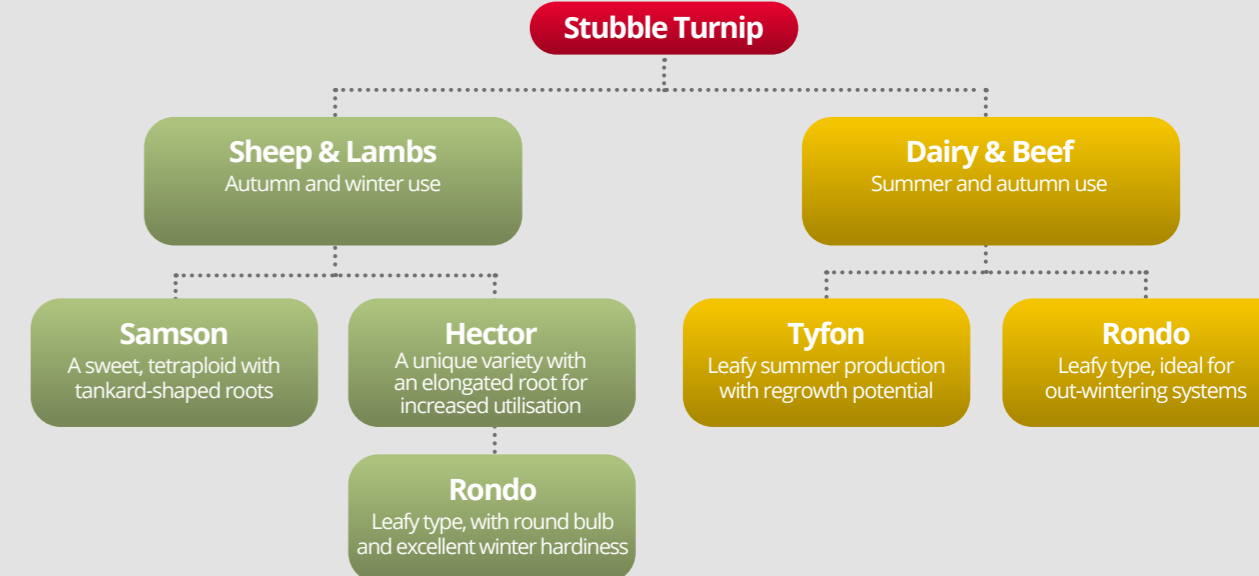


RONDO

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 %
100% = Tonnes/Ha		5.71	56.58	3.65	2.05
Samson (Tet) (c)	Purple Tankard	100	100	100	100
Barkant	Purple Tankard	96	92	82	120
Rondo	Green Globe	90	82	80	109
Hector	Purple Elongated	88	93	85	91
Appin	Leafy	85	76	50	147
Whitestar	White Globe	84	80	68	122
Fresia	Purple Tankard	79	80	72	91

Data Source: Limagrains UK Trials 1993 - 2025 (c) = Control Tet = Tetraploid * 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



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
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YIELD & FEED QUALITY

Average dry matter yield 3.5-4 tonnes/ha	Dry matter 12-13%	Metabolisable energy 10-11 MJ/kg DM
Average fresh yield 24-35 tonnes/ha	Crude protein 19-20%	Digestibility value 65%

GROWING COSTS

£408 per hectare	Fresh weight £12 per tonne	Dry matter £107 per tonne
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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.

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 40-80kg 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.

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 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 all classes of livestock as well as being an excellent choice as a winter cover crop.



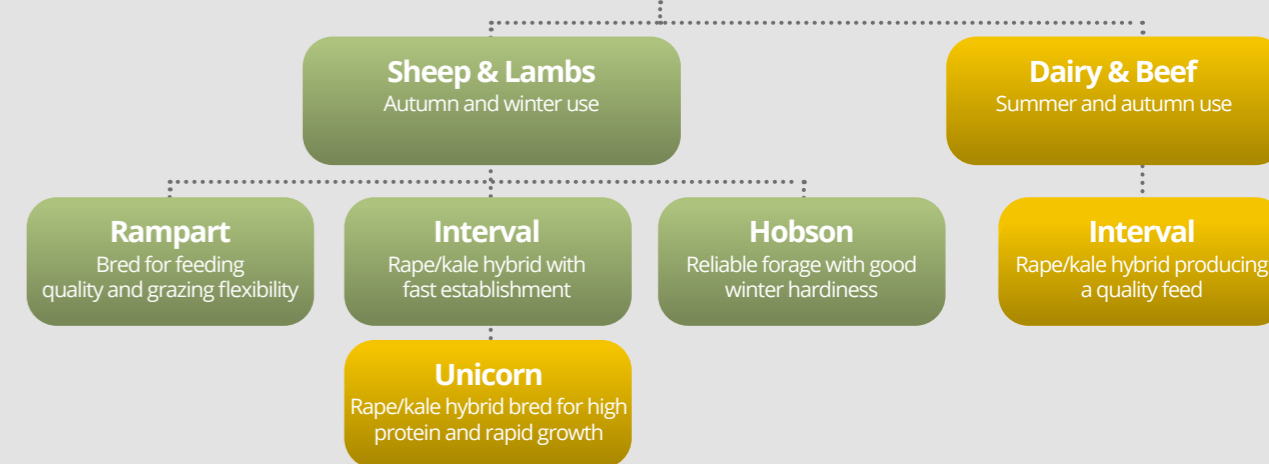
HOBSON

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



VARIETY SELECTION

Forage Rape & Hybrids



TRIAL RESULTS

VARIETY	RELATIVE DM YIELD %	RELATIVE FRESH YIELD %	DM CONTENT %	WINTER HARDINESS 9 = BEST
100% = Tonnes/Ha	4.28	30.69		
Interval (Hybrid)	108	122	12.3	5
Unicorn (Hybrid)	103	111	12.0	7
Swift (Hybrid)	101	113	12.5	6
Hobson (c)	100	100	14.0	9
Spitfire	97	122	11.0	3
Emerald	95	100	13.3	7
Stego	95	96	13.8	8
Rampart	94	104	12.6	6
Gorilla	92	90	14.2	9
Winfred	90	91	13.9	8
Redstart (Hybrid)	88	95	13.0	7
Avon	87	96	12.7	6
Mainstar	83	103	11.2	3

Data Source: Limagrain UK Trials 1993 - 2025 (c) = Control * 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
- Ensilage
- Lift and Store



SWEDE



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 compacted soils 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 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

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
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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 crop's 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.

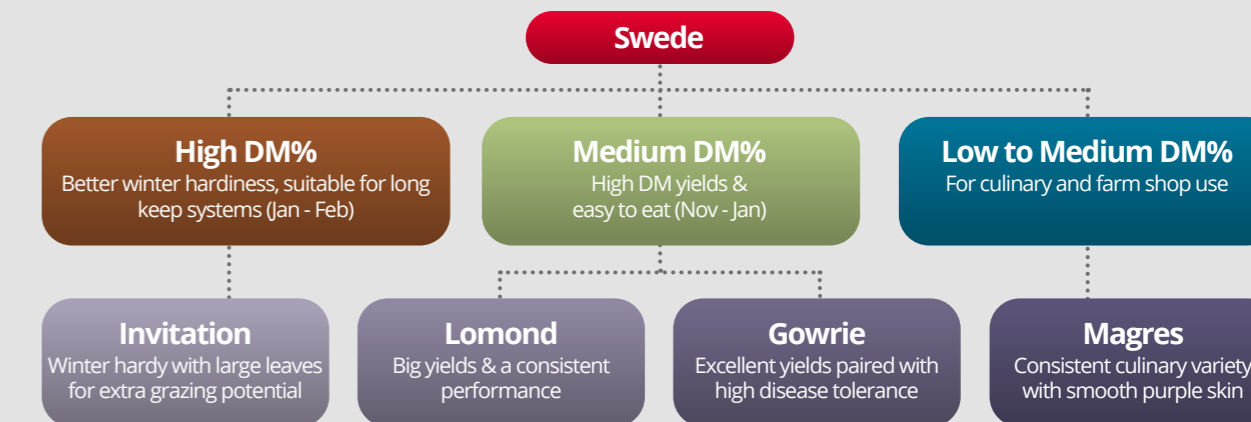


MAGRES

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



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
- Ensilage
- Lift and Store



FORAGE PEAS

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

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	Digestibility value
20-30 tonnes/ha	16-20%	62-64%

GROWING COSTS

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

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

VARIETY PROFILE

MAGNUS

Magnus is a UK proven semi-leafless forage pea variety, making it less prone to lodging than full-leaved varieties. Its rapid growth means it can be harvested between 11-14 weeks after sowing.



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 grows well across many soil types but does not tolerate heavy or waterlogged ground. A soil pH above 6 is essential; acidic soils should be avoided, though lucerne will cope with alkaline conditions up to pH 8.5.

A five-year rotation is required to prevent pest and disease buildup, and to avoid autotoxicity, as new lucerne will not establish in fields containing existing plants.

SEEDBED & SOWING METHODS:

Sowing can take place from April through early summer, provided adequate moisture is available. In southern regions, sowing up to mid-August is possible, but later crops risk poor winter survival. Recommended seed rates are 8-12 kg/acre (20-30 kg/ha). Seed should be drilled no deeper than 1 cm in 10 cm rows, into a fine, firm seedbed; deeper sowing greatly reduces emergence.

FERTILISER:

As a legume, lucerne generally requires no nitrogen. After nutrient demanding crops (e.g. cereals), up to 50 kg/ha nitrogen in the

seedbed may help establishment. A productive lucerne stand removes around 150 kg/ha each of phosphate and potash annually; these nutrients should be replaced either after each cut, or in a single application following the final summer harvest.

INOCULATION:

Seed must be inoculated with the appropriate Rhizobium bacteria, to ensure effective nodulation. Seed is usually supplied pre-inoculated.

WEED, DISEASE & PEST CONTROL:

Weed control is critical because lucerne establishes slowly and cannot compete with early weed pressure. Advice should be sought on the use of agrochemicals.

Lucerne may be attacked by sitona weevil and slugs in the establishment phase, so the use of slug pellets may be necessary. Nematodes can cause persistency issues but can be solved by using tolerant varieties.

Verticillium wilt is the main disease threat, causing leaf wilt and plant death; resistant varieties offer protection.

HARVESTING:

In the year of sowing, two cuts may be achievable, with four to five cuts possible in subsequent seasons. The first cut typically occurs in late April or May, followed by cuts roughly every 40 days at the flowerbud stage. Delayed cutting reduces quality and increases fibre content. Crops should be cut to a 7-8 cm stubble and wilted to about 30% dry matter (40-50% for baled forage). Overdrying leads to leaf shatter and significant yield loss.

VARIETY PROFILE

MEZZO

Mezzo has consistently outperformed the competition in our UK trials. It has excellent tolerance of nematodes and Verticillium, with good dormancy, leading to exceptional persistency.





WHOLECROP AND CRIMPED CEREALS

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/m² with a target of 500-600 seed heads per m² 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.

WHY GROW WHOLECROP CEREALS?

- Consistent quality feed
- Ideal for non-maize growing areas
- Earlier harvest/cutting - less weather dependent
- 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

Fresh yield: 30 - 35 tonnes per hectare

Dry matter: 35-45%

Energy: 10.4 - 10.6 MJ/kg DM

Starch: 25%

WINTER WHEAT CRIMPED

Fresh yield: 13- 15 tonnes per ha

Dry matter: 55-65%

Energy: 13.0 MJ/kg DM

Starch: 70%

GROWING COSTS

£1072 per ha

£988 per ha

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 and 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 DEFIANCE WINTER WHEAT

New to the Recommended List, and one of the highest yielding treated varieties available. LG Defiance delivers the highest untreated yield, giving reassurance where fungicide timings are stretched. It is a high biomass type, best suited to drilling from the end of September onwards - particularly on higher fertility sites. Large grain size makes it well suited to both wholecrop and crimping.



LG LOTUS WINTER WHEAT

LG Lotus is an exciting new variety with a very strong agronomic package. A short, stiff variety with one of the best Septoria ratings available. It offers flexibility for earlier drilling on fertile sites, thanks to its disease resistance and straw strength. Its high tillering capacity and good disease resistance, make it a reliable option for wholecrop.

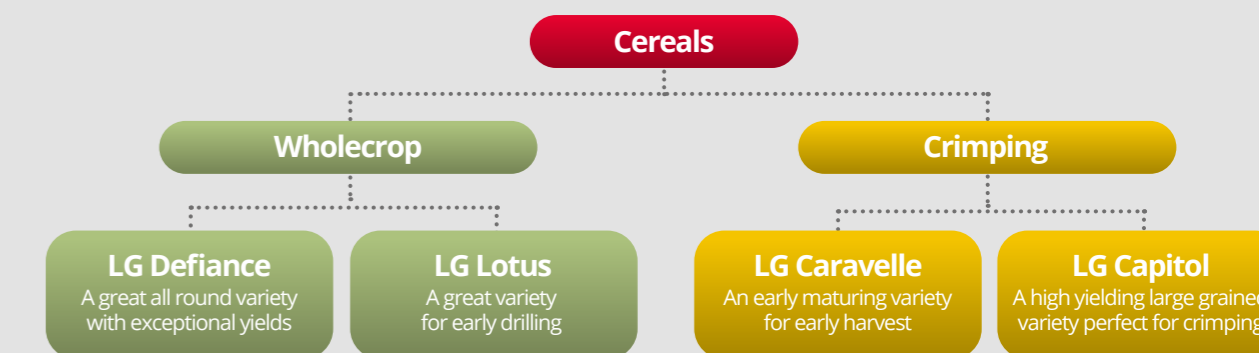


LG CARAVELLE / LG CAPITOL WINTER BARLEYS

Two of the highest yielding varieties on the RL, with performance comparable to hybrid types. Both show consistent performance across regions. Early maturity and good specific weight provide a strong opportunity for early harvest and grain crimping.



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

<input checked="" type="checkbox"/> Dairy	<input checked="" type="checkbox"/> Sheep	<input type="checkbox"/> Graze in-situ	<input type="checkbox"/> Zero Grazing
<input checked="" type="checkbox"/> Beef	<input type="checkbox"/> Pigs	<input checked="" type="checkbox"/> Ensile	<input type="checkbox"/> 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
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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
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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 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 PROFILES

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 fertiliser 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.



CROP SUITABILITY

- Dairy
- Sheep
- Graze in-situ
- Zero Grazing
- Beef
- Pigs
- Ensilage
- Lift and Store



FODDER BEET SEED PRIMING

Fodder beet seed priming is a technique that pre-activates germination, to deliver faster, more even crop establishment, leading to increased forage yields.



The priming process involves carefully controlling the moisture of the seed, allowing it to move through the initial phases of germination before it is dried back down, just before the seed sprouts.

When sown in the field, primed seed emergence is faster and more uniform, with better establishment of more vigorous seedlings. In laboratory conditions, germination time can be reduced by three to four days. In field conditions, this benefit may be increased, especially if sowing early into cooler soil temperatures.

Rapid, even establishment of primed seed, means plants reach key growth stages faster, reducing the time spent in their vulnerable seedling stage, where pests and disease can cause serious losses. Having all plants at a similar growth stage makes herbicide decisions more straightforward through the growing season, and results in an even root size and shape, reducing harvesting losses.



Increased establishment helps achieve target plant populations of 100,000 plants per hectare, allowing crops to reach their full yield potential. At this population, leaf canopy cover is optimal for light interception and helps reduce weed pressure.



KEY BENEFITS OF PRIMING

- Faster emergence
- More even plant stand
- Improved early vigour
- Increased establishment
- More uniform roots at harvest
- Reduced likelihood of bolting
- Increased yield

SEED PRIMING IS AVAILABLE ON:

- Fosyma
- Brick
- Robbos

Although data is still relatively limited, early sown trials data suggests that primed fodder beet seed is less susceptible to bolting, making it more suitable for early drilling.

All of the above benefits contribute to increasing dry matter yields. Primed seed typically increases fresh yields by 4-5%, which is equivalent to 3-5 tonnes of fresh yield per hectare.

SPECIES	FRESH YIELD T/Ha	DM YIELD T/Ha
Fosyma	96.7	20.3
Primed Fosyma	101.6	21.1
Benefit	+4.9t	+0.8t

Data Source: Limagrain UK trials 2022-2025



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?

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. 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 and improve the supply of trace elements and 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 persistent 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
- Economical to grow
- Autumn or winter feed
- Flexible sowing options
- Finishing lambs
- Slower growth than stubble turnips

SOWING INFORMATION

Sowing period	Direct drill	Broadcast
June to July	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
5.5 - 6.0 tonnes/ha	9-10%	68-70%
Average fresh yield	Crude protein	Metabolisable energy
50 - 60 tonnes/ha	17-18% [mainly leaves]	10-11 MJ/kg DM

GROWING COSTS

£300 - £340 per hectare	Fresh weight	Dry matter
	£5-£6 per tonne	£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, disking 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 60kg of nitrogen, 25kg of phosphate and 140kg of potash per ha is recommended for this crop. Certainly, a dressing of between 40-80kg 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.

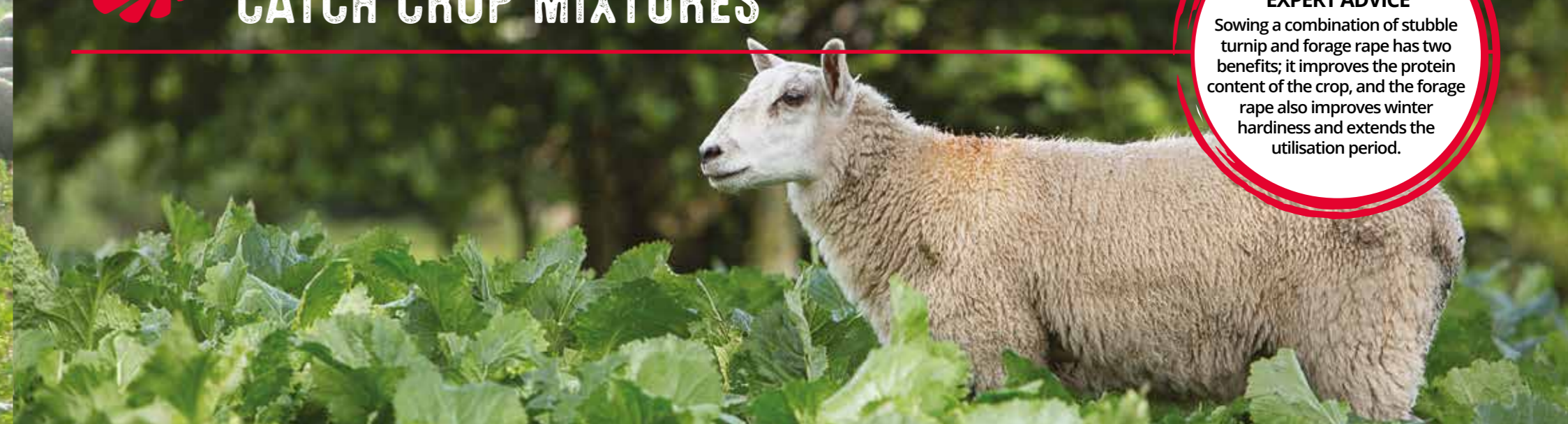


IMPERIAL GREEN GLOBE

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.

BALANCED FEED

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

MEAT MAKER

1.95kg Forage Rape *Hobson* 0.75kg Stubble Turnip *Rondo*
0.3kg Kale *Keeper*

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.

AUTUMN KEEP

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

Sow at 3kg per 0.5 ha

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

LATE LAMB

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

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



FERTILISER GUIDELINES

	SNS INDEX						
	0	1	2	3	4	5	6
KILOS PER HECTARE							
SWEDES AND TURNIPS (LIFTED)							
Nitrogen (N)	100	80	60	40	0-40	0	0
Phosphate (P ₂ O ₅)	105	75	45	0	0	0	0
Potash (K ₂ O)	215	185	155 (2-) 125 (2+)	80	0	0	0
FORAGE RAPE, SWEDES AND STUBBLE TURNIPS (GRAZED)							
Nitrogen (N)	100	80	60	40	0-40	0	0
Phosphate (P ₂ O ₅)	85	55	25	0	0	0	0
Potash (K ₂ O)	110	80	50 (2-) 20 (2+)	0	0	0	0
FODDER BEET							
Nitrogen (N)	130	120	110	90	60	0-40	0
Phosphate (P ₂ O ₅)	120	90	60	0	0	0	0
Potash (K ₂ O)	400	370	340 (2-) 310 (2+)	190	0	0	0
KALE							
Nitrogen (N)	130	120	110	90	60	0-40	0
Phosphate (P ₂ O ₅)	80	50	20	0	0	0	0
Potash (K ₂ O)	200	170	140 (2-) 70 (2+)	70	0	0	0
FORAGE RYE							
Nitrogen (N)	80	60	40	20	0	0	0
Phosphate (P ₂ O ₅)	95	65	35	0	0	0	0
Potash (K ₂ O)	180	150	120 (2-) 90 (2+)	50	0	0	0

Extract from DEFRA Fertiliser Manual (RB209)



PRECISION DRILL RECOMMENDATIONS



PRECISION DRILL 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.)			Grade Q-U (3.5 - 4.75mm)
Grade H (1.75 - 2mm) (Approx 300 - 370 seeds per gram)			



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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.



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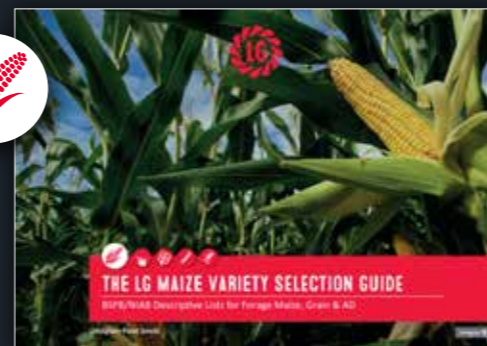


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SCAN TO VIEW

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These forage crop options are available from:



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Printed: 2026

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