

Brassica Growers' Guide

Extend your grazing with our versatile
and efficient forage solutions

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1. Why grow brassica forage crops?

1.1 Cost efficiency

Homegrown forage crops are cutting feeding costs and filling feeding gaps.

Feeding brassicas can cost just 20p/head /day.

Brassicas include a wide variety of forage crops that offer dairy, beef and sheep farmers in the UK valuable alternative sources of home-produced feed.

From the leafy kales and forage rapes, to root crops, including stubble turnips and swedes, brassicas are a versatile feeding solution to fill summer grazing gaps, extend autumn grazing, or support out-wintering systems.

1.2 Benefits of brassica forage crops

Feed cost savings

- Economic solution to summer grazing deficiencies
- Reduce the need for winter conserved forage
- Limit reliance on bought-in concentrates

Rotational benefits

- Pioneer crops for previously uncultivated areas
- Valuable break before pasture renewal
- Good break crop to restore soil health in arable and grazing situations

Overall enterprise profitability

- Extended grazing season
- Increase output per hectare
- Reduce labour, machinery and housing costs

Health, welfare and environment

- Avoid housing-related health problems by out-wintering
- Reduce fuel required for silage and bought in feeds
- Limit the risk of forage shortages due to drought



2. Planning your brassica forage crops

2.1 Integrating brassicas into your system

In order to make the best use of brassica forage crops within your existing system, follow this three-step guide to establish your basic approach.

Step 1 When do you want to feed the crop?

Brassica forage crops can be grown to provide quality grazing from June right through to February or March. They can therefore be used to supplement summer grazing, extend autumn grazing, or support out-wintering systems.

Step 2 When does the land required become vacant?

Brassica forage crops should be seen as a valuable part of the farm's rotational policy, so it is best to plan your cropping and utilisation within this bigger picture. Versatile modern varieties and new fast-growing cropping options do, however, mean that most requirements can be accommodated.

Step 3 How much land do I need?

First decide the number and type of livestock you are planning to feed with the brassicas and for how long. Then determine the most appropriate crop, based on your deliberations from steps 1 and 2. Calculate the area required using the guidelines provided in the section 'Feeding brassicas to livestock'.

2.2 Planning fibre feeding in advance

Livestock grazing brassicas must have access to straw or haylage, sufficient to provide at least 30% of the daily dry matter ration.

In crops grown for late autumn grazing, or out-wintering, bales should ideally be placed in the field whilst ground conditions are still dry. This minimises the risks of soil compaction, run-off from tractor wheelings, and reduces labour requirements during the feeding period.

Essential run-back areas (loafing / grazing areas at the end of fields) will also contribute to the fibre component of the ration in the form of deferred grazing.

2.3 Matching the crop to your requirements

Crop type	Seed rate kg/ha (kg/acre)	Sowing period	Sowing to utilisation interval	Utilisation period	Out-wintering potential
Kale	5 - 7.5 (2-3)	May to late June	20 weeks	November to February	High
Swede, natural Swede, graded	2.5 (1.0) 0.5 (0.25)	Mid-May to late June	25 weeks	December to March	High
Hybrid brassica, single graze	5 - 7.5 (2-3)	Mid-June to late August	10 weeks	September to January	High
Forage rape, single graze	5 - 7.5 (2-3)	May to late August	8 weeks	August to November	Limited
Multigraze brassicas, hybrid brassica/ grazing turnip	5 - 7.5 (2-3)	May to mid-June	8 weeks	Mid-July to January	Moderate
Stubble turnip	5.0 (2.0)	March to August	12 weeks	August to December	Low

2.4 Site selection for out-wintering

BrassicAs are being grown successfully in many situations in the UK. However, it is important to select the optimum site for brassica forage crops in order to achieve the best results in terms of enterprise performance, and also to ensure that all cross compliance requirements are met.

Ideal situation for site selection

- Fields where grass production is falling and a break crop is required.
- A minimum of 5 years since the last brassica crop to minimise disease risks.
- Avoid heavier soil types for out-wintering
- No threat to water courses.
- Avoid steeply sloping sites.
- Good airflow for rapid drying.
- Suitable shelter for livestock.

2.5 Preparation

Best results are achieved with thorough preparation

Soil test at least 8 weeks prior to planned sowing date, but ideally the previous winter and before any FYM is applied.

- Retain topsoil strength and resilience to trampling. This can be done by drilling directly into glyphosate-treated sward.
- Apply fertiliser and/or lime to achieve pH 5.8 – 6.5 and P and K indices of 2.
- Organise fencing to exclude water courses but allow continuous access to drinking troughs.
- Plan your utilisation to ensure downward grazing of slopes and move electric fencing frequently. Use back fencing to avoid poaching and protect regrowth.
- Allow for run-back for gradual introduction and suitable lying space.
- Consider using grassland buffers alongside vulnerable water courses.
- Have a fall-back plan in the event of extreme bad weather.



3. Growing brassicas effectively

3.1 Successful establishment

Conventional cultivation to achieve a fine, firm and clean seedbed is the most common practice for establishing brassicas, but direct drilling is an option if conditions allow.

Typical establishment regime

- Spray with glyphosate when pasture or weed cover is around 2,000kg DM/ha (8-10cm sward height).
- After 5-7 days, graze hard, or cut to remove as much vegetation as possible.
- Apply fertiliser on the basis of earlier soil tests.
- Prepare a fine, firm and clean seedbed through cultivations.
- If cultivating, broadcast seed, harrow and roll; or direct drill and roll.
- Seed should be sown at approximately 1cm deep, whatever the establishment method.

Timing and seed rates

Brassicas should ideally be drilled when soil temperatures are around 10°C and rising, with optimum timing dependent upon crop type and variety.

Seed rates should typically be between 5-7.5kg/ha (2-3kg/acre) depending on crop type and variety. Marginally higher seed rates are recommended when broadcasting compared with direct drilling. (See 2.3)

3.2 Monitoring the growing crop

Brassica crops must be monitored closely for pests, diseases and weed ingress at all times, particularly during the critical establishment phase (first six weeks).

In all pest, disease, and weed control situations, seek advice from a qualified agronomist on the most appropriate treatments and application rates

Typical challenges	Optimum solution
Weeds	Weeds should be controlled in the previous crop or through spraying prior to cultivation; pre-emergence herbicides may be an option.
Slugs	Roll after drilling; apply slug pellets if problems occur post emergence.
Sawfly, cabbage white butterfly, diamond back moth	Cost effective to use insecticidal sprays if detected at early stage.
Clubroot	Five year rotational policy; use more resistant varieties such as Bittern, Redstart and Swift.
Foliar fungal diseases	Select resistant varieties.
Dry rot (swedes)	Crop rotation. Use boron fertiliser.

3.3 Fertiliser requirements

Crop type	Nitrogen kg/ha (units/acre)	Phosphate P ₂ O ₅ kg/ha (units/acre)	Potash K ₂ O kg/ha (units/acre)	N applied at sowing (% of total)	N applied later (% of total)
Swedes	100-120 (80-96)	75-100 (60-80)	75-100 (60-80)	50%	50% at 10-12 weeks
Kale	100-120 (80-96)	80 (65)	80 (65)	50%	50% at 10-12 weeks
Stubble turnips	50-80 (40-64)	70 (55)	70 (55)	60%	40% at 6-8 weeks
Grazing turnips	40-60 (32-48)	30-40 (24-32)	30-40 (24-32)	100%	Further N may be applied for regrowth
Forage rape or hybrid brassica	50-80 (40-64)	40-60 (32-48)	40-60 (32-48)	100%	Further N may be applied for regrowth

4. Feeding brassicas to livestock

4.1 Grazing management

Brassicas are ideal grazing crops and hence offer all the cost saving advantages of reduced housing, bedding, conservation, feed-out, muck handling, and so on.

To maximise the efficiency of grazing and to minimise wastage, strip grazing with electric fences needs to be well managed. Strips (breaks) should be long and narrow to allow all the animals access to the crop at one time, minimise poaching, and improve crop utilisation.

The fence should ideally be moved daily, with the area provided being calculated on the basis of the crop's production and stock requirements.

Key grazing guidelines

- Introduce stock to brassicas gradually and with full stomachs (1-2 hours/day initially and building to unrestricted access in 7-10 days).
- Always allow access to a run-back area.
- Provide supplementary fibre as hay, haylage, or straw at all times.
- Cows in milk should receive no more than 30% of their daily dry matter intake as brassicas.
- Always make the appropriate minerals available.
- Allow easy access to water.

4.2 Multiple grazing

Several brassica forage crops, including Redstart and Swift hybrid brassicas and Appin leafy grazing turnip, have the potential to regenerate after grazing, offering the possibility of multiple grazing.

Multiple grazing guidelines

- Sow no later than early June to allow time for multiple grazing.
- Graze in blocks as opposed to strips, and take care to minimise crop damage.
- Ensure stock have access to clean water.
- Move stock on to leave 12-15 inches (30 – 40cm) of stem with ample growing points for regrowth.
- Replace bales as a fibre source between grazings.

4.3 Crop utilisation

The target with any brassica crop should be to achieve at least 85 – 90% crop utilisation, minimising the amount of forage remaining in the field. Choose varieties with the characteristics to encourage intakes and maximise utilisation.

Kale	Maris Kestrel has a high leaf-to-stem ratio and minimal stem rejection.
Hybrid brassica	Redstart and Swift have been shown in field trials* to have superior utilisation of stem.
Grazing turnip	Appin has a high leaf-to-bulb ratio to provide a highly palatable forage for rapid field clearance.
Swede	Triumph has been shown in field trials* to be superior to other leading varieties in terms of grazing preference.

*Germinal GB field trials programme 2018/19

4.4 Average yields and stocking guidelines for brassica crops

Crop type	DM (kg/ha)	DM (%)	ME (MJ/kg)	Animals/ha for 100 days (70% of diet)			
				Cows	Youngstock	Ewes	Finishing lambs
Swedes	9-14,000	10-12	12-14	15	14	83	65
Kale	11-12,000	12-15	10-13	19	18	107	84
Stubble turnips	6,500	9-12	10-13	11	10	63	49
Grazing turnips	4,000	10-14	10-13	9	8	49	38
Hybrid brassica	7-10,000	12-14	10-13	11	10	63	49
Forage rape	4-5,000	11-13	10-13	7	6	30	30

Assumptions

- Cow liveweight 500kg (adjust upwards for dairy cows)
- Youngstock liveweight gains 0.75kg/day
- 55kg ewes on maintenance feeding
- Lamb liveweight gains 200g/day
- Dairy cows should be restricted to no more than 30% of daily dry matter intake as brassicas, to avoid the risk of milk taint.

4.5 Measuring dry matter yield of your crop and calculating daily grazing requirements

For accurate feed planning it is essential to measure the DM yield of your crop. This is easily achieved using

- 1m square frame
- Seed bag
- Pair of garden shears
- Some scales

Follow this four-step guide for collecting the dry matter yield samples

Several samples should be taken from each field, picking representative sampling points



1. Place the frame in your forage crop.



2. Use the shears to cut each plant within the frame (about 10cm from the ground) and put the harvested crop in the bag.



3. Hook the bag onto the scales and record the crop weight per m².



4. To calculate DM yield per hectare multiply the fresh weight per m² by 10,000, then multiply by the expected crop DM percentage. (See 4.4)

4.6 Calculating daily feed allocation

Example based on a 270kg weanling requiring 8kg/DM/day	Your livestock & forage crop requirements
1. Livestock total intake estimate (Total daily intake on the basis of a dry matter requirement of 3% of liveweight)	8kg DM/day
2. Brassica % of diet (How much of the diet will be grazed brassica?)	70% *
3. Brassica daily requirement (box 1 x box 2)	5.6kg DM
4. Number of livestock	25
5. Daily requirement from brassica (box 3 x box 4)	140kg DM
6. Estimated crop DM yield/m ² **	0.8kg/DM/m ²
7. Total daily grazing area required (box 5/box 6)	175m ² of brassica
8. Length of feed face	120m
Fence to be moved (box 7/box 8)	1.5 m/day

*Maximum of 30% of diet DM for lactating cows

**Based on crop yields of 10tDM/ha (1kg/m²) x 80% utilisation

Grazing management is important to optimise the potential of these crops. Strip grazing small areas will provide the most efficient utilisation. Grazing larger areas will increase trampling and waste of available forage.



5. Maintaining animal health on brassicas

With the correct management livestock will thrive on brassicas.

A best practice approach that will ensure livestock remain healthy, and there are no other issues, is as follows:

- Check livestock twice a day when feeding brassicas.
- Avoid introducing animals to brassicas when hungry.
- Introduce animals to brassicas slowly, over a ten day period.
- Always provide a fibre source to ensure no more than 70% of the dry matter diet is brassicas.
- With milking cows, the brassica ration should be no more than 30% of the dry matter ration in order to avoid the risk of milk taint.
- Transition pregnant cows off brassicas 4-6 weeks pre-calving.

If in any doubt about the health of livestock on brassicas, reduce the proportion of the diet being fed.

ALWAYS CONSULT YOUR VET REGARDING ANY ANIMAL HEALTH ISSUES.





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