



Understanding brassica

An ideal option for farmers wishing to grow high quality feed for their livestock system.

- Cost effective source of dry matter
- Produces large quantities of high quality feed
- Can produce feed at various times of the year with flexibility of sowing time
- Can be grazed where they are grown, eliminating costs associated with hay, silage and grain
- Integral part of a pasture renovation programme

Background

Forage brassica crops are an ideal complementary feed, especially when pasture quality and quantity declines. Offering high value feed and yield during summer and winter, brassicas also play an important role in a pasture renewal programme.

While brassica crops are generally utilised for the quality and quantity of feed that they can produce, they can also provide other benefits such as; breaking the perennial weed cycle and endophyte base within a perennial pasture, and as a break crop for pest and disease cycles.

Role of brassica

Forage brassicas are an ideal option for farmers wishing to finish cattle or lambs to higher weights after the spring flush when pasture quality declines.

As a pasture matures, digestibility and hence Metabolisable Energy (ME) declines. This drop in quality often results in pasture only suited to livestock maintenance or low weight gains. To keep stock at higher daily gains, a higher quality alternative is needed.

Brassicas are high in quality with digestibility levels around 80-88% and with ME levels of 12-13 MJ/kg DM. Crude Protein is usually 12-16%, adequate for high liveweight gain. Fibre levels can be low and this can limit animal performance, so it is recommended to allow a run off area or offer 10-15% of the daily intake as hay or straw.

With a well balanced ration and access to clean water, stock grazing brassicas can achieve very high daily weight gains as follows:

<i>Merino weaners</i>	<i>100 – 200g/hd/day</i>
<i>Prime lambs</i>	<i>250 – 350g/hd/day</i>
<i>Weaner cattle</i>	<i>1.0 – 1.7kg/hd/day</i>

Which brassica should be used?

There are five main groups of brassica that are grown and they each offer many benefits to Australian farmers. The different groups of brassicas include:

Kale

Kale is a species that can produce large quantities of feed that is also of very high quality. Kales are grown to have feed available during the winter period. Kales generally have excellent tolerance to aphids and frost tolerance which makes them a very hardy species of brassica.

Forage rape

Forage rapes provide leafy, high quality feed which require a longer maturity time than hybrid leafy turnips. Forage rapes generally grow more dry matter from each grazing than leafy turnips and offer multiple grazing opportunities if moisture is available and the rapes are given the chance to re-grow.

Plant breeders have introduced kale genetics into forage rapes in more recent times to increase aphid tolerance, frost tolerance and general hardiness. The recent incorporation of kale genetics into selected forage rapes has greatly improved animal acceptance. Along with these improvements, dry matter is not the only factor that farmers need to evaluate when considering growing forage rapes as other key indicators such as utilisation, re-growth potential and leaf to stem ratio makes growing forage rapes a very cost effective option.

There are two maturity groups in forage rapes, early maturing (70-90 days) eg Titan which are also known as intermediate types and late maturing (90-110 days) eg Goliath® which are also known as giant types.

Swede

Swedes are generally used in cooler climate areas with high rainfall. Swedes are used to provide excellent quality feed for winter months where feed availability is generally at its lowest. Like turnips, utilisation of swedes is from both the leaf produced as well as the bulb.

Turnip (tankard or globe bulb)

Tankard type summer turnips are popular as a milking feed due to the exceptionally high yield potential from a single graze. They also have good leaf to bulb ratio which means high quality feed that offers good utilisation and therefore reduced wastage. Early maturing turnips (70-120 days) provide feed in the summer months to add to pastures for milk production or for dry cows (eg Barkant).

Late maturing turnips (100-140 days etc) provide autumn/early winter feed for young stock, milking or dry cows. These turnips are utilised in areas where growing feed in winter months is difficult.

Leafy turnip

These are generally a multi-graze option with a very low ripening period. Leafy turnips offer quick spring, summer and autumn feed with the potential of providing up to 3-4 grazings. They are more prone to stress during summer than forage rapes as they have a less prominent tap root.

Agronomy tips

A soil test is recommended to provide an understanding of the pH, fertility and nutrient levels. If the pH levels are below 5.8, then lime prior to sowing would be beneficial. Using the soil test results will give a good idea of which fertiliser to use at sowing and the appropriate rates.

The old pasture should be sprayed out early with glyphosate and any pasture residue should ideally be grazed off or removed by other means before cultivation.

Brassicas, like canola, are a small seed and require a shallow sowing depth. Sowing the brassica seed too deep may greatly reduce early vigour of the crop or the crop may fail to germinate at all. Sowing depth of brassica should be 1cm with good soil contact and coverage after seed placement.

Brassica seed can be direct drilled into friable soil if moisture is likely to be limited after working a seed bed or the site is prone to wind erosion. If this is the desired method, seed to soil contact is critical.

Good establishment is often achieved from a fine, firm and well prepared seedbed. Cultivation should prepare a seedbed whilst retaining adequate moisture for sowing. To ensure the best possible germination, some soil types may require the paddock to be rolled after sowing.

Be sure to have your brassica seed treated with Ultrastrike® which is a premium seed treatment that offers protection against some of the most common pasture pests, damping off diseases and "whiptail".

Why is fibre important?

Sometimes the quality of forages is so high (high protein and highly digestible), rumen function is not very effective and high levels of animal productivity may not be achieved. Brassicas are highly digestible and contain good levels of protein, but sometimes don't support optimum levels of animal performance because of their high forage quality.

Feeding a source of fibre to ruminants can aid digestion and improve animal productivity when feed quality is extremely high. This 'effective' fibre is the type of fibre that encourages animals to chew their cud. Cud chewing encourages salivation, and saliva is the body's natural buffer that helps balance acids produced during gut fermentation. Fibre also firms up liquid dung that is often seen on high quality feeds.

In a trial at PGG Wrightson Seeds Kimihia Research Centre in New Zealand, lambs were grazed on Pasja leafy turnip alone, Pasja leafy turnip plus lucerne hay and Pasja leafy turnip plus ryegrass straw.

Liveweight differences between treatments were obvious by week 3 of grazing and continued for the remainder of the study. Lambs supplemented with ryegrass straw grew at faster rates than lambs fed either no fibre, or lambs supplemented with lucerne hay. Mean growth rates by lambs fed ryegrass straw improved by 21g per lamb per day compared with lambs fed Pasja leafy turnip only.

While ryegrass straw was used for this study, barley straw would work equally as well. If this is not practical, then a run off area of a relatively low quality dried off pasture near the brassica crop will also work. In this case, it allows the animals to select the fibre requirements as they require it.

Grazing management

It is important to know the maturity of the brassica crop that is being grown before sowing so maturity can be monitored before introducing stock to the crop. This is important for many of the older type forage rapes where the leaves needed to turn a bronze purple colour which indicated that the crop was ready to introduce stock.

Don't allow stock sudden unrestricted access to a brassica crop

- Sudden access can upset the balance of rumen microbes, resulting in poor animal performance, scouring and ruminal acidosis
- Start by grazing the crop for no more than 1-2 hours per day, building up to a maximum allowance over at least 7-10 days

Break feed brassicas to ensure that the high quality leaf is balanced with stalks or bulbs

- Break feeding or strip grazing will improve utilisation as well as allow maximum re-growth potential of the forage rape crop or leafy turnip
- They can also be grazed in conjunction with summer dry pasture to help balance the diet

Animal health

- Check nitrate levels if growing conditions are suggestive of nitrate problems (especially overcast conditions or following periods of stress such as drought or frost)
- Grazing brassicas as a high proportion of the diet can put young animals at risk of pulpy kidney. Vaccination before animals go onto the crop can reduce the risk of illness
- High levels of SMCO (S-Methyl Cysteine Sulphoxide) can occasionally cause red water in ruminants, particularly in cattle grazing kale. Restrict excess nitrogen and sulphur fertiliser applications (especially on soils already high in sulphur) and avoid feeding flowering brassica's

Category	Product	Icons	Ready to Graze	Sowing Rate	Rainfall Guide
Kale			150-220 days	5-8kg/ha	Minimum 650mm per annum unless irrigated
Forage Rape			70-90 days	3-6kg/ha	Minimum 500mm per annum unless irrigated
			90-110 days	3-6kg/ha	Minimum 600mm per annum unless irrigated
Turnip			70-90 days	1-4kg/ha	Minimum 800mm per annum unless irrigated
Leafy Turnip			42-70 days	1-4kg/ha	Minimum 600mm per annum unless irrigated
			42-70 days	3-6kg/ha	Minimum 500mm per annum unless irrigated

Learning

For more information about brassica the following is available at pggwrightsonseeds.com.au

Forage Focus

Titan

Forage Focus

Goliath

Forage Focus

Pasja II

Forage Focus

Brassica Feeding Study

Research Paper

Nutritional evaluation
of five species of forage
brassica

LET'S GROW TOGETHER

Planning your forage and seed requirements in advance can make a big difference to your productivity. For over 75 years PGG Wrightson Seeds have been working with farmers to get the balance right.

To discuss your growth plans call your Sales Agronomist now on 1800 619 910 or visit pggwrightsonseeds.com.au.