

Brassica crops for winter feed

Forage brassicas such as rape and leafy turnips have traditionally been sown as a spring-summer crop in Australia. However, it is common in other parts of the world to use brassica crops as a source of forage high in protein and energy throughout the winter months.

Brassicas have demonstrated superior growth and quality compared to oats in trials conducted in Australia. One of the major drawbacks of using forage cereals during the winter is their inability to maintain feed quality from July onwards.

Due to recent drought and the current economic environment, most producers will be focusing on quick cost-effective winter finishing operations and forages with the ability to maintain quality throughout the winter will be required. Mixed farmers may also continue to look at alternative break crops to Canola and forage brassicas may have a place in these operations.

Yield Results

Goliath forage rape, a recent release from Wrightson Seeds is a tall erect growing, high yielding, winter hardy forage rape. It has demonstrated both in Australia and New Zealand superior winter yield and consequent animal production.

Autumn sown Brassica trials were conducted by PGG Wrightson Research at 'Kimihia' in New Zealand. Replicated trials were established over two consecutive seasons, February in 2004 and March in 2005. The trials were harvested in July 2004 and August 2005 respectively. Goliath forage rape yielded the highest compared to both Winifred and Rangī.

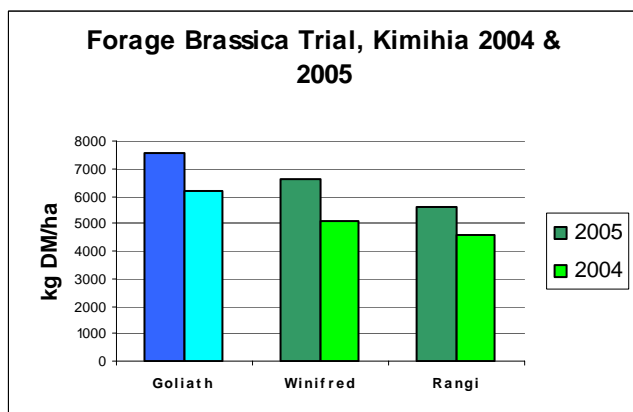


Figure 1. Yield results of autumn sown brassicas at Kimihia in South Island of New Zealand.

Wrightson Seeds also conducted a trial in Australia. Different winter feed options were sown in May 2005 and assessed throughout the season. The trial included: annual/Italian ryegrass, cereals and brassicas. **Appin** leafy turnip yielded the highest in this late sown trial, significantly greater than oats or annual/Italian ryegrass assessed over the same period.

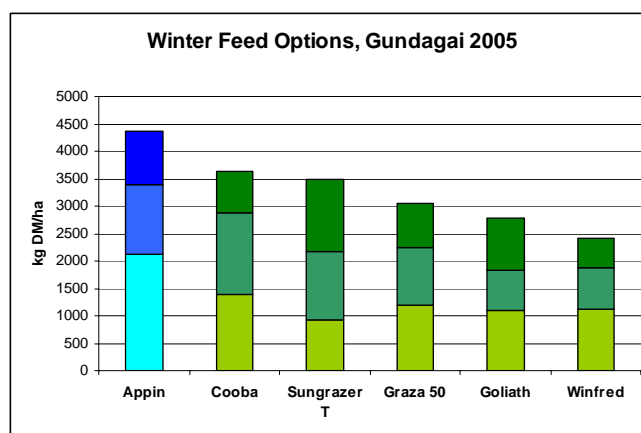


Figure 2. Yield results of autumn sown brassicas at Gundagai, NSW.

Animal Performance

Not only have forage brassicas demonstrated a winter yield advantage, but also animal performance benefits. An animal performance trial was conducted by PGG Wrightson Research in 2003 at Kimihia, New Zealand. Goliath forage rape and Massif oats were both sown on 4th March in two replicated blocks. Though the weight gain on the oats and forage rape were initially similar, the Goliath forage rape demonstrated superior feed quality, particularly from July onwards which was reflected in greater liveweight gains. Animals grazing Goliath gained in excess of 0.8 kg/hd/day more than those grazing oats from day 54 onwards through to the conclusion of the trial in September 2003. Further to the increased animal performance was the extra carrying capacity of the Goliath compared to the Oats. Over the length of the trial, an extra 23 kg/ha beef was produced per day in the Goliath blocks compared to the oat blocks.

The biggest difference between the two crops was the concentration of the major nutrients (feed quality). Table 1 shows that rape had a higher concentration of crude protein (CP) and water soluble carbohydrate (WSC) and lower concentrations of fibre (neutral detergent fibre; NDF) than oats. During the trial the quality of forage oats declined from mid-July onwards as indicated by the decline in CP and WSC concentration and increasing NDF concentration (Table 1).

Table 1. Dry matter production and nutritional results.

	Dry matter (mt/ha)	CP* (%)	WSC* (%)	NDF* (%)	MJME* (/kgDM)
9/06/2003					
Goliath rape	3571	21.1	23.4	20.3	12.9
Massif Oats	3320	20.6	11.6	41.6	11.5
10/07/2003					
Goliath rape	4763	22.1	31.4	20.0	12.7
Massif Oats	4932	16.3	23.3	46.6	11.1
5/08/2003					
Goliath rape	5174	16.8	38.0	19.9	13.1
Massif Oats	4595	12.7	16.9	54.9	10.1

Key:

CP Crude Protein
 WSC Water Soluble Carbohydrate
 NDF Neutral detergent fibre
 MJME Metabolisable energy

*Results corrected for dry matter

Grazing Management

There are some basic feeding guidelines that have been developed over many years of trialling and monitoring of Brassica crops which help maximise the animal production from brassicas. These are:

1. 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 acidosis. Start by grazing the crop for no more than two hours per day, building up to a maximum allowance over at least 7-10 days. Allow the rumen microbes time to adjust to the high quality forage.

2. Feed extra fibre prior to and while grazing Brassica crops. Forage crops are highly digestible and don't contain high concentrations of 'effective fibre' which is essential for optimising rumen efficiency. By feeding extra fibre this will encourage:

- More chewing and increased salivation, which helps maintain rumen pH
- Slower flow of feed through the rumen and gut, with a more effective rumen fermentation .
- Increased cud chewing and more effective digestion.

Extra fibre should be given prior to and throughout the Brassica feeding period. This will also assist in the prevention of gorging and improve the adjustment period whilst maintaining normal rumen function. It is suggested that 30% of the diet is fed as hay, straw or run-off dry pasture.

3. Feed brassicas as part of a balanced diet.

Animal performance on brassicas is best when crops are fed strategically as part of a balanced diet. For example, the high protein and energy of brassicas complements stalky hay which can be deficient in energy and protein or whole crop cereal and maize silage which are low in protein.

Forage brassicas are high in energy and protein, but low in crude fibre. For this reason they will need to be rationed to balance the total feed requirements of your livestock.

- For dairy cows the total of grain and brassicas should not exceed the sum of pasture plus hay/silage. The economic level of feeding forage brassicas is usually about 5 kg/cow/day.
- For sheep and beef cattle grazing for liveweight gain, stock should be introduced gradually over 5-7 days. They should always have access to a run-off pasture paddock or hay/straw making up to 15% of the diet.
- Utilisation can be increased from 30% to 70% using front and back electric fencing. (see below figure)



4. At all times give animals access to water when grazing Brassicas.

Although the water content of brassicas is high, it is recommended that animals have access to fresh water at all times. Limiting an animal's access to fresh water may cause it to reduce dry matter intake.

5. Recognise potential for stock health problems.

- Feeding brassicas can sometimes be associated with animal health problems. The risk and incidence of these problems can often be avoided by good agronomic and grazing management.
- Animal health problems can occur when introducing stock to Brassica crops or grazing under overcast conditions and after heavy rain.
- Photosensitisation may occur if crops are fed when still immature. You should wait for the correct maturity time before introducing animals.
- Ensure stock have access to adequate water.
- Stock should be introduced slowly to forage brassicas over the first week to enable the rumen time to adapt to the change in diet.
- Nitrate poisoning can occur under extreme conditions when overcast after heavy rain or during thunderstorms. It is advisable to keep stock off brassicas crops until the weather clears.

For more information on forage brassicas call Wrightson Seeds on 1800 619 910