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superior pastures



**FODDER  
BEET**

**2017/18**

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## WHY FODDER BEET?

- High yield potential (20 t DM/ha+), so you need less land to winter the same number of animals.
- High ME value (12-13 MJ ME/kg DM) and utilisation (typically 90%), for improved animal performance.
- Relatively low cost c/kg DM at high yields.
- Unaffected by most brassica diseases.
- Versatility.

Fodder beet has a number of features which can benefit dairy, beef, sheep and deer farmers. Whether grazed in situ, or lifted and fed out, the potential yield, feed value, utilisation and economics of this crop stack up well in many different farm systems.

Fodder beet demands good management to reach its potential, and care must be taken with animal feeding. Brassicas like kale and swedes have lower establishment costs, and can be sown on more diverse land classes. If you're new to fodder beet, seek advice from your retailer well before sowing.

## BENEFITING FROM FODDER BEET ON YOUR FARM

### Fodder beet types

It's important to choose the correct fodder beet variety for your feed requirements and intended use (grazing, lifting or both). Good starting points for this decision are bulb DM content, and whether the crop is only intended to be lifted. Fodder beet can be divided into three groups based on these factors:

#### Low bulb DM% (12-15%)

Lower yield potential, usually with a high % of bulb above ground (50%+). Only suited to grazing in situ.

#### Medium-high bulb DM% (16-20%)

Higher yield potential than low DM % types, and can be grazed in situ e.g. *Robbos*. Some can also be successfully lifted or grazed e.g. *Ribondo*. Bulbs generally sit 45-50% above ground.

### Lifting types

Bulbs sit lower in the ground, and are not suitable for grazing in situ. Very high DM % types (e.g. *Blizzard*) are best for maximum yield potential and increased bulb storage life.

### System fit

Thanks to its ability to grow a large volume of high quality, high utilisation feed that can be used from autumn to spring, fodder beet suits several different farm systems. Its high yield potential also frees up land for other uses. Alternatively you can increase daily allowances for improved liveweight gains.

This crop provides flexible cool season grazing and can also be used to extend dairy cow lactation by either grazing in situ or lifting and feeding to stock on pasture. Successful grazing entails the correct stock transition – see page 15 for more detail.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep
<i>Robbos/Ribondo</i>												
Dairy	Precision sown.						Extend lactation, start winter transition.		Winter feed.		Supplement spring pasture covers.	
Beef/Sheep/Deer	Precision sown.						High ME feed for liveweight gain or maintenance from autumn to spring.					
<i>Blizzard/Ribondo</i>												
Lifting fodder beet	Precision sown.						Mechanically lifted and fed to stock for a high ME supplement from autumn through to early summer.					
Maturity:	Once herbicide withholdings are met. 170 days+ to maximise yield.											
Typical Yield	18-24 t DM/ha average. 25 t DM/ha+ possible with good summer moisture and fertility.											
Sowing rate:	80,000 seeds/ha grazing. 100,000 seeds/ha lifting.											

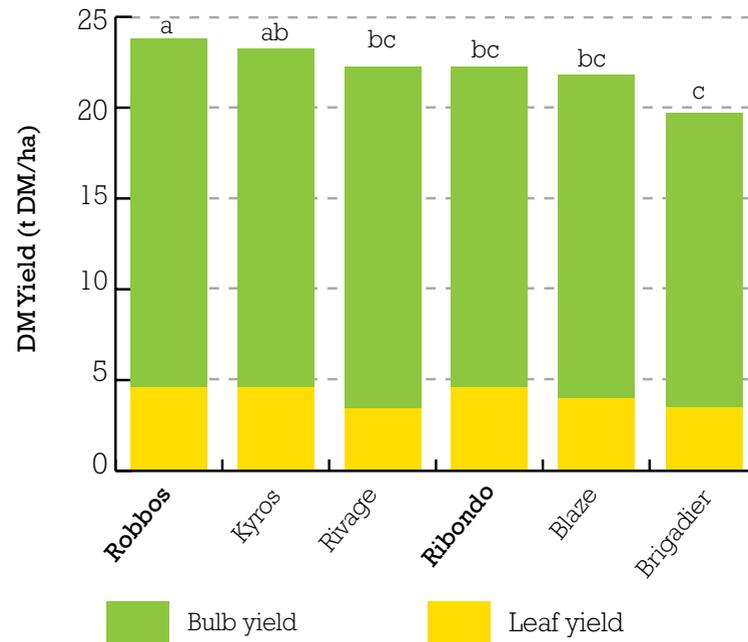
## ROBBOS

<b>Best feeding method</b>	<b>Grazing (but can be lifted)</b>
<b>Bulb DM content</b>	<b>Medium (16-18%)</b>
<b>Sowing rate</b>	<b>80,000 seeds/ha</b>
<b>Typical yield</b>	<b>18-24 t DM/ha; &gt;24 t with summer moisture</b>

*Robbos* fodder beet is one of the highest yielding varieties in the medium DM category, and has shown excellent leaf health through autumn, winter and early spring, when other varieties become vulnerable to disease. This is important because the leaf generates all of the energy which goes toward bulb growth, and also comprises a high percentage of the crop's total protein.

*Robbos* is a true mono-germ variety with DM content of 16-18%, giving it much higher yield potential than lower DM types. With an orange-yellow bulb which sits 45-50% above ground, it is well suited to grazing by all stock types.

### Fodder beet DM yields of low-medium DM cultivars\*



\*Combined trial data from 5 trials 2008-2016: Courtenay (3), Southland (1), Swannanoa (1). Cultivars in three or more trials included. Cultivars with the same statistical significance letter are not significantly different at the LSD 5% level.



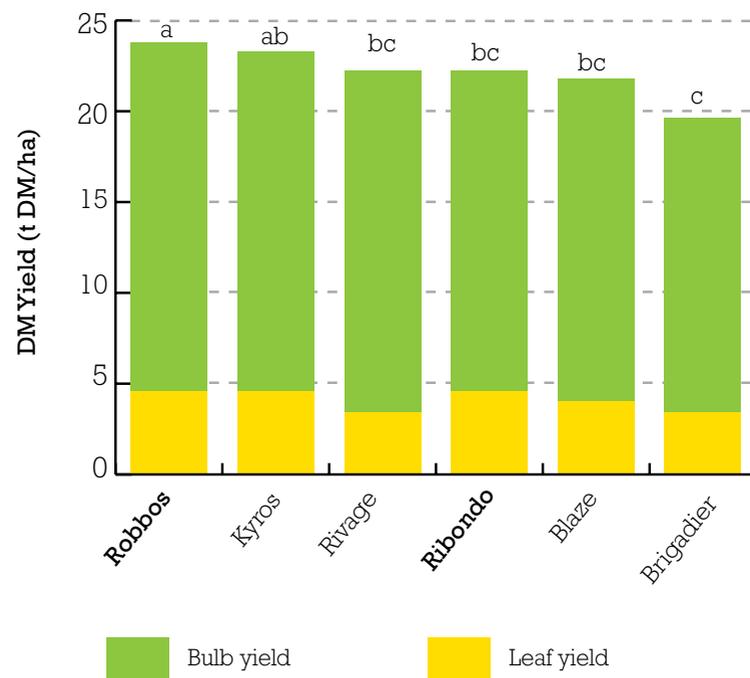
## RIBONDO

<b>Best feeding method</b>	Grazing or lifting (dual purpose)
<b>Bulb DM content</b>	Medium-high (18-20%)
<b>Sowing rate</b>	80,000 seeds/ha if grazing 100,000/ha if lifting
<b>Typical yield</b>	18-24 t DM/ha; >24 t with summer moisture

*Ribondo* is a true mono-germ with very even bulb shape and size and erect leaves, so it is ideal for lifting or grazing. The even height of bulbs above ground means little bulb is wasted when leaves are chopped off in the mechanical harvesting process. This dual purpose characteristic gives *Ribondo* flexibility, e.g. the crop can be mechanically lifted or grazed as required from the same paddock, with little wastage.

*Ribondo* has a yellow root and a medium-high DM content of 18-20% so high yields can be achieved.

### Fodder beet DM yields of low-medium DM cultivars\*



\*Combined trial data from 5 trials 2008-2016: Courtenay (3), Southland (1), Swannanoa (1). Cultivars in three or more trials included. Cultivars with the same statistical significance letter are not significantly different at the LSD 5% level.



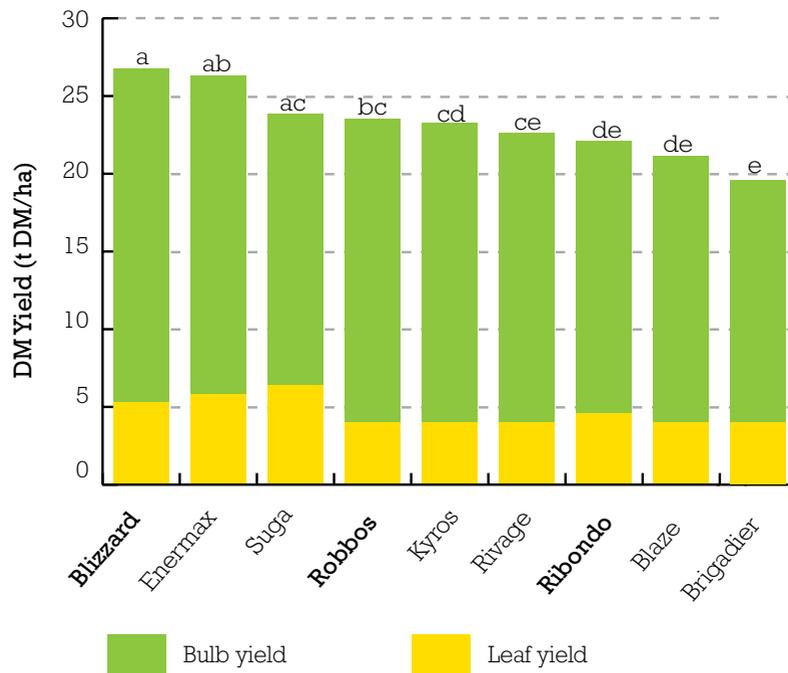
## BLIZZARD

Best feeding method	Lifting only (specialist lifting type)
Bulb DM content	High (20-22%)
Sowing rate	100,000 seeds/ha
Typical yield	20-25 t DM/ha; >25 t with summer moisture

*Blizzard* is a white lifting fodder beet with high DM content (20-22%). It can produce very high DM yields, and should be used when maximum yield/ha is sought from a lifted crop. Because of its high DM content, *Blizzard* bulbs will store longer in a windrow than lower DM types when leaves are removed.

It has shown excellent leaf holding ability and disease resistance to help maximise yield potential before bulbs are lifted. Grazing *Blizzard* is not advised because a high proportion of the bulb is in the ground, reducing utilisation when fed in situ.

### Fodder beet DM yield\*



\*Combined data from 5 trials 2008-2016: Courtenay (3), Southland (1), Swannanoa (1). Cultivars with the same statistical significance letter are not significantly different at the LSD 5% level.



## GROWING FODDER BEET - SUMMARY

### Planning

#### Plan ahead

Soil test 6-12 months before sowing. Choose suitable paddocks(s). Correct issues early (e.g. soil pH).



### Pre-sowing

Select cultivar fit for use e.g. grazing, lifting or both. Let spray and planting contractors know your plans.



Spray paddock(s) out 6 weeks before sowing. Cultivate to a fine, firm seedbed. Apply and incorporate base fertiliser.



### Sowing

Plant at soil temperature > 10°C with a precision planter.



### Post-sowing

Apply pre-emergence chemical + well timed post emergence sprays. Check crops weekly for weeds and pests. Apply post emergence N.



## SOWING FODDER BEET

### Pre sowing

Fodder beet has specific soil fertility and nutrient requirements which must be met if the crop is to achieve its full yield potential (e.g. soil pH >6.0). These should be addressed early and corrected before sowing. Ideally soil test paddock(s) 6-12 months before planting. Choose free draining soils with limited known weed problems; apply and incorporate all base fertiliser prior to planting.

*Tip: Fodder beet is highly sensitive to soil residues from commonly used agricultural chemicals. Before planting, check paddock history for chemicals used in the past two years, and confirm their withholding.*

'Stale seedbed' preparation is recommended, i.e. spray paddock(s) out with glyphosate, ideally 6 weeks before planting. Paddocks can then be ploughed to remove existing plant material, and ensure no compaction issues. Cultivate to produce a fine, firm seedbed. A second non residual weed spray (e.g. glyphosate) can then be applied just prior to sowing.

### Sowing date

Sowing date is location and season dependent, but early October to late November is generally recommended, once soil temperature is consistently above 10°C. Sowing too early (<10°C) can result in uneven germination, making spray timings difficult, as well as risking vernalisation, where the plants bolt to flower in late summer. Later sowings shorten the growing season, reducing yield potential.

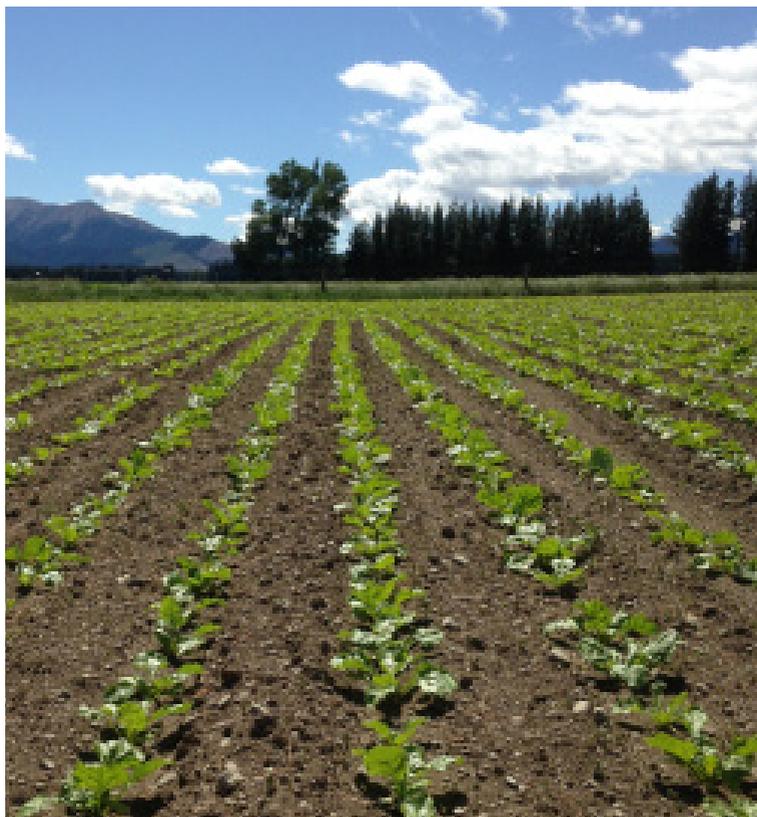


### Sowing

A precision planter is recommended to ensure seed is planted with appropriate spacings and sown at the correct depth (15-20 mm deep). How the crop is to be grazed should determine the planting layout. See page 16 for more detail.

### Post sowing

Check crops weekly for weeds and pests. A pre-emergence herbicide is usually applied, followed by multiple post emergence sprays. Contact an experienced local chemical rep for advice on products and spraying. Apply a side dressing of nitrogen prior to canopy closure. Later applications of nitrogen and potassium can also be considered.



## TRANSITION

This information is a summary only. Seek further advice if you are new to grazing fodder beet.

### Rumen acidosis

Rumen acidosis is the primary animal health risk when grazing fodder beet, and is caused by animals eating diets high in water soluble carbohydrates (WSC) or starch, such as fodder beet, too quickly. Clinical symptoms include: scouring, dehydration, bloating, laminitis, rumenitis, milk fever, limited cud chewing, and in severe cases, sudden death.

Often clinical signs of rumen acidosis are limited. Poor animal performance in the first 14-21 days could be a warning, as well as animals hanging back from the crop, or kicking at their stomachs. Manage this risk by transitioning stock onto fodder beet carefully, and avoiding any sudden increases in daily allowances.

### Measuring crop yield

Knowing your yield is essential before grazing to ensure correct daily DM allowance and overall animal performance.

Fodder beet yield is very difficult to estimate. For an accurate assessment at least 6 separate yield measurements are required per paddock, including DM % analysis.

For transition, assess crop yield at the area where livestock will start grazing, because correct crop allocation is paramount during this time.



*Coring is the best way to sample bulbs for dry matter – as bulb DM can vary significantly between bulbs in a crop.*

### Planning ahead

The method in which the crop will be grazed should determine planting layout. Generally stock should graze parallel to the rows to make feed allocation easier. Ensure good access for stock and enough room for the entire mob to get on the crop, without over-allocating their feed. This can be a challenge in high yielding crops during early transition.

One option is to plant a greenfeed crop in a headland (e.g. 6 m wide) parallel to the rows of fodder beet. Alternatively, you could lift the fodder beet in the headland, and feed to animals at a low level to start their transition. Both these options help ensure enough space for stock to get good access to the crop.



*Long narrow breaks allow animals equal access to the crop.*

### Fodder beet in the diet

Daily allocation of fodder beet depends on stock class, age, desired LWG and amount of crop available. After transitioning, best practice is to continue feeding  $\geq 30\%$  of the animals' diet as high quality supplement to minimise potential health issues. However, experienced farmers are successfully operating systems at higher feeding levels. High utilisation rates (e.g. 90%) can be achieved even with high crop allocation levels, as the feed quality of the whole plant is high.

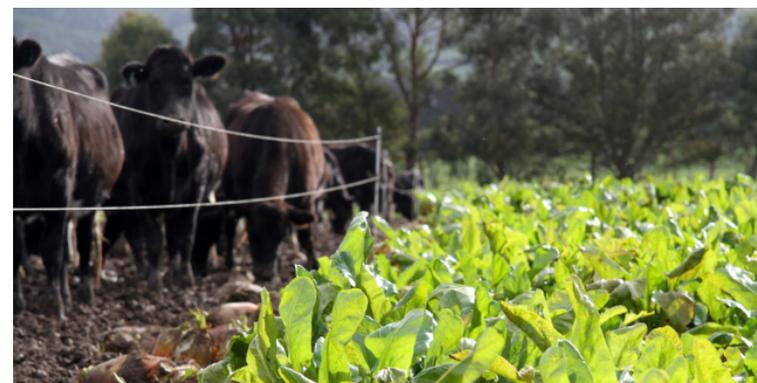
Low levels of fodder beet in the diet are sometimes used for maintenance feeding, or when fodder beet does not meet stock nutritional needs. Lactating dairy cows, for example, should receive no more than 5 kg DM/cow/day, due to low protein levels in fodder beet.

### Transition in practice

#### Mixed aged dairy cows, R2 heifers & steers

To avoid rumen acidosis, start by allocating 1 kg DM/day/head on day 1, and gradually increase the amount of fodder beet offered by 1 kg DM every 2 days until the desired allocation is reached. This will take 14-21 days depending on the final fodder beet allocation (e.g. 9-10 kg DM/hd for MA cows, 6-8 kg DM/hd for R2 heifers).

At the start of transition a high proportion of supplement or other feed will be required, and this will decrease as fodder beet intake increases. Supplement should be fed 3 hours before fodder beet to ensure good gut fill. This will slow the rate of fodder beet intake and minimise gorging. Long narrow breaks allow animals equal access to the crop.



### Example of transition diet for mixed aged cows

Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total needed (kg DM/hd)
Fodder beet (kg DM/hd)	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	8	8	8	8	9	113
Pasture or silage (kg DM/hd)	9	9	8	8	8	8	7	7	6	6	6	6	5	5	5	5	5	5	5	5	4	132
Total allocated diet (kg DM/hd)	10	10	10	10	11	11	11	11	11	11	12	12	12	12	13	13	13	13	13	13	13	
	This phase can happen on dairy platform										Feeding levels to dry stock only											

Monitor stock closely throughout transition. Ensure animals eat everything allocated to them, and do not let a bank of uneaten bulbs accumulate behind cows during transition.

#### R1 heifers & steers

Transition timing for R1 heifers and steers is the same (14-21 days), however feed quantities are half the R2 allocation. Start by allocating 0.5 kg DM/animal/day on day 1, and increase by 0.5 kg DM every 2 days until the desired allocation of fodder beet is reached (e.g. 4 kg DM/hd). All R1s should be vaccinated for clostridial diseases before going onto fodder beet. Young growing animals have a higher demand for protein, so this should be fed as a supplement to calves grazing fodder beet (e.g. high quality grass silage).

#### Sheep & deer

Sheep and deer do not require the full 14-21 day transition phase. They can be satisfactorily transitioned by having access to fodder beet for a few hours each day for 3-4 days and then being locked on the crop. Ensure all sheep are fully vaccinated for clostridial diseases before going onto fodder beet.

#### Supplement

Fodder beet is relatively low in fibre (NDF) and crude protein (CP), and high in water soluble carbohydrate (WSC). Animals can thus require more fibre and protein in their diet than when they're eating brassicas, depending on stock type, age and weight gain expectations.

The best supplement for stock on fodder beet is good quality pasture silage, because it contains both fibre and CP. Straw and cereal silage have low CP content, particularly for young growing animals.

#### Fodder beet vs brassica nutritional information

	DM%	CP%	NDF%	WSC g/kg DM
FB average	14-20	9-14	11-16	500-700
FB leaves	10-15	19-23	30	100-120
FB bulb (low DM variety)	10-15	<b>8-11</b>	<b>13-15</b>	<b>500-650</b>
FB bulb (med-high DM variety)	16-20	<b>8-11</b>	<b>13-15</b>	<b>500-700</b>
Swedes	9-12	12-20	16-30	450-500
Kale	11-18	12-20	20-35	350-400



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