SUPER FEED FOR SUPER YIELDS

Seed Force
fodder beet guide
An update on this crop for Australian beef & dairy producers

INTRODUCTION

The potential of fodder beet is becoming more widely recognised in Australia after Seed Force in New Zealand has taken the crop from a few hectares eight years ago up to around 80,000 in 2015/16.

The main driver behind that growth is the low cost of high energy feed – around $80-120 per tonne as feed in the New Zealand system. This is enabling significant cost savings for the NZ dairy industry at times of historically low milk prices, something that we have in common with our cousins “across the ditch”.

Seed Force is the main driver behind fodder beet’s recent commercial return to the Australian market. Seed Force’s exclusive variety SF Brigadier fodder beet is one of the highest utilised yield forage options available to farmers. It has a soft bulb suited to all livestock types but in particular young cattle and all sheep. Plus our varieties SF Lifta and SF Suga are also providing the flexible alternatives to growers who wish to either feed them to older animals or lift them for feeding back later.

Crops of 20-40t DM/ha are being grown in 5-6 months by Australian dairy and beef producers under Seed Force direction, producing 12MJ grain quality feed at $75-150/t as fed. This is extremely favourable compared to current grain prices at around $350-400/t for similar quality feed. This can reduce grain feeding costs by 50-70% on dairy farms saving dairy producers around $1/cow/day in feed costs whilst beet is being fed.

And beef producers can finish large numbers of cattle on relatively small areas at 20-25 head/ha gaining 0.8-2.0kg/hd/day depending on stock class, time and length of feeding.

Its full potential will only be achieved by good crop husbandry and nutritional support.

Key points for considering Seed Force fodder beet in your rotation are:

- Very high yield potential, enabling smaller areas to be cropped
- Consistent 12MJ high energy feed
- Highly palatable and digestible for ruminants
- Ease of feeding, due to lower height of crop
- Low cost energy alternative to grain for cows
- Economic high stocking rate finishing option

UNDERSTANDING THE CROP

Fodder beet (Beta vulgaris) is part of a species which includes mangel and sugar beet and is therefore not a member of the brassica species, more commonly grown for winter feed in Australia.

Fodder beet was originally grown in Australia many years ago and although its potential as a quality feed source for ruminant animals was known the lack of specific weed control herbicides and modern agronomy techniques made it a very labour intensive crop.

Seed Force in New Zealand has worked together with industry researchers to develop new knowledge of growing and grazing fodder beet. This knowledge has now being fine-tuned to suit specific Australian climatic conditions.

Fodder beet seed is quite different to many of the seeds that are typically sown in pasture based systems in Australia. It is bred as two main types; Technical monogerm is a clustered seed that has to be mechanically cut which gives a lower germination % but lower cost. Genetic monogerm is a single seed with higher germination % but higher cost.

Regardless of seed type it must be known that fodder beet seed carries a slightly lower germination percentage than that of more common species. This is addressed with sowing rates. Fodder beet is a slower germinating species compared with brassicas.

Depending on seed bed and climatic conditions emergence is often seen from 7-21 days post sowing and may be staggered.

SEEDBED PREPARATION

A well prepared seed bed is essential to establish the crop as evenly and as quickly as possible.

Alm the equivalent of a vegetable seed bed or well prepared Lucerne seed bed as a guide.

Apply crop fertiliser prior to your last surface working of the paddock.

Finally, roll the paddock prior to drilling.

Weed control is vital for establishing beets and poorly prepared seed bed will affect seeding emergence and subsequent herbicide timing.
FERTILISER

Fodder beet is an intensive crop so it is important to provide the necessary inputs to optimize yield and return per hectare. The fertiliser program should be based on a recent soil test. Typically a high yielding crop (20tDM/ha) might require:

- 100kg/ha Nitrogen
- 60kg/ha Phosphorus
- Up to 400kg/ha Potassium
- 30kg/ha Sulfur
- 40kg/ha Calcium
- 35kg/ha Magnesium
- 2.5kg/ha Boron
- Up to 100kg/ha Agricultural salt may be required

SOIL 

- Precision sowing of fodder beet is recommended.
- Fodder beet requires at least five days of 10°C or higher before planting.
- Seed should be sown to a depth of 1.5—2.0cm.
- Drill to the lower depths in drier, warmer seed beds.
- With precision drills, sowing speed needs to be 3-4km/hr, to ensure correct seed placement.
- Sow minimum one full box per (100,000 seeds) hectare when using a precision drill
- Sow with a row width of between 350-500mm.

SOWING

WEED CONTROL

This is a crucial area for the successful establishment of the fodder beet crop. There is a limited range of registered chemistry available in Australia, from pre-emergent options to post emergent. Generally all are specific herbicides for beet crops.

The available proprietary chemicals are registered:
- Tramat is a registered trademark of Bayer CropScience
- Pyramin is a registered trademark of Nufarm
- Betanal is a registered trademark of Bayer CropScience

The first spray is pre-emergence/post plant application as soon as possible post drilling.

The second will be applied when the crop is at two true leaf stage – do not mistake with the cotyledons.

The final spray is generally applied 7—10 days later with another application of multiple actives, often similar to the first post emergent spray. As the crop is generally larger at this stage the chemical rate or the number of actives can be increased to help ensure adequate control of invasive weeds or pests.

Grazing checklist:

- Ensure that you have correct supplements on farm ie silage, hay, straw
- Conduct an accurate yield assessment of the crop with correct DMW's
- Work out a feed budget to take into account transition time, utilization, stock type, daily ration, crop yield, supplements fed, number of animals to be fed
- Ensure animals are allowed time to adjust to the crop, with access to fibre and fresh water
- This will take around 14 days regardless of stock type
- Strip graze to manage intake and minimize wastage
- Preferably shift break on a daily basis and if conditions are wet consider shifting breaks twice a day

Grazing and Animal Nutrition

Once mature, fodder beet can be fed to any stock class. As with any forage crop the adjustment phase for the animals correct rumen function is crucial to ensure its potential is reached. Younger stock seem to adjust more readily to lower dry matter varieties such as SF Brigadier. As opposed to some fodder beet varieties which grow low to the ground, SF Brigadier is well out of the soil for ease of in-situ grazing.

Sow into adequate soil moisture from when soil temperature is at least 10°C. (pay attention to evening time soil temperatures as well as day time and check last frost date)

Best results are achieved using a precision drill. Sow seeds at 1.5—2.0cm depth. Make sure coulters are set to an even depth

Sow 80,000-120,000 seeds/ha depending on variety

Drill speed should be low to avoid poor seed placement, 3 - 4km/hr maximum

Apply post plant/pre emergence herbicide after sowing if conditions are dry this may have to be applied and incorporated prior to sowing

Plan your herbicide program based on expected weeds and to avoid delay in correct timing of application

Apply when the crop has at least two true leaves and before weeds reach the four true leaf stage

Apply second nitrogen application close to canopy closure

SF BRIGADIER

Fodder beet agronomy checklist

- Select free draining paddocks that are able to be prepared to a good standard
- Avoid paddocks where previous crops have had residual chemicals applied
- Soil test early using a 100mm soil probe. Test pH of paddocks being considered for fodder beet well before sowing. A pH (H2O) above 6 is required, ideally 6.2
- Spray out and prepare seed bed as early as possible using a double spray program if necessary
- A fallow period should be used to help conserve soil moisture, especially for dryland crops
- Fertiliser use should be based on a recent soil test, fertiliser should not be applied with the seed
- A fine, firm seed bed is essential
- Apply insecticides prior to or at drilling if required, monitor for insect pests post establishment
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SF Brigadier fodder beet

Fodder beet is a well known crop, but with new genetics and better management practices it is gaining rapid interest for its ability to produce very high yields of high quality forage. It is typically sown in spring using specialist seeders and has a 4-6 month growing period.

SF Brigadier offers new genetic potential and is capable of producing 20-40t DM/ha. It can be sown in autumn or spring depending on region and likely frost incidence. It is a brassica but a member of the mustard family and offers the opportunity to break the traditional weed and pest cycle of brassicas, particularly for Daikon beet moth.

**Benefits**
- High sugar feed option
- Very high potential yields
- Good weed and pest rotational crop
- Can yield up to 20-40t DM/ha. Cheap energy feed option.
- Sound option to avoid Diamondback moth problems

**Features**
- Fodder beet is a vegetable crop being grown by dairy (and beef) producers. It requires more attention to detail than throwing 40-50kg/t ryegrass out of a drill or spreader.
- It needs to be sown slowly to achieve even seedling depth and plant spacing to ensure rapid canopy closure and maximise yield potential.
- Weeds, pests and diseases all need to be planned for and the agronomy program needs to be delivered by someone trained in this crop. Vic uses Les Bekker from Dardanup Rural who has undertaken Seed Force training and learnt much himself working with this crop in WA. Les provides the on-farm monitoring to grow a successful crop.
- The crop is an alternative energy supplement similar to grain that can be grown at a significantly lower cost if you can deliver good yields of a minimum 28tDM/ha. At around $33,000/ha this can deliver feed at about $150/t, dropping to $100/t for 30t crops.
- Cows need to be transitioned on to the crop over about 10-14 days and limited to about 5kg/t DM/cow/day, without too much effort in changing ration.

**High yields were never this sweet**

***Four years in, Victor Rodwell is still keen on progressing fodder beets for his dairy operation in Boyanup in WA’s productive south west region, although his crop is a different light.***

His four year journey has seen him learn more about the crop as his yields have increased and he has encountered various new issues above the other forages grown on his farm.

Victor first trialed SF Brigadier in 2012 and was limited by poor establishment until he used a second hand Gardano precision planter jointly owned by Seed Force and Dardanup Rural for last year’s crop. That sowing achieved 71,000 plants/ha from a sowing rate of 11,800 seeds/ha with his own soil seed drill and 50kg/ha of SF Brigadier.

So what have been the learnings from Victor’s journey so far?

• Fodder beet is a vegetable crop being grown by dairy (and beef) producers. It requires more attention to detail than throwing 40-50kg/t ryegrass out of a drill or spreader.
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Longevity

**High yields were never this sweet**

Victor’s crop is a traditional polyploid, mangel type fodder beet with orange bulbs. The bulb sits high up out of the soil and is ideal for grazing in situ by all livestock classes, and its high sugar level makes it very palatable.

SF Brigadier

**• Good weed and pest rotational crop**

**• Very high potential yields**

**• High sugar feed option**

**• Can yield up to 20-40t DM/ha. Cheap energy feed option.**

**• Sound option to avoid Diamondback moth problems**

**FODDER BEET JOURNEY FOR DAIRY IN THE WEST**

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**CIPPSLAND BEET PRODUCER PLEASED WITH FIRST YEAR RESULTS**

Luke Stukely and family run a beef cattle and cropping enterprise at Flynn in Gippsland. His operation includes both breeding and finishing programs.

Last season Luke grew SF Brigadier for the first time. He planted 11 hectares, which went on to produce about 18tDM/ha. 110 14-18 month old steers were grazed grass on the beet, and there are still 52 head finishing on it and will do till start of August. Luke said, “I initially became interested in growing fodder beet after doing some of my own research about three years ago. But it was a Farmer helping De Jim Gibbs talk in late last season that encouraged me and a few local farmers to give it a go with the support of our local agronomist, Garry Condon from Rodwells.”

“He was there discussing some of the issues growing it last year, especially around lack of early moisture and weed control, I’m pleased with the results overall and will improve my system for next season! “I struggled a little with plant numbers, but the bulks that did grow did really well and were impressively sized. It was a very hands on crop, and I was most impressed with was how well the cattle did on it.”

**“Weight gains ranged from 1.5-1.8 kg per head per day for the cattle initially grazed on it, and the remaining 52 head will be weaned prior to going on the truck to processes”**

**“What made my mind up about the crop were the cattle themselves. They looked a lot like fed社 cattle. They were relaxed, and easy to handle. And I achieved above average weight gains.”**

**“The other benefit was not only how well the cattle did, but the effect on the paddock itself. I’ve been sowing ryegrass behind it, and can see both short term as well as long term benefits to the paddock by growing fodder beet.”**

**“I can really see the potential of fodder beet in cattle finishing systems, and think the crop can take off in the next five years. I intend to tweak my production system by bumping up sowing rates from 80,000 to 100,000 seeds/ha and getting earlier maturity levels right in the coming season, with the aim of growing a higher yield and finishing more cattle per hectare.”**
BEET ECONOMICS

Whilst some are deterred by the cost/ha of growing beet, the economics of beet production and feeding are “unbeetable”.

Costs of $100-$150/t for 12MJ ME feed is less than half the cost of grain fed to most Australian dairy herds.

Feeding beet at 5kg/cow/day will save around $1/cow/day in feeding costs.

For a 300 cow herd feeding beets over 90 days will add $27,000 to the bottom line in feed savings.

And for beef producers, the ability to put 20-30 steers/ha onto a small area to gain around 0.8-1.7kg/hd/day for 150 days will deliver $3,000-$5,000/ha Gross Margins.

These numbers make beet an unprecedented financial option for finishing stock, freeing up land for breeders.

FEED COST CALCULATOR

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<th>Operation (Example)</th>
<th>cost $/ha</th>
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<td><strong>Total costs/ha</strong></td>
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