# Beet for Grazing – Cattle

Your way to reduce feed costs and improve earnings

SEEDING THE FUTURE SINCE 1856



A beet crop on your farm may save your working time and deliver a highly competitive feedstuff for your animals



### Beet is a well-known crop in temperate regions, especially in the northern hemisphere

Today beets are grown mainly for sugar production, but beets are also well utilized as a forage crop for livestock in many places around the globe.

In the past, beets made up a substantial part of the daily feeding ratio for dairy and young cattle. For example, in northern Europe the beet crop made up for 15–20 percent of the entire agricultural crop land – and for good reasons too!

In recent times, fodder beet has seen a resurgence in New Zealand where it is now understood how to feed high levels of fodder beet (80–90 percent of the dry

matter intake) while grazing the beet in-situ. This introduction aims to give you an understanding of how to successfully graze fodder beet to achieve high level animal performance. We deal with production values in the field as well as feeding and nutritional aspects. It is important to emphasize that even this introduction provides some hints on why and how, you should never start grazing your animals without proper advice!

We will take you through a selection of topics and we trust that you will discover why beet is an underestimated feed crop – with a potential to enhance your production, reduce your feed costs and lift your earnings!

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### So, for good reasons beets were for centuries one of the most valuable crops on many farms. But what might be the reasons to grow beet under a modern grazing technique?

Let's first conclude that the species beet (Beta Vulgaris) is a vigorous and very robust crop which has a yield potential of more than 30 tonnes dry matter per hectare. This offers greater potential to reduce feed costs per unit of dry matter grown. The long vegetation period offers a sought after greening effect as well.

On the farm the crop adds diversification in the crop rotation. And where we see more and more severe climatic events the beet crop offers security and consistency in feed supply. The beet types you grow for in-situ grazing have a lower dry matter content, grow high out of the ground and facilitate grazing. The well-know high dry matter types give extremely high dry matter yields but are not suitable for grazing. Though they can be harvested and fed to animals as part of a standard feeding program.

With the fodder beet types for grazing you achieve an easily digestible fodder that can be grazed safely once introduced through a proper transition. Whatever your animal type may be cattle, sheep or deer.



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# 1. Why Fodder Beet?



# Fodder beet has a number of qualities that make it attractive as a forage feed

Yield – yields of 20–30 tonnes of dry matter per hectare, including the leaves, are typical and can be achieved with sound management. In comparison forage brassicas typically yield 12–15t dry matter per hectare. The high yields allow for high stocking rates and the ability to reduce the total area required for the forage crop.

Quality – measured in megajoules of metabolisable energy, fodder beet has an metabolisable energy value of 12.0 megajoule/kg dry matter, which remains consistent across the season. Such high values for feed quality are unique for a forage crop. Depending on the local environment, it can be grazed and fed from autumn through winter and into spring.

Although the root part of the fodder beet has a relatively low protein content, the whole crop (including the leaves) has a medium protein content which is sufficient to supply your animals with enough protein. Ideally, 20 percent or more of the dry matter yield should come from the leaf which provides enough protein in the diet for most animal classes. The table below outlines the most relevant nutritional parameters of beet.

#### Quality and content of fodder beet

	Dry Matter	MJ ME	Crude Protein	Neutral Detergent Fibre	Calcium	Phosphorus
	(%)	(kg DM)	(%)	(%)	(%)	(%)
Leaf	9-23	11.5–12	11.4–25.9 (17.0)	12.4–46.9 (29.9)	0.39-3.9 (1.6)	0.06-0.4 (0.26)
Bulb	8-20	12-12.5	5.1–10.7 (7.8)	7.8–14.9 (10.6)	0.01–0.05 (0.02)	0.08–0.38 (0.18)

Source: Adapted from Gibbs J, et al. 2015. Feeding fodder beet in lactation and to replacement heifers. SIDE.



Value – aligned with achieving high yields, the cost per kg dry matter is low when achieving high yield of 20t dry matter per hectare or more. The cheapest crops are commonly those with the highest yields and grazing in-situ means that the animals harvest the crop. In New Zealand, grazed grass is the lowest cost feed; fodder beet comes next as the second cheapest – and grazing at a different time.

Flexibility – fodder beet can be fed safely to a range of animals. Young and old beef cattle, dairy cows as well as replacement heifers, sheep and deer. The crop can be fed from the autumn, through winter and into the following spring. Fodder beet can also be harvested and fed out to animals on pasture or into barns as required. This can also help initiate transition by allowing animals to become familiar with beet before shifting them into grazing fields.

### From fodder beet we get better animal performance for a lower cost of production

**Anna and Ben Gillespie** Omakau New Zealand Anna and Ben Gillespie run a livestock property in Central Otago, New Zealand. They are contract grazing 1,100 dairy cattle from four months old to two years old, and finishing 400 beef animals. Ben and Anna on their own are able to complete daily feeding of these 1,500 animals in just two hours.

Animal performance – because of the high-quality feed and high dry matter intakes, exceptional animal performance can be seen from grazing fodder beet. For beef animals this means very high liveweight gains compared to other forages. Liveweight gain of  $0.5 - \ge 1$  kg is typically achieved with standard management. In addition the beet intake improves the carcass composition as it gives higher intra-muscular fat deposition. For dairy cows beet improves body condition score through the dry period (when not lactating) and provide additional energy in the diet when feeding in lactation. All in all – with the understanding of these key characteristics and the established knowledge and experience of grazing fodder beet you too can reduce forage feed costs and improve earnings on your own farm.



Fodder Beet for beef and dairy animals

# 2. Ensuring Appropriate Transition in Feeding



The key aspect to feeding fodder beet safely and avoiding acidosis is ensuring that the transition onto feeding fodder beet is well managed. When the animals have been transitioned correctly, they can be fed ad libitum without risk of acidosis

#### Three key areas of feeding fodder beet

- Safely transition animals onto fodder beet without incidence of acidosis
- Maximise intakes of fodder beet DM where required
- Manage levels of additional (supplementary) feed for fibre and protein requirements

The graph shows the gradual increased intake of fodder beet corresponding to the simultaneous decrease in quality supplements for a 500kg cow.



Source: KWS



### It is important to manage supplementary feeding levels to have a balanced diet without providing excessive amounts that will cause substitution of fodder beet

Supplement feed, in addition to fodder beet, is crucial to provide fiber and part of the protein requirements, especially for animals gaining weight and younger growing animals. Supplements like grass, alfalfa and good quality hay are good sources of protein. For animals on maintenance diets, supplement could be lower in protein such as wheat straw or basic quality hay. On the following three pages you will find specific recommendations for the three given categories of animals.



Mixed age dairy cows – non lactating



Lactating dairy cows



**Beef Animals** 



#### Mixed age dairy cows – non lactating

- Day 1: 1 kg dry matter fodder beet allocated per animal
- Increase the allocation by 1 kg dry matter every second day for 14 days
- Decrease proportionally the amount of other feed as fodder beet allocation increases
- Day 14: hold the level of dry matter intake for a further 7 days until day 21
- Day 21: gradually move the fence until the animals start leaving fodder beet behind. Ad libitum levels will have been reached and the animals should have access to the crop for 24 hours per day on unrestricted intakes
- These animals will get protein requirement from the grazed fodder beet. They will need some fibre intake of 2 kg dry matter per head per day for good rumen function. The most cost effective option should be used. Supplement allocation should be limited. Excessive intake of supplement will cause substitution of the fodder beet and decrease dry matter and energy intakes.





Lactating dairy cows

- Transition for lactating cows is the same as for non-lactating cows in a pasture based system however fodder beet should be limited to a maximum of one third of the diet. This is because crude protein and phosphorous levels in beet are too low for a lactating cows requirements
- Day 1: 1–2 kg dry matter allocated per animal
- Increase the allocation by 1 kg dry matter every second day until reaching 4–5 kg dry matter per head per day
- Animals are limited to this level each day and are given access to the crop for a period of time each day until they have eaten their daily allocation
- Because of this limited daily allocation these animals will not be fully transitioned. As such, animals that break through the fence or have excessive allocation are susceptible to acidosis. Therefore careful management is required.



#### **Beef Animals**

Day 1: Allocate 1 kg dry matter of fodder beet

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- Increase allocation by 0.5 kg-1 kg dry matter every second day. 0.5 for young animals < 18 months) and 1 kg for older animals
- For younger beef animals, supplement needs to have crude protein levels of at least 13 percent – e.g. grass or alfalfa, fresh or silage.



With such high yields in fodder beet we only need 25 percent of the land area compared to other crops. The cows love it and the utilization is the best of almost any feed

> **Dan Davison** Culverden New Zealand

Dan Davison is milking 600 dairy cows in a family partnership based in Culverden, Canterbury, New Zealand. Dan has been using fodder beet for five seasons. Using fodder beet, partly in late lactation and at ad libitum levels through the winter non-lactation period, fodder beet has become an important part of Dan's farming system. It is a cheap form of supplementary feed through the autumn period and it is indeed a great product for fast weight gain through the winter.



# 3. Practical Management



### There are several practical steps that can be taken to help manage the transition process

It must be recognised that one of the key aspects to animals transitioning correctly and safely onto fodder beet is that they need to adjust their typical grazing behaviour. From eating a large volume in a short period of time to grazing slowly and over a longer duration. The transitioning process is designed to teach the animals this behaviour.



#### **Key Steps**

- Ensure that animals all have enough space to access the face of the crop equally. Rule of thumb is 1 linear meter per animal grazing across the face of the crop.
- For accurate allocation during transition it is important to know the yield of the whole crop, root and leaf.
- Crush beet for young animals being fed fodder beet for the first time, it can help to crush the fodder beet with a wheel of a vehicle to help them gain a taste for the beet and to begin transition.
- Ensure animals have equal access to supplement to make sure that intake levels are adequate for all animals.
- During transition, feed animals supplement in the morning and fodder beet in the afternoon. This helps to prevent animals going onto the fodder beet hungry and gorging themselves.
- 6. Direction of planting and feeding. As cattle tend to face away from cold winds and rain, crops should be fed so that animals are facing away from the prevailing weather patterns.

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### 4. Animal Health





#### Phosphorus

Phosphorous levels in fodder beet are typically low and therefore special attention is required here. Phosphorous supplementation maybe required if the proportion of the leaf is less than 25 percent of the total dry matter of the plant and supplement quality is poor.

#### **Clostridial diseases**

Because of the relatively high sugar diet, clostridial diseases can be problematic on fodder beet and for this reason young cattle, ewes and lambs should receive a clostridial vaccination before entry onto the crop.

#### Acidosis

Acidosis is the primary health concern related to feeding fodder beet. All efforts must go into prevention management. If animals suffer from mild acidosis, reduce their fodder beet intake to 75 percent of their current allocation for 4 days before re-transitioning them. Acute cases of acidosis will cause a relatively quick death. Acknowledgement: This booklet has been produced with the assistance of Dr Jim Gibbs and Dr Bernardita Saldias

### **Your Opportunity**

Fodder beet is a high value feed that can be grazed successfully in-situ achieving high levels of animal performance and reducing feed costs. To take advantage of these opportunities and discuss how fodder can benefit you, please do not hesitate to contact KWS for further information.

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