

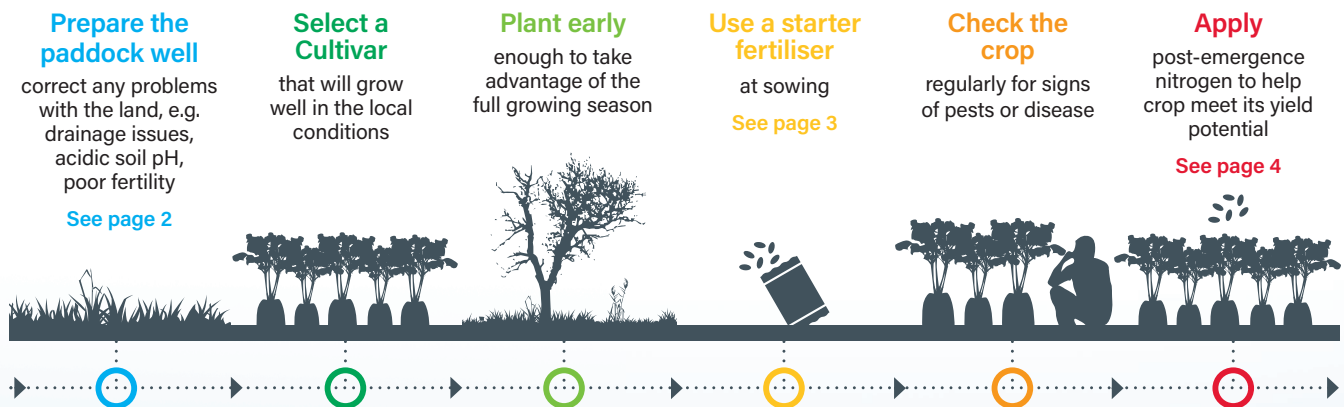


Best Practice Crop Nutrition

Fodder Beet

In recent years there has been a resurgence of interest in the cultivation of fodder beet, mainly because it is a high-yielding crop with the potential to produce up to 30 tonne dry matter per hectare. It is also high in energy – the bulb has a metabolisable energy (ME) level of 12 – although it is relatively low in protein. Fodder beet is often planted as an alternative to brassicas as part of cropping rotations or pasture renewal programmes.

Although original research on the nutrient requirements of fodder beet was done in the United Kingdom, in recent years similar trials have been carried out in New Zealand, predominantly in the Canterbury region. The information presented in this leaflet is based on this research and assumes that the crop will be grazed in situ. Good management is important if the fodder beet crop is to give a respectable economic return. This includes the following steps:



Before sowing

Fodder beet crops require careful management and should not be planted into poor-performing paddocks. They prefer light to medium free-draining soil and a well-prepared seed bed. Correct any issues such as poor drainage, weed problems and low fertility before sowing.



What

Soil test using the Ballance Brassica Test.



When

At least 6 months before sowing, if possible 12 months before sowing.



Why

Fodder beet is very sensitive to low soil pH levels. The ideal pH range is 6.0-6.2 in the top 150 mm of soil. If soil pH needs adjusting, lime needs to be applied – it will take at least 6 months to have an effect on soil pH. Soil testing early will also allow sufficient time to correct the other nutrient levels with a suitable base fertiliser.



How

Use a 150 mm augur. Soil test a transect (line) across the paddock. Avoid areas that are not typical of the paddock, e.g. fence lines, stock camps, urine patches. Take the samples in either autumn or spring. Do not sample within 3 months of applying fertiliser or lime, or when soil is saturated.

Test	Target levels
pH	6.0-6.2
Phosphorus (Olsen P)	15 or more
Potassium (QTK)	3 or more
Sulphur (sulphate S)	Not determined
Magnesium (QTMg)	8 or more
Sodium (QTNa)	4 or more
Boron (mg/kg)	1.1

Target soil test results for growing fodder beet crops. If levels are lower than this, address with lime and/or base fertiliser applications.

Products

Lime

Choose a good-quality ag-lime. As a rule of thumb, it takes 1 tonne lime/ha to raise the soil pH by 0.1 unit. So if the soil pH is 5.8, apply at least 2 tonne lime/ha. To achieve the desired pH throughout the top 150 mm of the soil, the lime may have to be incorporated by cultivation.

Base fertiliser

The actual product needed and the rate to be applied will depend on soil test results. However, products in the Superten and Cropzeal ranges are generally suitable, as they supply most of the nutrients needed to support crop growth. Apply sufficient fertiliser to correct any identified deficiencies and also apply 20-30 kg S/ha. If soil magnesium levels are low, apply magnesium oxide (50 kg/ha) with the base fertiliser. If levels of K are below 3, apply 200 kg MOP/ha; otherwise, apply 100 kg MOP/ha. If desired, half of this K may be applied with the post-emergence N.

Salt

Unlike many other plants, fodder beet appears not to grow rapidly without an adequate supply of sodium (Na) in the soil. Salt (NaCl) is normally used to meet this requirement.

Where soil Na levels are below 4, apply 100 kg NaCl/ha in the base fertiliser dressing. Salt should never be applied near the seed as it is very harmful to germination.

Available N

The Ballance Brassica soil test measures the amount of available N in the top 150 mm of soil. This information is required when calculating how much post-emergence N should be applied.



At sowing



What

Use a starter fertiliser.



When

At sowing.



Why

How much a fodder beet crop yields depends on how quickly leaf area is established. Using a starter fertiliser gives seedlings easy access to essential nutrients, getting them off to a good start. Seedlings that have good vigour in their early growth phases will also be able to compete strongly with weeds. Like most crops, fodder beet needs nitrogen and phosphorus in the starter fertiliser.



How

Drill with the seed (in a separate box). Avoid direct contact with the seed. Alternatively, broadcast then incorporate into the soil just before sowing.

Boron

Boron is an essential trace element and is needed to produce a healthy, high-yielding crop. A deficiency will cause heart rot, which results in the growing point dying and turning black. Rot then develops and spreads from the heart to the crown and shoulders. To prevent heart rot, include boron in the starter fertiliser at a rate of 1.5-3 kg B/ha. Applying Cropzeal Boron Boost at 250-300 kg/ha will supply 1.8-2.1 kg B/ha. For higher rates of boron, or where lower rates of Cropzeal Boron Boost are being used, additional Granular Boron (15% B) should be added to reach the desired rate.

Products

Cropzeal Boron Boost

Cropzeal Boron Boost provides all of the nutrients needed for healthy crop establishment. As the boron is incorporated in every granule, it is evenly spread through the crop, meaning every plant has a better chance of getting the boron it requires. The typical application rate is 150-250 kg/ha. Do not let product come into contact with seed.

DAP and Granular Boron

This combination supplies the same nutrients as Cropzeal Boron Boost, but because it is a mix, not a compound fertiliser, it is not as effective at supplying boron evenly throughout the crop.

Cropzeal 16N

When soil potassium levels are low (<Quick Test 4), Cropzeal 16N can be used. This product supplies three macronutrients (nitrogen, phosphorus, potassium) needed for crop growth. Can be blended with Granular Boron. Typical application rates are 250-350 kg/ha.

Serpentine Super

Use alone if soil N levels are high but Mg is required. If broadcasting, apply at 300 kg/ha; if drilling, apply at 250 kg/ha. If soil is low in potassium, use in combination with Cropzeal.



Post emergence



What

Check trace element status.



When

Once crop is growing vigorously.



Why

Trace element deficiencies can restrict crop growth and may also impact on animal health when stock graze the crop. Boron is the trace element of most concern in fodder beet.



How

Any suspected trace element deficiencies must be confirmed by herbage testing. Contact your Ballance field consultant for advice.



What

Apply post-emergence nitrogen and potassium.



When

Just before or at canopy closure.



Why

Nitrogen is a growth promoter. Applying N helps the crop reach its agronomic potential. However, applying too much N will reduce the economic yield of the crop. The crop's K requirements increase after canopy closure and post-emergence applications help to meet this need.



How

Review soil test results to check reserves of available N. If available N levels are low (<100 kg N/ha), apply 100-150 kg SustaiN or Nrich urea/ha at canopy closure. If available N levels are high (>200 kg N/ha), post-emergence N will not be required, as long as N has been applied in the starter fertiliser. If split K applications are being made, apply the remainder of the K from the base fertiliser recommendation.

Products

SustaiN

This is the preferred product when applying high rates of N. It reduces the loss of N by volatilisation, which can exceed 30% when urea is used for side-dressing crops. Volatilisation means N is lost as a gas; using SustaiN helps to keep some of that N in the soil, where it can be used by plants.

SustaiN 15K, 20K or 25K

If K is being applied as split applications, with half going on in the base fertiliser, and the other half at or around canopy closure, one of the SustaiN K products is preferred.



Healthy Fodder Beet

