

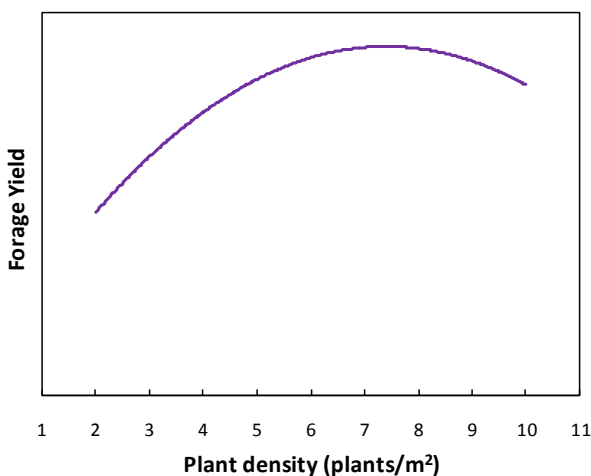
# Growing Fodder Beets on Tasmanian Dairy Farms

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**Introduction** – Fodder beets are a high-yielding forage crop that provides forage to fill late autumn and winter feed gaps. Fodder beets while similar in appearance, are not related to forage brassicas, but are related to sugar beets, beet roots and silver beets. Successful production of fodder beets requires careful planning and execution of all steps in the crop-production process. This note aims to assist in determining whether fodder beets are an appropriate crop for your farming system.



**Cultivar selection** – Fodder beet cultivars can be separated into two types; harvesting or grazing types. For harvesting types the majority of the bulb grows below ground. This makes them more suited to mechanically harvesting with specialised beet harvesters and stockpiling or ensiling for later use. In contrast, grazing types produce the majority of the bulb above the soil surface which enables utilisation by direct grazing. Grazing types often have bulbs that are softer, making them easier for stock to eat.



The influence of plant density on the yield of fodder beets grown in Tasmania

**Seedbed preparation and sowing** – Optimising the number of plants established is critical to growing a successful fodder beet crop. On farm research has shown that under Tasmanian conditions the crop cannot compensate lower than optimal plant densities. Maximum yields are attained at plant densities between 6 and 8 plants per m<sup>2</sup>. Depending on the degree of seedbed preparation and soil type, attaining these plant densities may require sowing at rates up to 120,000 seeds/ha. A row spacing of approximately 50cm is recommended. Fodder beets require a fully prepared, fine, weed-free seedbed. Previous crops or pastures should be sprayed with a broad spectrum herbicide. This should be followed by several cultivations to fully incorporate plant residues. While beet crops grown in other regions of the world are sown using specialised beet planters or precision drills, research in Tasmania has shown that if the crop is intended for direct grazing, there is no benefit of using a precision drill over other high quality drills (e.g. Air-seeders). The crop should be sown in mid to late spring when

soil temperatures are greater than 5°C and after the last frosts. Waiting till a soil temperatures are greater than 10°C before sowing will ensure a more even germination and improve seedling vigour. As the crop can take over 200 days to mature later sown crops will not have enough time to fully develop before winter which will limit yield.

**Fertiliser requirements** – Fertiliser decisions should be based on a soil test. As a guide, to reach its maximum yield, the crop will require 70kg/ha of phosphorus, 200kg/ha of potassium and 170kg/ha of nitrogen. Phosphorus fertiliser should

be applied prior to planting while nitrogen and potassium applications should be split between an application just prior to planting and a side dressing at canopy closure. Fodder beets have a high requirement for boron and magnesium. As

beet species evolved in saline areas of the Mediterranean they also require the application of salt (50–100 kg/ha) when grown on non-saline soils.

**Irrigation** – Irrigation may be required over summer to prevent moisture stress. However, the crop is susceptible to water-logging so overwatering should be avoided. Irrigation should be scheduled based on estimated crop evapotranspiration or by the use of soil moisture monitoring equipment.

**Weed and pest management** – While one of the advantages of fodder beets is its resistance to the major pests of forage brassicas (e.g. Diamondback moth), there are a number of pests which fodder beets are susceptible to during establishment (e.g. Red-legged earth mite and cutworm). Careful monitoring and the use of appropriate chemical controls will minimise the impact of these pests on crop yields.

Fodder beets are slow to establish and consequently are very susceptible to competition from weeds. Ensuring that the seed bed is weed-free prior to planting and having a plan to minimise weed pressure post planting is critical to the success of the crop.

**Forage quality and utilisation** – Typical forage quality of fodder beets grown in Tasmania is 12% dry matter, 13% crude protein, 23% neutral detergent fibre, 12% acid detergent fibre, 27% water soluble carbohydrates and 11MJ of metabolisable energy per kg.dry matter. Leaves are higher in crude protein than bulbs but have lower energy content. The crop should be strip grazed with a fresh break being provided to cattle on a daily basis.

Cattle may not initially take to eating the bulbs due to their size. Breaking bulbs into smaller pieces in the first few days of grazing will encourage cattle to eat them. Beet leaves can have low levels of oxalates which can cause scouring and immature crops can have a high nitrate content. Similar to forage brassicas, when feed to milking cows the proportion of fodder beets should not exceed one-third of the cow's daily diet.

**Cost of production** – Monitoring of fodder beet crops in Tasmania has identified that the direct costs of production (fertiliser, herbicides etc.) associated with a fodder beet crop is between \$1,600 and \$1,800 per ha. However, when growing forage crops there is also the opportunity cost of the pasture forgone by growing the crop as well as other implications to the farm system (e.g. increased grazing pressure on the rest of the farm). As such, a more detailed analysis is required to assess the economic viability of such activity. Whole of farm systems modelling has identified that when growing fodder beets on the milking platform in place of a productive pasture yields in excess 20t DM/ha are required to improve farm profitably. The required yield for achieving break-even will be less if the fodder beets are grown as part of a pasture renovation cycle replacing an unproductive pasture, or grown off the milking platform.

**Acknowledgments** – This note was developed as part of the project: “Optimising Establishment to Maximise Yield of Fodder Beets on Tasmanian Dairy Farms”, funded by DairyTas and the Tasmanian Institute of Agricultural Research. The support of the farmers that provided fodder beet crops for the field research is gratefully acknowledged. The agronomic advice provided by Craig Weir from Seed Force is also gratefully acknowledged.

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**Additional resources** – Pembleton K.G. and Rawnsley R. P. (2011) Optimising the establishment of fodder beet to maximise yields on Tasmanian Dairy Farms: Final report to Dairy Tas, TIAR, Burnie TAS.

Seed Force (2011) SF Brigadier: Fodder beet grower guide, (Seed Force Pty. Ltd.: Shepparton, VIC)

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