SUGAR BEET & FODDER BEET

Beet is an extremely high yielding fodder crop that is easy to grow but attention to detail is vital. The recipe for success with beet is ‘Sow early in a dry field free from scotch, ensure adequate lime and fertiliser are applied, control weeds, protect from pests and diseases, harvest when mature and balance diets properly at feeding time

Rotation:

Beet should only be grown after two years have elapsed since a beet, brassica or oil seed rape crop was grown.

Sowing period:

Sugar beet can be sown from mid March. Fodder beet can be sown from early April. Beet is a sensitive crop and will not thrive in harsh conditions. For maximum yields, sow as early as possible under favourable weather and soil conditions, delays after mid April will reduce yields by about 4% per week latest sowing time is late May.

Seeding rates:

Seeds are precision drilled. Aim to establish 30,000 plants per acre. Average field emergence for sugar beet is about 70% (range 55% to 80%) and is a little less for fodder beet. With 56cm (22”) row width and 18cm (7”) spacing 40,700 seeds are planted per acre, assuming 74% establishment this gives 30,000 plants per acre. Sow at a depth of 3.2cm.

Varieties:

Sugar Beet – Full range of varieties are available with a choice of seed dressing.

Standard dressing: Afton, Ariana, Celt, Juvena, Ocean and Oisin.
Manganese Dressing: Afton, Atlantis and Celt.
Gaucho Dressing: Afton Celt and Ocean.
FODDER BEET

Full range of varieties are available with varying Dry Matter levels. Varieties are listed with expected dry matter % in brackets. Alps (15.8%) Bolero (16.4%) Kyros (15.3%) Magnum (17.9%) Minotaure (15.5%) and Tintin (16.3%)

Lime: Target pH of 7 ideally lime should be applied one year ahead of growing a beet crop.

Fertiliser:

Fertiliser recommendations are shown in the following table:

<table>
<thead>
<tr>
<th>Soil Index for NPK</th>
<th>Index 1</th>
<th>Index 2</th>
<th>Index 3</th>
<th>Index 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen Kg/ha</td>
<td>195Kg/ha (156 units/ac)</td>
<td>155Kg/ha (124 units/ac)</td>
<td>120Kg/ha (96 units/ac)</td>
<td>80Kg/ha (64 units/ac)</td>
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<tr>
<td>Phosphorus Kg/ha</td>
<td>70Kg/ha (56 units/ac)</td>
<td>55Kg/ha (44 units/ac)</td>
<td>40Kg/ha (32 units/ac)</td>
<td>20Kg/ha (16 units/ac)</td>
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<tr>
<td>Potash + Sodium Kg/ha</td>
<td>320Kg/ha (256 units/ac)</td>
<td>204Kg/ha (192 units/ac)</td>
<td>160Kg/ha (128 units/ac)</td>
<td>80Kg/ha (64 units/ac)</td>
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</table>

Boron should be applied to all beet crops. Choose a compound fertiliser with boron and apply before sowing and mix into soil. Nitrogen topdressing can be applied at 4-8 leaf stage. Low Boron soils may need a further foliar boron application in June/July. Manganese and Magnesium will need treatment if soil levels are low, foliar applications are best at 4-10 leaf stage.

Weed Control:
Poor weed control is the most common cause of crop failure. Beet is a poor competitor with weeds. The aim is to keep the crop weed free until at least eight weeks after emergence. There are a range of herbicides available and two applications will be required in most crops. Early sown crops may require a third application. Each application usually includes at least two herbicides and possibly an adjuvant. Herbicides choice, rate of application and timing are critical and it is recommended to get advice from an experienced agronomist. Broadleaf weed herbicides include: Debut, Goalpost, Wizard, Betanal Expert, Goltix, Target SC, Venzar Flo, Beetex, Pyramin DF, Vivendi and Dow Shield. Grass weed herbicides include: Falcon, fusillade Max, Co-Pilot, Galant Solo and Stratos ultra.

Pest problems:
Beef crops are very prone to pest problems particularly slugs, leatherjackets and rabbits.

**Minute soil pests:**

Apply Yaltox granules in-furrow at sowing if problems are expected or use Gaucho treated seed.

*Slugs:* They feed on the leaves and stems and big losses can occur. Apply Methiocarb (Draza) slug pellets preventatively in a band at sowing or broadcast at first sign of attack.

*Leatherjackets:* Roots and stems are attacked at or just below soil level causing death of young plants. The use of Draza slug pellets at sowing is a useful preventative. Apply Dursban 4 or Clinch if high populations are noted or when damage is first seen.

*Flea Beetle:* Adult beetles eat holes in the leaves of seedlings, especially in dry weather. Spray with Dursban 4, Clinch or Decis.

*Aphides:* Black Aphides cause leaf curling and sap loss. The Peach Potato Aphid spreads Virus Yellows which can reduce yields in some seasons. Control by spraying with Dimethoate or Metasysox.

*Mongold Fly:* The leaves feed between the upper and lower surface of seedlings. Spray with Dimethcate.

*Rabbits:* Shooting, trapping and Rabbit bait are moderately effective. Where numbers are high a wire fence, either mesh or electrified will give best results but must be erected properly.

**Diseases:**

Ramularia Leafspot and Rust are the main problems and usually occur in the autumn. They can result in severe defoliation which will increase harvesting losses with belt lifting harvesters. Crops to be harvested after Nov 1st should be treated with a fungicide in late July or early August. For crops to be harvested in October, treatment is justified when disease symptoms are seen before August 1st. Punch C or Score are the best fungicides.

**Sugar Beet**

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<table>
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<tbody>
<tr>
<td>Dry Matter Yield</td>
<td>13 – 20 t/ha</td>
</tr>
<tr>
<td>Fresh Yields:</td>
<td>55 – 88 t/ha</td>
</tr>
<tr>
<td>Dry Matter:</td>
<td>21 – 22.5%</td>
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</table>
Crude Protein: 5 – 7%
ME (MJ/Kg DM) 14

Fodder Beet

Dry Matter Yield: 13 – 20 t/ha
Fresh Yield: 65 – 115 t/ha
Dry Matter: 13 – 19 %
Crude Protein: 6 – 8 %
ME (MJ/Kg DM) 13.5

Harvesting and Storage Information:
Beet should be mature at harvest and well crowned at the leaf scar. Allow 1 square metre of hard surface per tonne of beet. Do not cover the beet for 2-3 weeks after storage. Protect from low temperatures (<3°C) and frost by covering the clamp with 20cm of straw or a suitable cover. Ventilation is required to reduce heat build up and rotting. The best dimensions for a naturally ventilated clamp are 4m wide at base, wedge shaped with a maximum height of 2.5m and as long as is required. Storage losses will be higher for Fodder beet than Sugar beet, the lower the Dry Matter % the higher the losses.

Feeding Information:
Beet is a high energy low protein and low fibre feed. Treat it as a forage concentrate as it digests very quickly in the rumen. Roughly 4kg Sugar Beet = 1kg Fodder Beet = 1kg Barley and 5.5 kg Fodder Beet = 1kg Barley. It is important to introduce to beet gradually, allow a two week introduction period. The total diet must be balanced for protein, fibre and minerals particularly Calcium, Phosphorus and Copper. Roots must be clean and washing is preferable. Beet should be chopped as this greatly increases intakes, this is most important for younger cattle and for sheep. Beet is a high palatable and highly digestible feed and in a properly balanced diet it should result in excellent animal performance and more efficient milk and meat production.

Low Dry Matter Beet can be grazed in situ where soil and weather conditions permit.

Comparing Sugar Beet and fodder Beet for use as a fodder crop

<table>
<thead>
<tr>
<th>Advantage of Sugar Beet</th>
<th>Advantage of Fodder Beet</th>
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<tr>
<td>Growing</td>
<td>Easier to grow than fodder beet due to:</td>
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</table>
- Can be sown earlier than fodder beet due to better bolting resistance and harder seedlings
- Less prone to herbicide scorch

### Harvesting

**Harvest losses are lower due to:**
- Root height out of the ground is more consistent
- Smaller root sizes that are more suitable for belt lifting harvesters
- Leaves may be in better condition depending on the variety

**Soil contamination at harvest is usually lower than with Sugar Beet but depends on variety choice.** The softer varieties tend to grow higher out of the ground and have fewer grooves in the root and therefore retain less soil.

### Yield and Crop

- **Huge DM yields**
- Higher DM% so less space required for storage than for fodder beet
- Higher ME than fodder beet (Typical 5% higher)

- **Huge DM yields**
- Can have much higher fresh yields especially with softer medium dry matter varieties like Minotaure, Tintin and Bolero.
- Expect Protein to be 1-2% higher

### Storage

- Lower storage losses due to the higher dry matter percentage of the roots which leads to:
  - Less mechanical damage at harvesting and subsequently less bruising and rooting during the storage period.
  - Less prone to frost damage
  - Less prone to heating in the clamp in periods of mild weather
| Feeding          | • Due to the higher dry matter content the feed rate per animal in fresh weight terms is lower. This presents less of a challenge to animals on high intake, high performance diets.  
• While the level of soil contamination of harvested sugar beet roots will be higher, when expressed in terms of kilograms of soil per tonne of root dry matter the difference is minimal. | • With soft fodder beet varieties you have the option of grazing in the field.  
• Fodder beet will have lower soil contamination and will reduce the need to wash roots before feeding. |