



## Fodder beet Trial, Ashcroft Farm 2014/2015

### **Introduction**

This trial was designed to determine the effectiveness of 6 EM treatment variations, against a control on Fodder beet, at Ashcroft Farm at Carew.

### **Method and Materials**

**History of paddock:** ex grass      **Fodder beet variety:** Jamon

**Plot size and layout:** See table 1      **Sowing date:** Nov 2014

**Sowing rate:** 50,000 seeds/ha

**Date of product applications;** All products, 2/12/14 and repeated on 15/12/15

**Harvest Date:** 13/5/2015

Treatments= 6 (see Table 2), plus each plot had an adjacent paired control plot.

Replicates= 4

Plot Size – 10 metres long by 0.5 metres wide (1 row) equalling 5 m<sup>2</sup>,

2 subsamples per plot were harvested as continuous lengths of 10 beets each, giving a total of 20 beets per plot. Fresh weights were recorded for each plot. DM was assessed by drying a subsample of tops and bulbs and drying.

The plots were harvested as numbered plots with no reference to treatments (blind approach).

Independent data analysis was carried out by Dr Tim Jenkins

### **Summary**

- EM treatments gave a significant increase over control.
- Nitrogen enhanced EM (EMN-RTU), looks promising.
- Molasses addition gave mixed results.
- Reducing N inputs by 50% and combining EM looks to be a viable option



**Table1: Treatment details**

Treatment	Table 2: Key	Amount per ha	Description
1	EM-RTU	20 l/ha	EM-Ready to Use
2	EM-RTU plus Molasses	20 litres/ha plus 20 litres/ha	Addition of molasses
3	EMN-RTU	20 litres/ha	EM-RTU manufactured with N
4	EMN-RTU plus Molasses	20 litres/ha plus 20 litres/ha	Addition of molasses
5	Liquid N plus EMN-RTU	23kgN/ha plus 20 litres/ha EM-RTU	Effect of N at half rate with EM
6	Liquid N	46kgN/ha	Comparing N alone at full rate

**Basal Fertilisers applied to paddock**

Pre-plant= 300kg/ha Potash Super plus 10kg/ha Borate 45

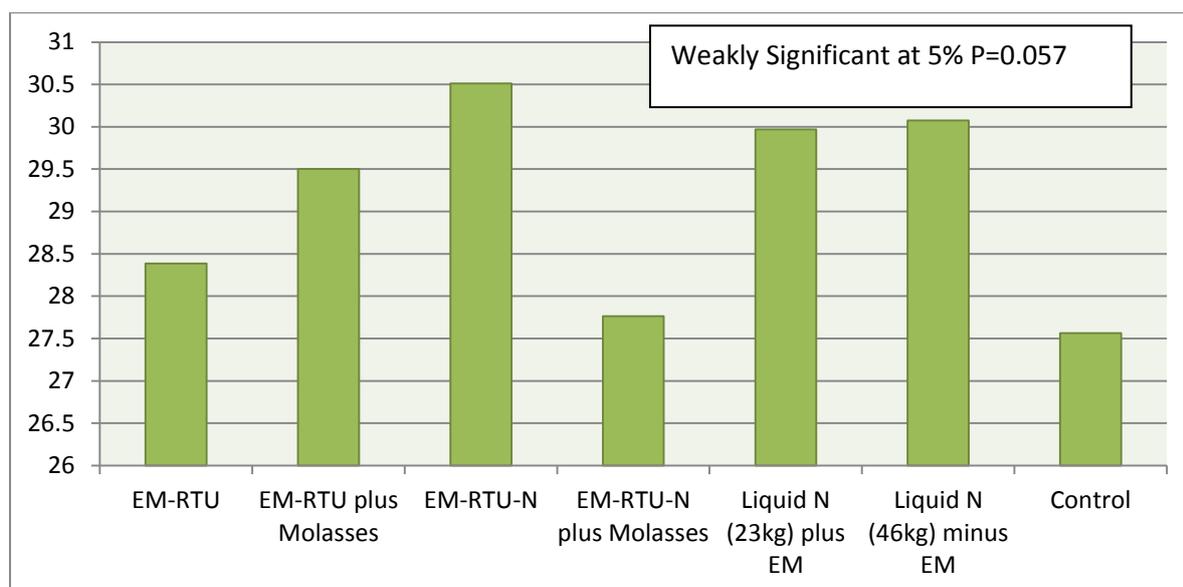
Drilling= 300kg/ha Cropmaster 15 plus 5/ha of Zinc Sulphate plus 5kg/ha Copper Sulphate

N Post Emergence @ 15-20 cm ht. = 150kg/ha, **note** (not applied to trial)

N Post Emergence @ 30-40 cm ht. = 150kg/ha, **note** (yes applied to trial)

**Results:**

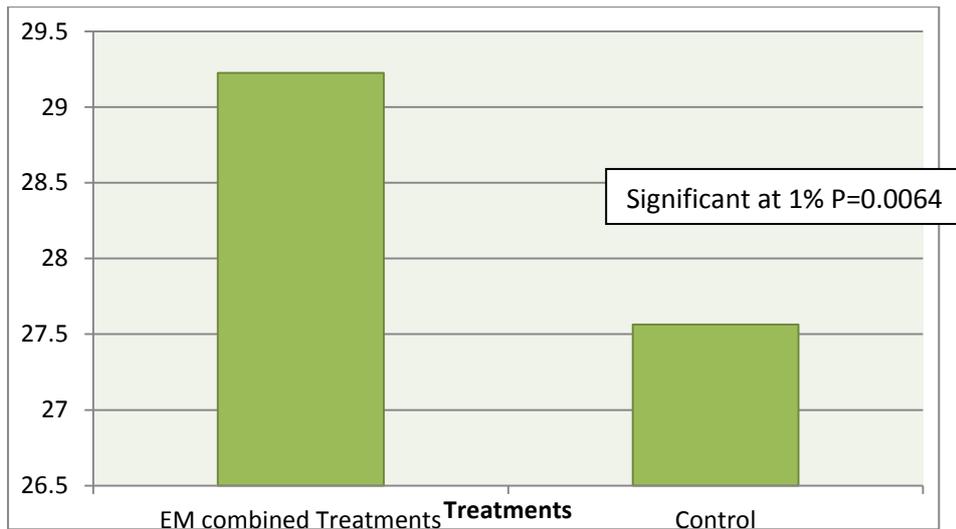
**Table 2: Ashcroft Farm FB Trial 2015: Fodder Beet Yield (DM/tonnes/ha). Effect of EM treatments with and without molasses plus the effect of EM with a half rate of N compared to a full rate.**





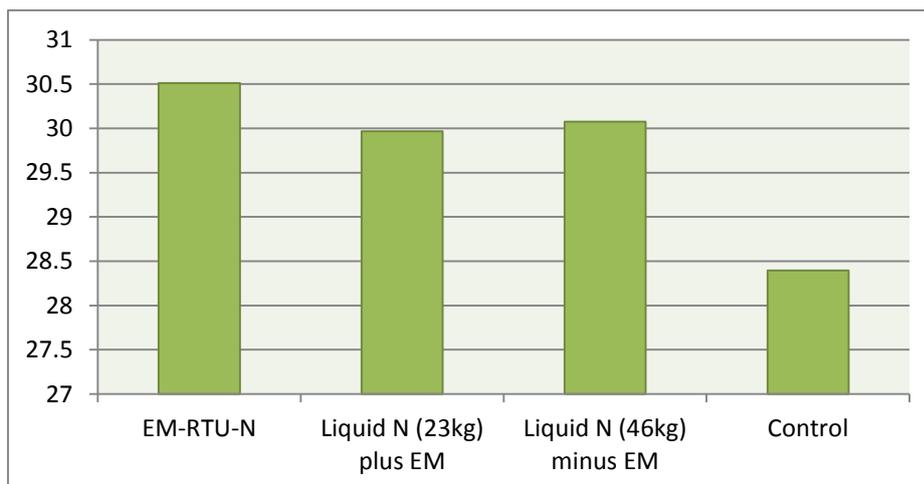
In all case the EM treatments showed a positive gain over control (Table 2). The addition of molasses gave mixed results, with an increased when combined with EM-RTU, but a decrease when included with EMN-RTU (N enhanced). The best treatment overall was EMN-RTU (P=0.057).

**Table 3: Ashcroft Farm FB Trial 2015: Fodder Beet Yield (DM/tonnes/ha) Effect of combined EM treatments (not N treatments) compared to untreated control**



By combining the EM treatments and then analysing, we see a very significant lift in yield over control (P=0064), resulting in a gain of over 2 tonnes/ha of dry matter (Table 3).

**Table 4: Ashcroft Farm FB Trial 2015: Yield (DM/tonnes/ha), Effect of Nitrogen, with or without EM compared to untreated control**



This graph looks at the Nitrogen effect, and demonstrates that when EM is combined with a half rate of N, then a comparable yield to a full rate of N is realised (Table 4).



## Acknowledgement

We thank Barry Daly, for the allowing us to use his crop for the trial.

## Appendix

Dr Tim Jenkins data analysis report.

### EM Fodder Beet Trial

The treatments pooled resulted in higher yields than the control comparison ( $p=0.0064$ ). This was at least partly due to the effect of liquid N fertiliser applied. A half rate of liquid N with EM RTU performed similarly to a full rate of liquid N (46 kg N/ha) but because the N rates differed as well as the inclusion of N, it cannot be determined what the effect of EM was in combination with the Liquid N. Considering each treatment individually, there was only a weakly statistically significant difference detected between treatments ( $p=0.057$ ).

Figure 1 shows that the EM treatments all tended to have higher yields than the control comparison. When just the treatments without Liquid N were considered, there was no statistically significant difference detected between treatments ( $p=0.111$ ). When the EM treatments were pooled and compared with control (again excluding the Liquid N treatments, the EM effect was estimated at 5.16 tonne per hectare but this was only weakly statistically significant ( $p=0.053$ ).

**Figure 1. Boxplot of treatment effects with means represented by crosses and medians by bold horizontal lines.**

