



# Fodder beet Trial, Ashcroft Farm 2015/2016

## Introduction

This trial was designed to determine the effectiveness of 8 Foliar EM treatment variations, against a control on Fodder beet, at Ashcroft Farm at Carew.

## Method and Materials

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

**Plot size and layout:** See table 1     **Sowing date:** 26/10/15

**Sowing rate:** 80,000 seeds/ha

**Fertilisers: Pre sow.** 200kg Crop 15, 5kg kieserite, 3kg Na Cl, 3 g Pot. Chloride, 1 kg Borate 46

**Post emerge applications:** Urea 100kg on 16/12, Urea 100 kg + 75 Pot. Chloride 29/1

**Date of product applications;** All products, 08/12/15 (5 true leaf) and repeated on 12/01/16

**Harvest Date:** 12/5/2016

Treatments= 8 (see Table 1),

Replicates= 5

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

2 subsamples per plot were harvested at 2 metre each, the beets were counted. Fresh weights were recorded for each plot. DM was assessed by drying a subsample of tops and bulbs and drying (Individual plot DM's were not measured).

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



## Summary

- EM treatments gave a significant increase over control.
- Nitrogen enhanced EM (EM-N), looks promising although EM RTU performed as well.
- Other treatments received mixed results as although they outperformed control none were statistically significant.



**Table1: Treatment details**

Treatment	Key	Amount per ha	Description
1	Control		nil
2	EM-RTU	20 litres/ha	EM-Ready to Use
3	EMN-RTU	20 litres/ha	EM-RTU manufactured with N
4	Comcat	100g/ha	Plant stimulant
5	Comcat plus EM	100g/ha plus 20 litres/ha	Plant stimulant plus EM-RTU
6	EM-RTU plus Molasses	20 litres/ha plus 20 litres/ha	Addition of molasses
7	EMN-RTU plus Molasses	20 litres/ha plus 20 litres/ha	EM-RTU manufactured with N plus molasses
8	Special Brew		

## Independent Results Analysis – Tim Jenkins

Statistical analysis was with GLM (generalized linear model, R ) for the effects of each of the treatment combinations treated separately (Table 1) and for each of the factors (Table 2, with Comcat, EM, Wuxal and Mo). In the Table 1 analysis, EM and EM + N treatment plots had statistically significantly higher total fresh weight than control with all other treatments being intermediate. No differences were detected in fresh weight per plant in the Table 1 analysis. With the more appropriate analysis according to individual components of treatments, EM was found to have a statistically significantly positive effect (P = 0.006) on total fresh weight per plot and on fresh weight per plant (P = 0.048). There was no effect detected related to the other components within the combinations tested (Comcat, Wuxal, molasses and added nitrogen) in the treatments.

**Table 2: Effect of each treatment type**

Treatment	Beet no/ plot	Total fresh weight (kg/plot)	Fresh weight per plant (kg)
Control	13.6 a	34.5 a	2.5 a
EM	13.6 a	42.0 b	3.1 a
EM-N	14.0 a	42.2 b	3.0 a
Comcat	14.4 a	38.9 ab	2.7 a
Comcat+EM	14.0 a	40.2 ab	2.9 a
EM+Mo	14.4 a	40.4 ab	2.8 a
EM+N+Mo	13.8 a	40.6 ab	3.0 a
Special Brew	14.6 a	41.3 ab	2.9 a
SEM	0.91	2.22	0.24
P-value	0.925	<b>0.038</b>	0.405

a,b Values in each column that share the same letter are not statistically significantly different from each other. SEM: Standard error of the mean.

Note: EM-N is very similar to EM. The only difference is that a small amount of Urea is used in the manufacturing process. This will equate to 0.1% N in the solution.

Mo = Molasses. This was added in equal parts to the EM eg EM + Mo = 20 +20 /ha



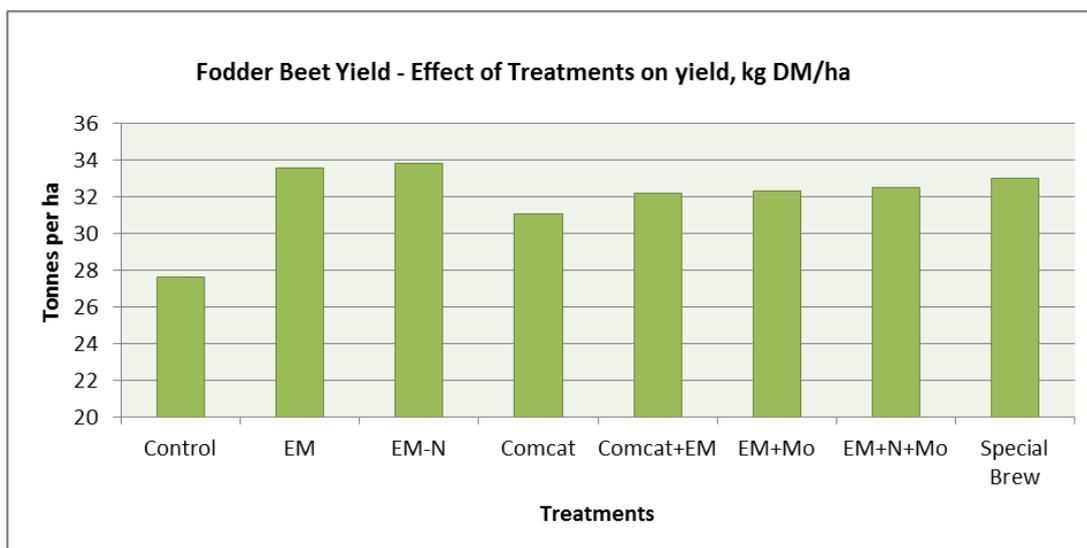
**Table 3: Effect of each treatment factor**

Factor	Beet no/ plot	Total fresh weight (kg/plot)	Fresh weight per plant (kg)
EM Effect	-0.53	46.12	3.33
SE	5.894	14.890	1.625
P-value	0.928	<b>0.004</b>	<b>0.048</b>
Comcat Effect	0.45	1.15	0.01
SE	0.589	1.489	0.163
P-value	0.447	0.446	0.963
Molasses Effect	0.39	-0.76	-0.10
SE	0.589	1.489	0.163
P-value	0.516	0.612	0.524
Wuxal Effect	0.43	-0.60	-0.12
SE	0.803	2.029	0.221
P-value	0.599	0.771	0.579
Added Nitrogen Effect	-0.01	1.03	0.09
SE	0.589	1.489	0.163
P-value	0.982	0.495	0.573

SE: Standard Error

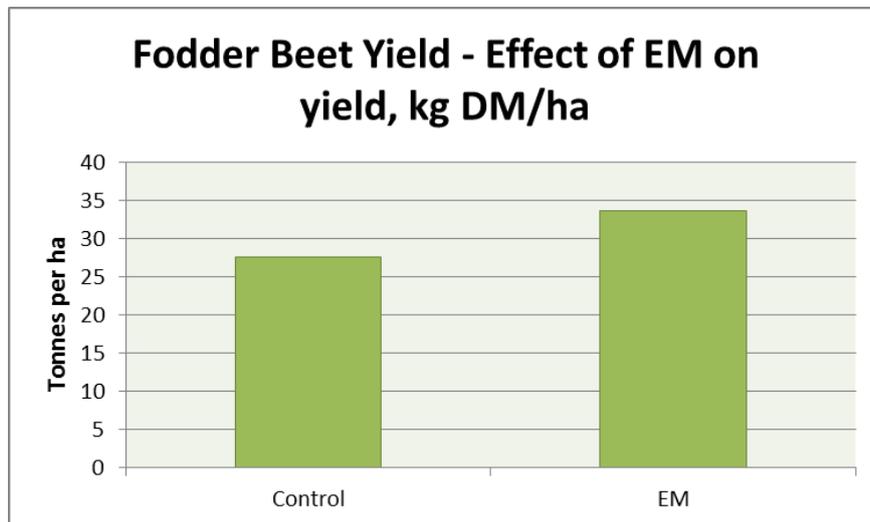
With the more appropriate analysis according to individual components of treatments, EM was found to have a statistically significantly positive effect ( $P = 0.006$ ) on total fresh weight per plot and on fresh weight per plant ( $P = 0.048$ ). There was no effect detected related to the other components within the combinations tested (Comcat, Wuxal, molasses and added nitrogen) in the treatments.

**Table 4: Graph demonstrating all treatments**





**Table 5: Graph demonstrating mean yield DM T/ha of Fodder beet yield data, EM application against control (non-treated)**



### Summary

- This trial was planned and conducted by Mike Daly and focussed more on the effect of EM and additions to EM, such as molasses and Comcat and N enhanced EM.
- The overall clear results showed that EM significantly increased fresh crop yield. Adding molasses or using the N enhanced EM did not improve yield. Adding Comcat did not improve the activity of EM.
- Dry matter was not assessed on this trial, just fresh weights and beet numbers from each plot.
- This trial indicated a clear advantage in using EM as a foliar input.

