

## Sugar beet periodic lift trial

**Centre** Morley      **Trial Code** SBT13-810      **Variety** Caymen

### Objective

To determine the growth rate and yield benefit of sugar beet treated during the late summer and autumn with and without a triazole based fungicide programme.

### Summary

- In 1997 a long term study was initiated at Morley to examine the relationship between yield and lifting date in sugar beet; this is known as the 'periodic lift study'. Since 2007 the monthly comparisons of adjusted yields have been carried out either following, or in the absence of, a summer fungicide regime (using a triazole based product).
- In 2013 the sugar beet (cv Cayman) was drilled on 04/04/2013 and all crop inputs were as the Morley Farm crop with the exception of fungicide applications.
- In 2013, rather than a triazole alone, the programme was based on Escolta (cyproconazole + trifloxystrobin) applied on 17<sup>th</sup> July, 20<sup>th</sup> September and 6<sup>th</sup> October 2013. The programme compared a one or two spray fungicide regime (Table 2). The two spray programme was applied at either a low rate (0.175 l/ha fb 0.175 l/ha), a reduced rate (0.35 l/ha fb 0.175 l/ha), a full rate or a full rate stretched programme (0.35 l/ha fb 0.35 l/ha).
- Maximum yield was achieved from the two spray full stretch rate fungicide programme lifted in November with a total adjusted yield of 133t/ha compared to the analogous untreated that achieved 128t/ha. Adjusted yield response and sugar content at monthly lift intervals are shown in Figure 1.
- The addition of a full rate single fungicide spray gave an average yield response of 2% across the lift timings compared to the analogous untreated lift without fungicide. The addition of a full rate two spray programme increased yields by an average of 7% across the lift timings compared to the analogous untreated lift without fungicide. The main diseases were Ramularia and Rust found at around 5% infection in the untreated. The value of a two spray programme becomes particularly apparent at the later lift timings indicating the additional protection offered to that of a single spray.
- The margin over fungicide spray (Table 2) indicated that, on average, the one spray programme returned £33/ha compared to the analogous untreated lift whilst the two spray full rate programme returned £221/ha (based on a crop price of £32.00/t and the fungicide spray that costs £30/ha including application). This therefore shows the potential value for the inclusion of a fungicide sprays to the sugar beet crop.

**Table 1: Margin from fungicide spray (output – fungicide cost\*) 2013.**

Lift dates	Margin (£/ha)				
	Untreated	One spray programme (full rate)	Two spray programme (low rate)	Two spray programme (full rate)	Two spray programme (full stretch rate)
Third Week of (or as close to)					
August	2141	-	-	-	-
September	2027	2095	-	-	-
October	3534	3582	-	-	-
November	4106	3931	4098	4155	4187
December	3777	3975	4024	4169	3925
January	3793	3835	3818	4015	3864
<b>Average</b>	<b>3230</b>	<b>3484</b>	<b>3980</b>	<b>4113</b>	<b>3992</b>

\* Sugar beet price £32.00/tonne. Fungicide cost £30/ha including application.

This trial was funded by NIAB TAG National Agronomy Centre Initiative

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**Table2: Treatments**

TRT	Treatments T1	Treatments T2	Treatments T2	Lift dates
	Late July	Late August (4 week interval)	Mid September (6 week interval)	<i>Third Week of (or as close to)</i>
1	-	-		August
2	-	-		September
3	ESCOLTA @ 0.35 l/ha	-		September (One spray programme – full rate)
4	-	-		October
5	ESCOLTA @ 0.35 l/ha	-		October (One spray programme – full rate)
6	-	-		November
7	ESCOLTA @ 0.35 l/ha	-		November (One spray programme – full rate)
8	ESCOLTA @ 0.175 l/ha	ESCOLTA @ 0.175 l/ha		November (Two spray programme – low rate)
9	ESCOLTA @ 0.175 l/ha	ESCOLTA @ 0.35 l/ha		November (Two spray programme – reduced rate)
10	ESCOLTA @ 0.35 l/ha	ESCOLTA @ 0.35 l/ha		November (Two spray programme – full rate)
11	ESCOLTA @ 0.35 l/ha		ESCOLTA @ 0.35 l/ha	November (Two spray stretch programme – full rate)
12	-	-		December
13	ESCOLTA @ 0.35 l/ha	-		December (One spray programme – full rate)
14	ESCOLTA @ 0.175 l/ha	ESCOLTA @ 0.175 l/ha		December (Two spray programme – low rate)
15	ESCOLTA @ 0.175 l/ha	ESCOLTA @ 0.35 l/ha		December (Two spray programme – reduced rate)
16	ESCOLTA @ 0.35 l/ha	ESCOLTA @ 0.35 l/ha		December (Two spray programme – full rate)
17	ESCOLTA @ 0.35 l/ha		ESCOLTA @ 0.35 l/ha	December (Two spray stretch programme – full rate)
18	-	-		January
19	ESCOLTA @ 0.35 l/ha	-		January (One spray programme – full rate)
20	ESCOLTA @ 0.175 l/ha	ESCOLTA @ 0.175 l/ha		January (Two spray programme – low rate)
21	ESCOLTA @ 0.175 l/ha	ESCOLTA @ 0.35 l/ha		January (Two spray programme – reduced rate)
22	ESCOLTA @ 0.35 l/ha	ESCOLTA @ 0.35 l/ha		January (Two spray programme – full rate)
23	ESCOLTA @ 0.35 l/ha		ESCOLTA @ 0.35 l/ha	January (Two spray stretch programme – full rate)

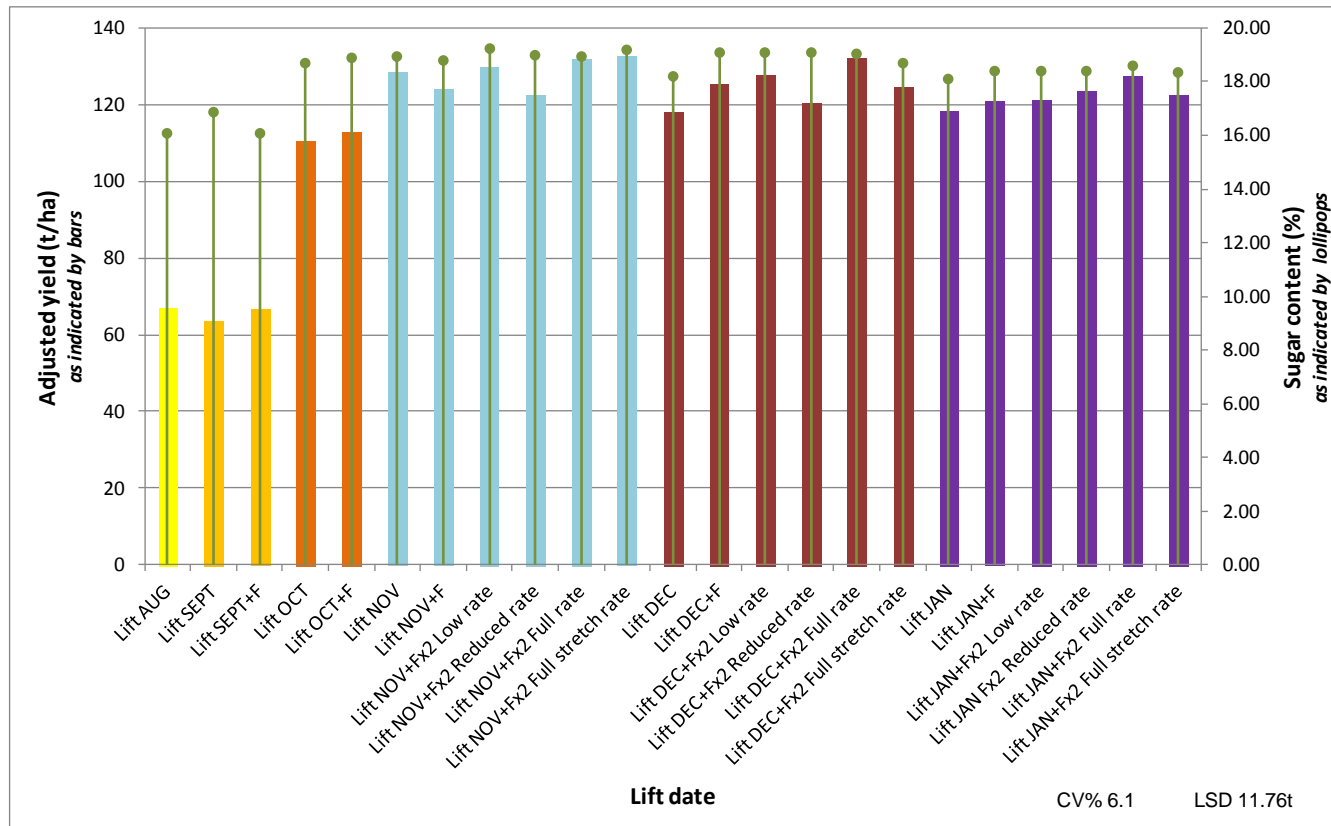
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Figure 1: The effect of a one or two spray fungicide programme on yield response and sugar content in sugar beet, Morley 2013



Fungicide: Escolta @ 0.35 l/ha or 0.175 l/ha applied in late July (1 spray programme) and late September (2 spray programme) or early October (2 spray stretch programme).

DEC - untreated;

DEC+F Full rate – 1 spray full rate fungicide programme;

DEC+Fx2 Low rate – 2 spray low rate fungicide programme;

DEC+Fx2 Reduced rate – 2 spray reduced rate fungicide programme;

DEC+Fx2 Full rate – 2 spray full rate fungicide programme;

DEC+Fx2 Full stretch rate – 2 spray full stretch rate fungicide programme.

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***Input Appendix: Field details & overall applications to crop***

**Trial name:** Periodic Lift trial

**Crop:** Sugar beet  
**Location:** Middle Track  
**Trial code:** SBT13-810  
**Soil type:** Ashley Series (Sandy loam)  
**Soil analysis:** N/A  
**Previous crop:** Winter wheat  
**Drill date:** 04/04/2013  
**Seed rate:** 1.1 units/ha  
**Harvest date:** Various  
**Variety:** Cayman  
**Drilled plot size:** 12m x 3m  
**Replicates:** 3

<b>Input type</b>	<b>Product</b>	<b>Product rate</b>	<b>Date</b>
Herbicide:	Glycel	4.0 l/ha	09/11/12
	Takron	2.1 l/ha	06/04/13
	Target SC	1.0 l/ha	28/04/13
	Betanal Maxx Pro	1.0 l/ha	28/04/13
	Safari Life WSB	280 g/ha	16/05/13
	Beta-Team	1.0 l/ha	16/05/13
	Beta-Team	1.5 l/ha	02/06/13
	Volcan Combi	1.5 l/ha	02/06/13
	Vivendi 200	1.0 l/ha	11/06/13
	Shogun	1.0 l/ha	14/06/13
Adjuvants	Companion Gold	0.5 l/ha	09/11/12
	Logic	0.5 l/ha	02/06/13
Fertiliser:	Liquid N27+S	75 kg N/ha	06/04/13
	Liquid N27+S	40 kg N/ha	20/05/13
PGR:			
Insecticide:	Groove	1.2 l/ha	14/06/13
Fungicide:	As described in treatment schedule		

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