

Trial Title: SBT21-810 Periodic harvest of sugar beet and fungicide interaction

Centre: Morley

Trial Code: SBT21-810

Variety: LG BTS 4100

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

Background: 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'. Between 2007-2018 the monthly comparisons of adjusted yields were carried out either following, or in the absence of, a summer fungicide regime (using triazole based products). For 2019-2023 monthly lift timings have been condensed into 3 timings throughout the campaign (September, November and January).

Summary: In 2021 the programme was based on either a one or two spray Escolta (cyproconazole + trifloxystrobin) programme, with an additional three-spray programme, including Mirador Xtra (azoxystrobin + cyproconazole) applied late September (Table 1). T1, T2 and T3 fungicides were applied on 23/07/21, 25/08/21 and 04/10/21 respectively.

- In 2021 cv KWS BTS 4100 was drilled on 06/04/21. Establishment for sugar beet in 2021 was generally good in all areas and the trial established well. This variety has moderate disease resistant ratings with 5.1 for rust and a low 2.6 for powdery mildew.
- All inputs were as the Morley farm crop with the exception of fungicide applications.
- In 2021 The programme was based on Escolta (cyproconazole + trifloxystrobin) applied at the full dose rate (0.35L/ha) on 23/07/21 and 25/08/21 comparing a one and two spray programme for each lift date plus an untreated. Mirador Xtra (azoxystrobin + cyproconazole) at the full dose rate (0.9L/ha) was applied on 04/10/21 as a third fungicide only for the last lift date. The lift dates were, 20/09/21, 23/11/21 and 06/01/22.
- Maximum yield (109.94t/ha) was achieved with treatment 5, the one spray programme and the November lift date. However, this yield was not significantly different from the other fungicide treatments.
- At each lift timing the untreated plots were assessed for green leaf area, *Uromyces betae* (rust), *Cercospora beticola* (leaf spot) and *Peronospora farinose* (downy mildew). These are assessed by estimating the total % of each of the total leaf area. There was no downy mildew recorded. Rust and cercospora leaf spot pressure also remained very low. There was no Virus Yellows recorded this year
- Figure 1 (below) shows the yield from each lift date for all the treatments. There is no benefit in this particular year from the fungicides within the lift dates which is due to the low disease pressure other than the untreated plots in the January lift which were significantly lower yielding. We do see the higher yield from the later two lift dates but no significant difference between the treated November and January lifts.
- There is a difference in sugar percentage (Figure 2 below) with the first lift being significantly lower than the latter two, but no difference between the second two lift dates. There was no difference in the NA or K levels. There was seasonal variation in the AN levels, but the only significant difference was the untreated plots in the January lift being higher than the all the treated plots in the same lift.

Figure 1. Yield shown (t/ha) across three lifting dates v fungicide treatments.

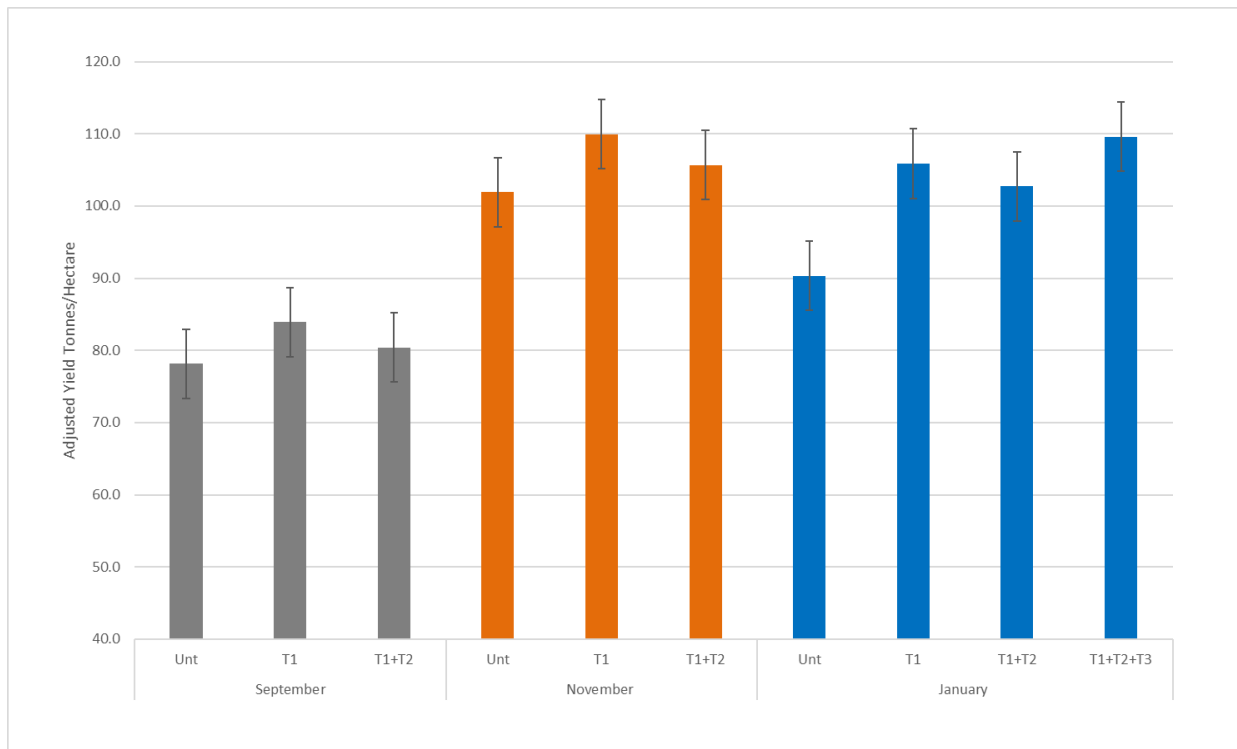


Figure 2. Percentage sugar across three lifting dates v fungicide treatments.

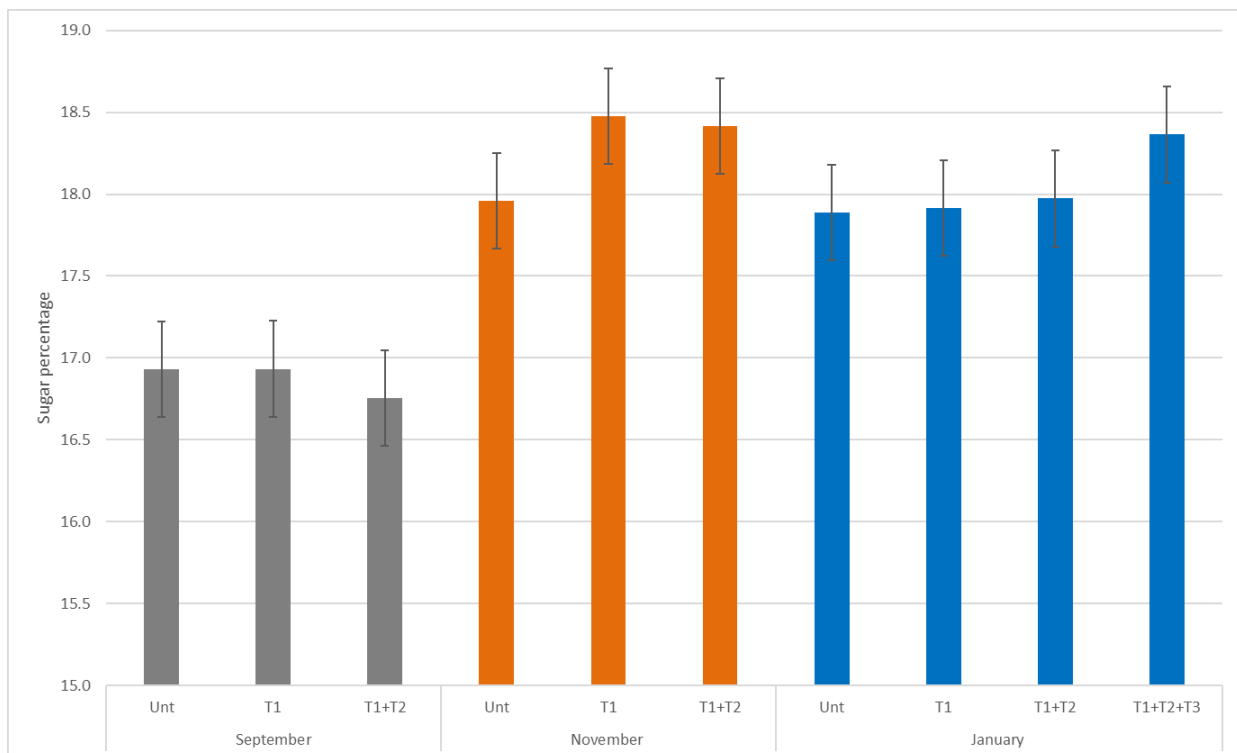


Table 1 Fungicide treatments and lift timings

TRT	Treatments T1	Treatments T2	Treatments T3	Lift dates
	Mid July	Mid August (4 week interval)	Late September (6 week interval)	<i>Third Week of (or as close to)</i>
1	-	-	-	September
2	ESCOLTA @ 0.35 l/ha	-	-	September (One spray programme)
3	ESCOLTA @ 0.35 l/ha	ESCOLTA @ 0.35 l/ha	-	September (Two spray programme)
4	-	-	-	November
5	ESCOLTA @ 0.35 l/ha	-	-	November (One spray programme)
6	ESCOLTA @ 0.35 l/ha	ESCOLTA @ 0.35 l/ha	-	November (Two spray programme)
7	-	-	-	January
8	ESCOLTA @ 0.35 l/ha	-	-	January (One spray programme)
9	ESCOLTA @ 0.35 l/ha	ESCOLTA @ 0.35 l/ha	-	January (Two spray programme)
10	ESCOLTA @ 0.35 l/ha	ESCOLTA @ 0.35 l/ha	MIRADOR XTRA @ 0.9 l/ha	January (Three spray programme)

Appendix

Field details:

Trial Code	SBT21-810 (Morley LOTs)
Trial Centre	Morley
Trial Location	Morley
Crop	Sugar Beet
Previous Crop	Winter wheat/Maximus Cover Crop
Soil Texture	Sandy loam
Soil Series	Ashley
Soil analysis:	N/A
Soil Mineral Nitrogen	N/A
Total N/ha applied	127 kg N/ha
Drill Date	06/04/2021
Variety	BTS 4100
Seed Rate	1.15 Unit/ha
Drilled Plot Dimensions	3m x 10m
Replicates	3
Harvest Date	Various as treatments