

Trial Title: SBT20-810 Periodic harvest of sugar beet and fungicide interaction

Centre: Morley

Trial Code: SBT20-810

Variety: KWS Kortessa

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 2020 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 24/07/20, 20/08/20 and 01/10/20 respectively.

- In 2020 cv KWS Kortessa was drilled on 31/03/20 which was a similar date to 2019 but over a month earlier than 2018, reflecting much drier spring conditions. This variety shows a good rust resistance score on the Recommended List of 7.9 (from limited data) which is above the mean.
- All inputs were as the Morley farm crop with the exception of fungicide applications (See Appendix for details).
- In 2020 The programme was based on Escolta (cyproconazole + trifloxystrobin) applied at the full dose rate (0.35 l/ha) on 24/07/20 and 20/08/20 comparing a one and two spray programme for each lift date plus an untreated. Mirador Xtra (azoxystrobin + cyproconazole) at the full dose (0.9 l/ha) was applied on 01/10/20 as a third fungicide only for the last lift date. The lift dates were, 22/09/20, 18/11/20 and 06/01/21.
- Maximum yield (115.5 t/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 farinosa* (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. The most prominent disease issue across the trial was virus yellows with up to 20% leaf cover in some plots.
- Figure 1 shows the yield from each lift date for all the fungicide treatments. There was no benefit in this particular year from the fungicides within the lift dates which was probably due to the low disease pressure. There was however, a higher yield from the later two lift dates but no significant difference between the November and January lifts. There was a difference in sugar percentage with the first lift being higher than the latter two and there was also a difference in the Amino N figures, with the first lift being higher but no difference between the second two lift dates. There was no difference in the sodium and potassium levels.

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

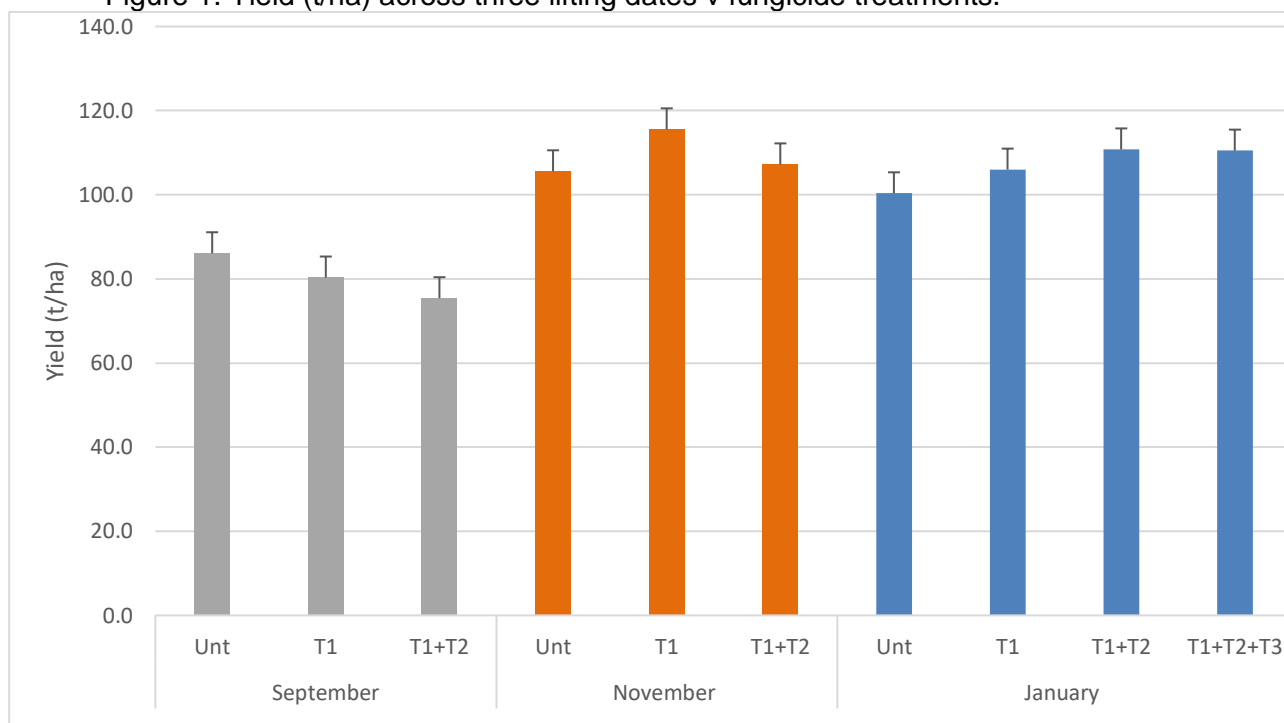


Table 1 Fungicide treatments and lift timings

TRT	Treatments T1	Treatments T2	Treatments T3	Lift dates
	Mid July	Mid August (4 week interval)	Late September (6 week interval)	Third Week of (or as close to)
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:	SBT20-810 (Morley LOTs)
Trial Centre:	Morley
Trial Location:	Morley
Crop:	Sugar beet
Previous Crop:	Winter wheat
Soil Texture:	Sandy loam
Soil Series:	Ashley
Soil analysis:	N/A
Soil Mineral Nitrogen:	N/A
Total N/ha applied:	113 kgN/ha (inc. 24 kg/ha from Cattle manure)
Drill Date:	31/03/2019
Seed Rate:	1.2 Unit/ha
Drilled Plot Dimensions	3m x 10m
Replicates	3
Harvest Date	Various as treatments