NAC Winter Barley fungicide response

Centre Morley; Caythorpe; Sutton Scotney **Trial Code** WB16-510

Objective **Variety** SY Venture

To record and monitor the yield responses to each of the component spray timings within a fungicide spray programme on barley.

NAC theme: Long term monitoring

Summary

This National Agronomy Centre (NAC) experiment forms part of an ongoing trial series recording the yield response to fungicide input and spray programme components in winter barley. The field experiments are being undertaken at Morley (Norfolk), Sutton Scotney (Hants) and Caythorpe (Lincs). In 2015/16 a mean peak yield response of c. 2.2 t/ha was observed over the three sites from the fungicide programmes. The bulk of this response was associated with the 'T1 and T2' timings; the mean responses over the three sites was 0.16 t/ha (T0), 1.91 t/ha (T1 and T2) and 0.08 t/ha (T3).

Treatments:

(kg or l/ha)

Trt	Nov	GS 25	GS 30-31	GS 33-39	GS 39-49	GS 59-61	Comment
1	-	-	-		-	-	Untreated
2	-	-	Kayak + Proline (0.8 + 0.3)		Siltra (0.4)	-	Standard programme
3	-	-	Kayak + Proline (0.8 + 0.3)		-	-	T1 alone
4	-	-	-		Siltra (0.4)	-	T2 alone
5	-	Kayak + Proline (0.4 + 0.125)	Kayak + Proline (0.4 + 0.175)	Siltra (0.2)	-	Siltra (0.2)	Stretch sequence
6	-	Kayak + Proline (0.4 + 0.125)	Kayak + Proline (0.4 + 0.175)	-	-	-	Stretch sequence T1
7	-	-	-	Siltra (0.2)	-	Siltra (0.2)	Stretch sequence T2
8	Proline (0.25)	-	Kayak + Proline (0.8 + 0.3)		Siltra (0.4)	-	Aut T0 fb T1 + T2
9	-	Proline (0.25)	Kayak + Proline (0.8 + 0.3)		Siltra (0.4)	-	Spring T0 fb T1 + T2
10	-	-	Kayak + Proline (0.8 + 0.3)		Siltra (0.4)	Siltra (0.2)	T1 + T2 + T3

Table 1: Treatment details and target growth stage.

Results

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- This experiment forms part of a longer term National Agronomy Centre (NAC) funded trial series running at Morley (Norfolk), Sutton Scotney (Hants) and Caythorpe (Lincs) over several seasons. This records a snapshot of the yield response to fungicide input and spray programme components in winter barley (Table 1).

- With regard to the following data interpretation, the 'T1 + T2' response is based on comparison of treatments 2 and 1; the 'T3' response is based on comparison of treatments 2 and 10; and the T0 response is based on comparison of treatments 2 and 9 (for a spring applied T0).

- Assessment across sites:
    - The mean data across all three sites for yield and specific weight is presented in Figures 1 and 2 respectively; site differences were statistically significant for both parameters.
    - A peak mean yield response of 2.15 t/ha was observed over the three sites from the fungicide programmes (with a gross value of £227/ha based on grain value of £105 per tonne). Typically the higher yield and specific weights were associated with higher input programmes.
    - Component yield responses of 0.16 t/ha (T0), 1.91 t/ha (T1 and T2) and 0.08 t/ha (T3) were apparent in 2016. With a barley grain value of £105 per tonne, this would suggest gross responses of £17/ha (T0), £201/ha (T1 and T2) and £8/ha (T3).

- At Caythorpe (Lincs):
    - The main disease present was *Rhynchosporium commune* with levels around 28% recorded on leaf 1 in untreated plots (treatment 1) on the 13/06/16. In treatment 2 (standard programme), on the same assessment date, rhynchosporium levels on leaf 1 were around 10%.
    - Significant differences in yield (Figure 3) and specific weight (Figure 4) were apparent in this study. Yield responses of 0.29 t/ha (T0), 2.14 t/ha (T1 and T2) and 0.02 t/ha (T3) were apparent in 2016 at Caythorpe.

- At Morley (Norfolk):
    - The main disease present was net blotch with levels around 20% recorded on leaf 2 in untreated plots (treatment 1) on the 13/06/16. In treatment 2 (standard programme), on the same assessment date, net blotch levels on leaf 2 were around 0.5%.
    - Significant differences in yield (Figure 3) and specific weight (Figure 4) were apparent in this study. Yield responses of 0.0 t/ha (T0), 1.98 t/ha (T1 and T2) and 0.10 t/ha (T3) were apparent in 2016 at Morley. The T0 treatment resulted in slightly lower yield relative to the standard programme (6.95 t/ha and 7.11 t/ha respectively).

- At Sutton Scotney (Hants):
    - The main disease present was rhynchosporium, with levels of 4.7% recorded on leaf 1 in untreated plots (treatment 1) on the 31/05/16; lower levels of brown rust were also apparent (1.7%). In treatment 2 (standard

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programme), on the same assessment date, levels of rhynchosporium on leaf 1 were around 0.7% and brown rust was absent.

- Significant differences in yield (Figure 3) and specific weight (Figure 4) were apparent in this study. Yield responses of 0.20 t/ha (T0), 1.61 t/ha (T1 and T2) and 0.13 t/ha (T3) were apparent in 2016 at Sutton Scotney.

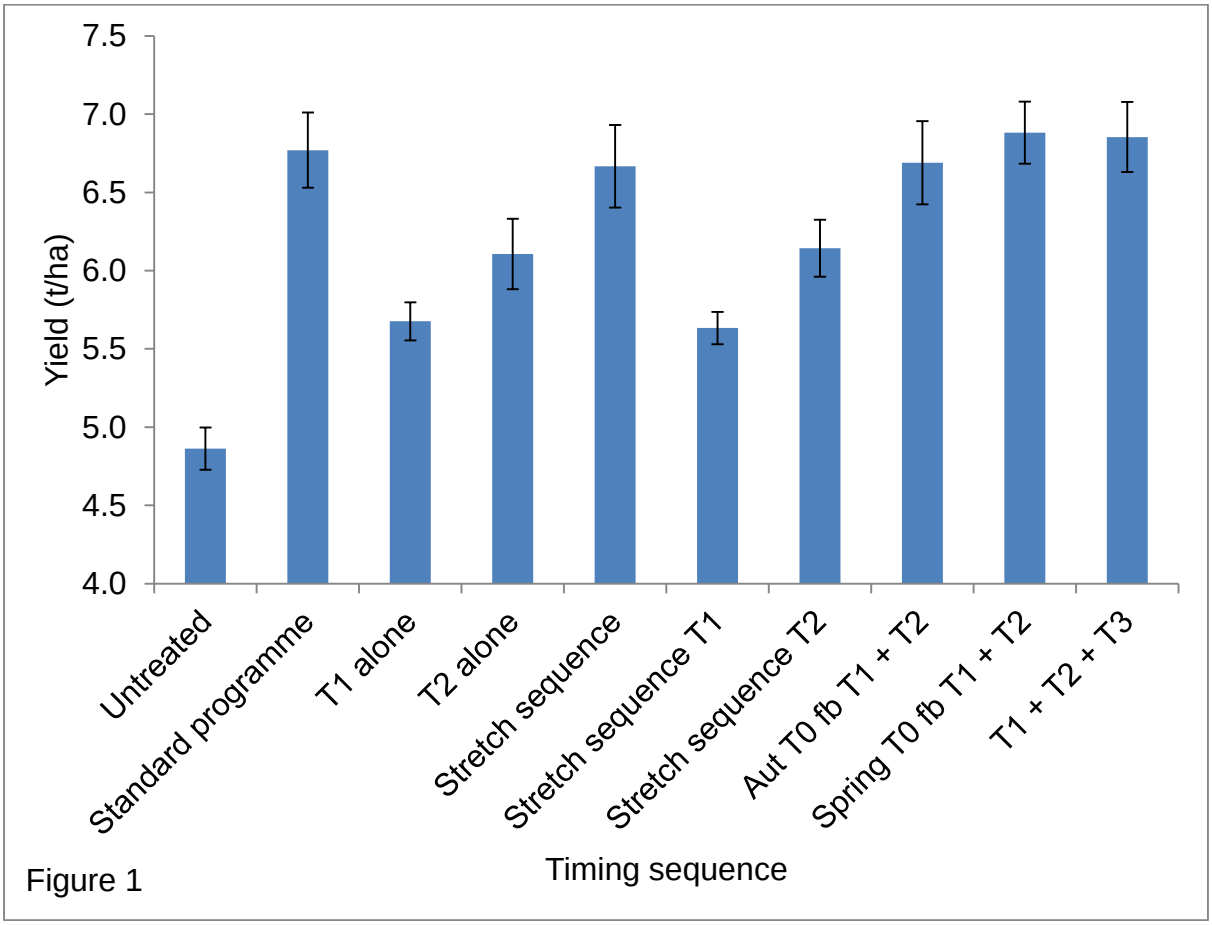

Figure 1: Mean end season yield data (t/ha) across the 3 sites (Morley, Sutton Scotney and Caythorpe).

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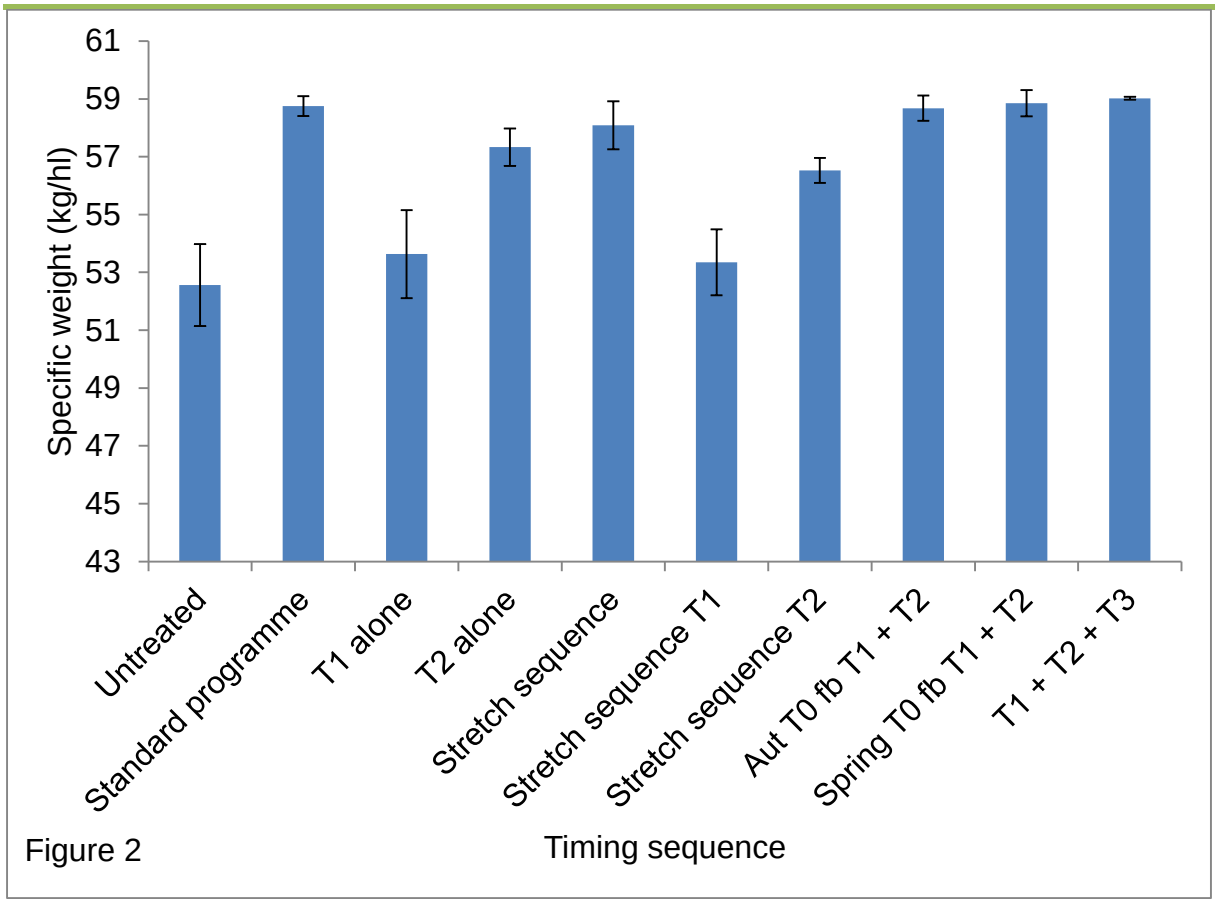

Figure 2

Figure 2: Mean end season grain specific weight across the 3 sites (Morley, Sutton Scotney and Caythorpe).

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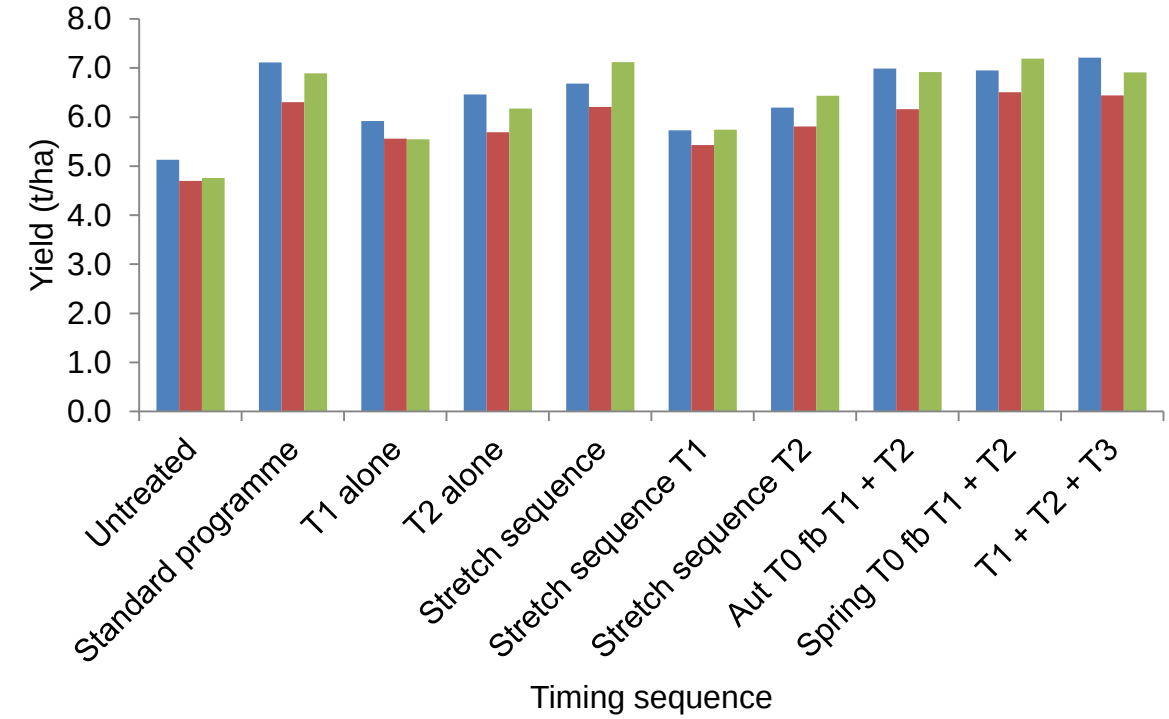

Figure 3

Figure 3: Mean end season yield data (t/ha) for the individual sites (Morley, Sutton Scotney and Caythorpe).

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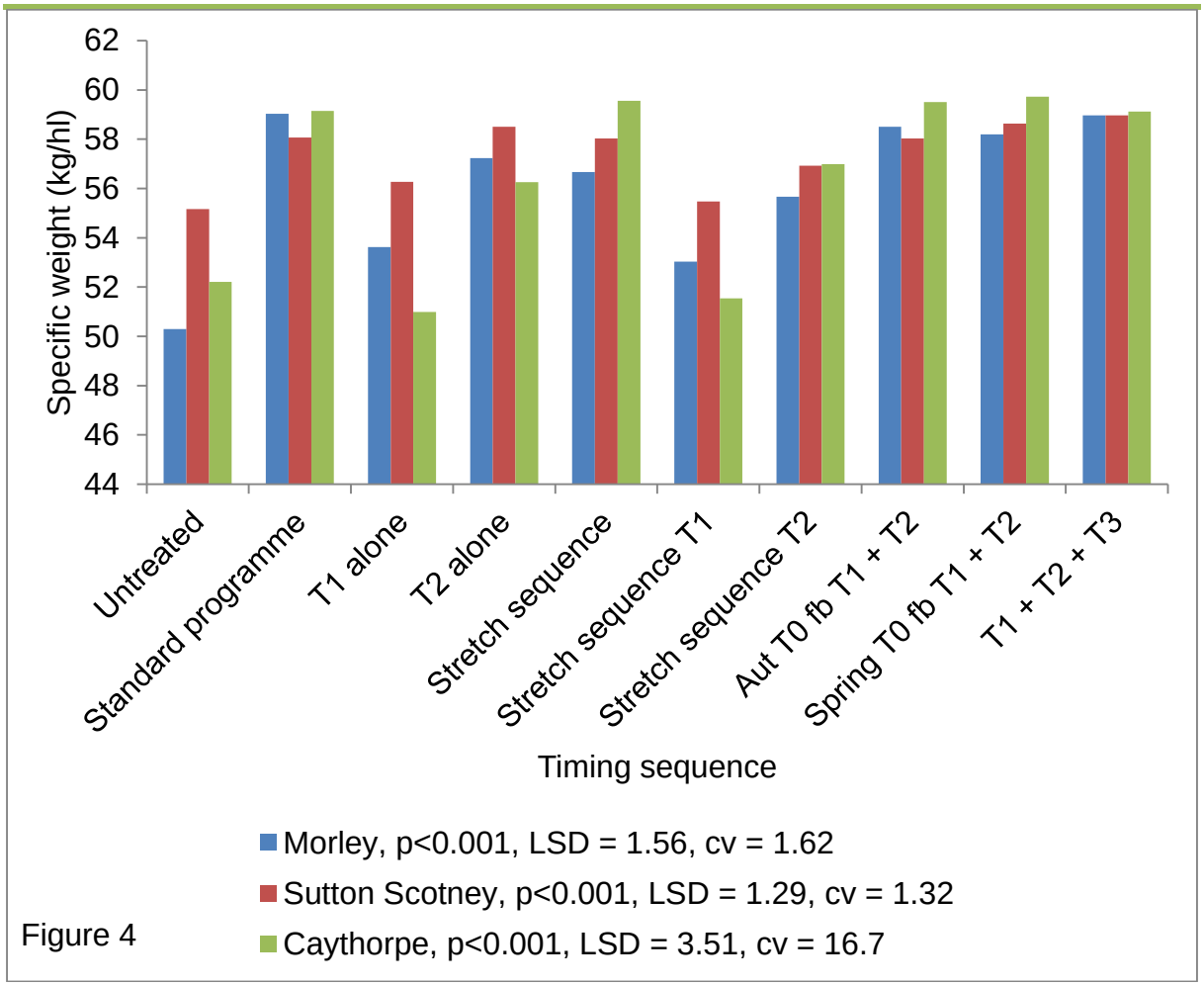

Figure 4

Figure 4: Mean end season grain specific weight for the individual sites (Morley, Sutton Scotney and Caythorpe).

Field details & overall applications to crop

Crop:	Winter barley
Trial ID:	WB16-510
Location:	**Morley**
Soil type:	Ashley series, Sandy Loam
Soil analysis:	pH 8.1 P-0, K-1, Mg-0 Available N at 30cm 18.8 kgN/ha
Previous crop:	Winter Wheat
Drill date:	29/09/2015
Harvest date:	18/07/2016
Drilled plot size: m²	20m²
Harvested plot size: m²	19m²
Replicates:	3

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Input type	Product	Product rate (l, ml, kg or g/ha)	Date
Herbicide	Surrender	2.0 l/ha	18/09/2015
	Anthem	2.0 l/ha	10/10/2015
	Liberator	0.6 l/ha	10/10/2015
	Adigor	1.0 l/ha	19/04/2016
	Axial	0.42 l/ha	19/04/2016
Fertiliser	N	70.4 kgN/ha	19/03/2016
	SO_3	13.0 kg SO_3/ha	19/03/2016
	N	70.4 kgN/ha	08/04/2016
	SO_3	13.0 kg SO_3/ha	08/04/2016
	MgO, S	960 g MgO/ha, 720 gS/ha	12/06/2016
PGR	3C Chlormequat 750	2.0 l/ha	19/04/2015
Adjuvant	Companion Gold	0.5 l/ha	18/09/2015
	Adigor	1.0 l/ha	19/04/2016
	Groove	1.0 l/ha	19/04/2016

Field details & overall applications to crop

Crop:	Winter Wheat
Trial ID:	WB16-510
Location:	**Sutton Scotney**
Soil type:	Andover Series 1, silty clay loam
Soil analysis:	pH: 7.9 P: 21mg/l K: 178mg/l Mg: 35mg/l Available N: 17.4 kgN/ha
Previous crop:	Winter Oilseed Rape
Drill date:	29/09/2015
Harvest date:	19/07/2016
Drilled plot size: m²	20m²
Harvested plot size: m²	19m²
Replicates:	3

Input type	Product	Product rate (l, ml, kg or g/ha)	Date
Herbicide	Liberator	0.6 l/ha	13/10/15
	Spitfire	1 l/ha	03/05/16
Insecticide	Hallmark	0.05 l/ha	26/11/15
Fertiliser	Double Top	50 kgN/ha + 56 kgSO_3/ha	07/03/16
	Ammonium Nitrate	100 kgN/ha	03/05/16

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Members' Results

02 November 2016

Field details & overall applications to crop

Crop:	Winter Wheat
Trial ID:	WB16-510
Location: Name	**Caythorpe**
Soil type:	Elmton 1
Soil analysis:	P-32 ppm, K-200 ppm, Mg-44 ppm, pH-7.8, OM-2.8%
Previous crop:	Spring Barley
Drill date:	30/09/15
Harvest date:	18/07/16
Drilled plot size: m²	20m²
Harvested plot size: m²	19m²
Replicates:	3

Input type	Product	Product rate (l, ml, kg or g/ha)	Date
Herbicide	Crystal	3.5 l/ha	02/10/15
	Liberator	0.3 l/ha	03/11/15
	Thor	25 g/ha	13/04/16
Fertiliser	N, SO3	61 kgN/ha, 68kgSO_3/ha	23/02/16
	Ammonium nitrate	103.5 kgN/ha	11/04/16
	Ammonium nitrate	20 kgN/ha	09/05/16
Insecticide	Hallmark Zeon	50 ml/ha	03/11/15
PGR	CCC	1.5 l/ha	13/04/16
	Moddus	0.1 l/ha	13/04/16
	Terpal	1.0 l/ha	03/05/16

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