# Trial 2. Influence of additional Potassium on grain yield (Kerang)

## **Protocol Objective:**



To assess the influence of additional Potassium fertiliser (Potassium Sulphate) used in crop on grain yield, tissue and grain concentration on soil with adequate K indices.

Kerrang, Victoria	
Sown: 29 October 2019	Hybrid: Pioneer Hybrid 1756
Harvested: 22 April 2020	FAR Code:
Soil Type: Neutral self-mulching grey clay	Irrigation Type: Border check irrigation
Previous crop: Grass dominant pasture (3 years)	

# Key Messages:

- The Kerang site had a Potassium (K) soil level (0-10cm) that exceeded 600 ppm (Colwell K) at sowing and showed no yield response to additional K applied in crop.
- As was the case at Yenda the application of K as potassium sulphate at V4 or V8 saw no change in leaf tissue levels when compared to the control (no added K) assessed at V10 or tasselling.
- Harvest results showed no response to added potassium, indicating that the soil was able to supply the required potassium to the crop.
- There was no evidence of luxury uptake of K in tissue and grain samples (assessed in untreated, 40 (tissue only) and 80 kg /ha K).

Treatment K Rate (kg K/ha) applied V6	Yield (t/ha)	Test weight kg/hL	
0	16.27 +/- 0.842	82.79 +/- 0.125	
20	16.16 +/- 0.842	82.53 +/- 0.121	
40	16.49 +/- 0.842	82.75 +/- 0.125	
40 + 40 (applied V6 & V10)	14.57 +/- 0.845	82.99 +/- 0.125	
80	16.02 +/- 0.846	82.70 +/- 0.128	
Mean	15.9	82.8	
P val	0.485	0.287	
LSD	2.279	0.388	
CV	10.542	0.387	

**Table 1.** SAGI analysis for grain yield (t/ha) and test weight (kg/hl) with variable K input at V6 and V6

 & V10.

*Yields taken from hand harvest quadrats as opposed to machine harvest based 2x 2m row opposite one another. Hand harvested quadrats tend to give higher yields than machine yields* 

There was no significant difference in grain yield as a result of any potassium application. There was some variability in the yield data due to variable plant populations in the plots.

Table 2. Influence of potassium	n application of leaf and grain K content (%).
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		0	( )	
Treatment (kg K/ha)		Leaf %K	Grain %K	
	V10	VT		
Nil (Control)	2.4	1.4	0.48	
40	2.5	1.5		
80	2.1	1.4	0.47	
Nil (Control) 40 80	V10 2.4 2.5 2.1	VT 1.4 1.5 1.4	0.48	

Potassium application had no effect on potassium concentration in either the leaf or grain.

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# Protocol 7. Disease management for irrigated crops



## Trial 1. Products, rates and timing interaction trial

#### **Protocol Objective:**

To examine the influence of fungicide timing and rate for the prevention of disease and green leaf retention in grain maize

## Hopefield, NSW

Sown: 2 December 2019 Harvested: 27 May 2020 Soil Type: Red loam over clay Previous crop: Wheaten Hay Hybrid: Pioneer Hybrid 1756 FAR code: FAR IRR M19-04 Irrigation Type: Overhead pivot

#### Key Messages:

- There were no significant yield effects of fungicide application at either V8 (8 leaf) or VT.
- No disease was observed in the trial and there was little evidence to suggest that fungicides improved green leaf retention when assessed at V14, V15 and V16.

#### **Grain Yields**

Treatment Yield		Test Weight			
Timing	Product	Predicted	Standard	Predicted	Standard
		value	error	value	error
V8	Propiconazole	18.22	+/- 0.67	76.31	+/- 0.59
V8	Prothioconazole	19.29	+/- 0.68	77.8	+/- 0.59
V8	Prothio+Pyraclostrobin	19.11	+/- 0.67	76.74	+/- 0.59
V8	Pyraclostrobin	18.55	+/- 0.67	77.5	+/- 0.59
V8	UTC	18.6	+/- 0.68	76.1	+/- 0.59
VT	Propiconazole	18.33	+/- 0.67	76.84	+/- 0.58
VT	Prothioconazole	18.41	+/- 0.66	77.71	+/- 0.59
VT	Prothio+Pyraclostrobin	19.11	+/- 0.68	77.36	+/- 0.59
VT	Pyraclostrobin	18.95	+/- 0.67	76.62	+/- 0.59
VT	UTC	19.71	+/- 0.68	77.23	+/- 0.59
Mean	Mean 18.8 81		18.8		31
Timing P	val	0.656		0.851	
Product I	P val	0.698		0.829	
Interaction	action P val 0.717 0.928		0.717		928
LSD		1	.99	1.0	)33
CV		7	<b>'</b> .4	0.8	364

Table 1. SAGI analysis for grain yield (t/ha) and test weight (kg/hl).

*Yields taken from hand harvest quadrats as opposed to machine harvest based 2x 2m row opposite one another.* 

Hand harvested quadrats tend to give higher yields than machine yields

\* The use of fungicides in this trial does not constitute a recommendation and have been used for experimental purposes

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# Disease and Green Leaf Retention

No disease was recorded in the trial. There were few significant differences recorded in green leaf retention as a result of fungicide application. The use of the both DMI triazoles and QoI (strobilurins) was ineffective when assessed between the middle of February and the end of March (Table 2 - 4).

	Green Leaf Retention		
	V14	V15	V16
Treatment mL/ha	% GLR	% GLR	% GLR
Timing - V8			
Untreated	96.2 -	97.2 -	97.9 -
DMI – Prothioconazole (Proline) (100g/ha)	95.4 -	96.9 -	97.9 -
DMI – Propiconazole (Tilt) (125g/ha)	95.9 -	97.1 -	98.3 -
Qol – Pyraclostrobin (Cabrio) (200g/ha)	95.8 -	97.3 -	98.5 -
DMI/QoI – Prothioconazole + Pyraclostrobin	96.2 -	97.3 -	98.3 -
Timing – VT			
Untreated	96.1 -	97.2 -	98.2 -
DMI – Prothioconazole (Proline) (100g/ha)	95.9 -	97.4 -	98.2 -
DMI – Propiconazole (Tilt) (125g/ha)	96.4 -	97.0 -	98.4 -
Qol – Pyraclostrobin (Cabrio) (200g/ha)	96.3 -	97.1 -	98.1 -
DMI/QoI – Prothioconazole + Pyraclostrobin	95.6 -	97.2 -	98.0 -
Mean	95.97	97.14	98.17
LSD (Fung x Timing)	NS	NS	NS
P Val (Fung x Timing)	0.538	0.771	0.502

Table 2. Green Leaf Retention (% GLR) assessed on 17 February 2020 at R3.

Table 3. Green Leaf Retention (% GLR) assessed on 9 March 2020 at R4.

	Green Leaf Retention		
	V14	V15	V16
Treatment mL/ha	% GLR	% GLR	% GLR
Timing - V8			
Untreated	96.3 -	97.5 ab	98.2 -
DMI – Prothioconazole (Proline) (100g/ha)	96.3 -	97.3 abc	98.1 -
DMI – Propiconazole (Tilt) (125g/ha)	96.6 -	97.4 abc	97.9 -
QoI – Pyraclostrobin (Cabrio) (200g/ha)	96.1 -	97.2 abc	98.0 -
DMI/QoI – Prothioconazole + Pyraclostrobin	95.8 -	97.0 bc	97.9 -
Timing – VT			
Untreated	96.0 -	96.9 c	97.6 -
DMI – Prothioconazole (Proline) (100g/ha)	96.7 -	97.7 a	98.2 -
DMI – Propiconazole (Tilt) (125g/ha)	96.5 -	97.4 abc	98.4 -
QoI – Pyraclostrobin (Cabrio) (200g/ha)	96.5 -	97.5 ab	98.1 -
DMI/QoI – Prothioconazole + Pyraclostrobin	96.5 -	97.4 ab	98.3 -
Mean	96.3	97.3	98.1
LSD (Fung x Timing)	NS	0.50	NS
P Val (Fung x Timing)	0.424	0.029	0.075

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	Green Leaf Retention		
	V14	V15	V16
Treatment mL/ha	% GLR	% GLR	% GLR
Timing - V8			
Untreated	88.5 -	93.6 -	93.4 -
DMI – Prothioconazole (Proline) (100g/ha)	88.0 -	94.0 -	92.3 -
DMI – Propiconazole (Tilt) (125g/ha)	88.9 -	93.5 -	93.1 -
Qol – Pyraclostrobin (Cabrio) (200g/ha)	88.4 -	93.5 -	92.5 -
DMI/QoI – Prothioconazole + Pyraclostrobin	87.0 -	94.1 -	93.4 -
Timing – V14			
Untreated	88.6 -	93.9 -	92.8 -
DMI – Prothioconazole (Proline) (100g/ha)	86.7 -	94.0 -	93.7 -
DMI – Propiconazole (Tilt) (125g/ha)	90.0 -	94.2 -	93.6 -
Qol – Pyraclostrobin (Cabrio) (200g/ha)	88.6 -	94.0 -	92.5 -
DMI/QoI – Prothioconazole + Pyraclostrobin	86.6 -	94.5 -	92.8 -
Mean	88.1	93.9	93.0
LSD (Fung x Timing)	NS	NS	NS
P Val (Fung x Timing)	0.771	0.873	0.308

Table 4. Green Leaf Retention (% GLR) assessed on 30 March 2020 at R5/6.

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