

Cereals

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Elliston and Wharminda district wheat variety trials in 2016

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RESEARCH

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Location: Elliston
Nigel & Debbie May

Rainfall
Av. Annual: 427 mm
Av. GSR: 353 mm
2016 Total: 546 mm
2016 GSR: 421 mm

Yield
Potential: 6.68 t/ha (W)
Actual: Trial Av. 5.23 t/ha (W)

Paddock History
2015: Grass free pasture
2014: Grass free pasture
2013: Wheat

Soil Type
Grey light sandy clay loam

Plot Size
1.5 m x 10 m x 3 reps

Yield Limiting Factors
Disease - possibly eye spot

Location: Wharminda - Tim Ottens
Wharminda Ag Bureau

Rainfall
Av. Annual: 338 mm
Av. GSR: 253 mm
2016 Total: 460 mm
2016 GSR: 339 mm

Yield
Potential: 5.05 t/ha (W)
Actual: Trial Av. 2.94 t/ha (W)

Paddock History
2015: Legume pasture
2014: Barley
2013: Wheat

Soil Type
Sand

Plot Size
1.5 m x 10 m x 3 reps

Yield Limiting Factors
Frost

Key messages

- Elliston wheat varieties performed well above average in an exceptional year with a long, cool finish. A wide range of varieties yielded well. These included; Corack, Wyalkatchem, Cosmick, Shield, Yitpi, Mace, Emu Rock and Cutlass.
- At Elliston, Scepter did not perform as well as expected. A late developmental issue may be the cause.
- Later maturing Cutlass, Yitpi and Trojan as well as mid-maturing Scepter were the top yielding varieties at Wharminda in 2016.
- The Wharminda trial experienced a number of consecutive days of frost from mid-late September which may have affected grain yield and quality of earlier flowering varieties.

Why do these trials?

These variety trials were undertaken to fill the gaps in regions where National Variety Trials were not undertaken. They continue to be highlighted as a subject of relative importance as they allow local growers to identify, evaluate and ground proof any issues or successes of variety performance at a local level.

Elliston district wheat trial How was it done?

Sown on 12 May 2016, the trial contained fifteen wheat varieties, replicated three times. Prior to sowing, 2.5 L/ha Boxer Gold, 1.6 L/ha Avadex and 2 L/ha Roundup were applied. The trial was sown with DAP fertiliser (18:20:0:0) @ 100 kg/ha treated with flutriafol 250 fungicide @ 400 ml/ha.

1.4 L/ha of Bromicide MA and 0.15 L/ha Lontrel was applied for broadleaved weed control and 3 L/ha of a chelated blend of zinc, copper and manganese (Smart Trace Triple) to remedy potential trace element deficiencies. These were done on 28 June when soil available water was known to be high and the plants were in no way under stress. Fastac was sprayed @ 200 ml/ha to combat red-legged earth mite, with another round of Smart Trace Triple @ 3 L/ha on 19 July and later Prosaro @ 300 ml/ha on 22 September for foliar disease.

Table 1 Elliston district wheat trial results in 2016

Variety	Yield (t/ha)	Protein (%)	Test weight (kg/hL)	Screenings (%)
Corack	5.87	10.6	81.7	3.0
Wyalkatchem	5.80	10.7	83.2	1.5
Cosmick	5.71	10.6	83.2	6.0
Shield	5.53	10.9	82.0	3.7
Yitpi	5.49	11.6	80.2	4.6
Mace	5.45	10.6	81.6	2.5
Emu Rock	5.43	11.5	82.2	5.9
Cutlass	5.42	11.2	80.6	2.7
Scout	5.40	10.8	84.3	2.6
Trojan	5.22	10.6	83.3	2.3
Grenade CL Plus	4.95	11.2	82.0	2.4
Scepter	4.87	10.0	82.8	3.6
Kord CL Plus	4.68	12.1	81.8	3.2
Axe	4.37	12.2	80.7	1.3
Hatchet CL Plus	4.32	12.7	82.2	1.9
Site mean	5.23	11.2	82.1	3.2
LSD ($P=0.05$)	0.46			
CV (%)	5.3			

Table 2 Elliston district wheat yields as a percentage of Yitpi (2012-2016)

Variety	2016	2015	2014	2013	2012
Axe	80	109	95	87	92
Corack	107	82	108	93	94
Justica	NA	NA	108	89	87
Cobra	NA	111	109	NA	NA
Trojan	95	81	108	NA	NA
Grenade ^{CL Plus}	90	111	106	NA	NA
Emu Rock	99	99	98	NA	NA
Scepter	89	NA	NA	NA	NA
Cutlass	99	NA	NA	NA	NA
Shield	101	115	107	NA	NA
Hatchet ^{CL Plus}	79	91	NA	NA	NA
Phantom	NA	113	117	NA	NA
Cosmick	104	109	NA	NA	NA
Kord ^{CL Plus}	85	132	102	104	75
Mace	99	197	117	121	99
Scout	98	101	104	92	106
Wyalkatchem	106	111	112	113	97
Yitpi	100	100	100	100	100
Yitpi (t/ha)	5.49	0.47	2.87	1.41	3.08

What happened?

Overall, the site saw well above average yields (Table 1) with Corack, Wyalkatchem, Cosmick, Shield, Yitpi, Mace, Emu Rock and Cutlass all yielding well. Clearfield varieties (Hatchet, Kord and Grenade) yielded poorly compared to other varieties trialed. The yield of Scepter was 10% (0.58 t/ha) lower than Mace. Straw samples indicated the presence of eye spot on the Scepter stubble, but further investigation is required to identify the cause of the poor yield of Scepter at this site. Axe was the lowest yielding variety (4.37 t/ha).

Protein levels across the site were reasonable with all varieties except Scepter reaching the APW requirement of 10.5% while some varieties achieved over 11.5% (H2). Those that yielded higher generally achieved lower protein content, whilst lower yields resulted in higher protein levels.

Test weights were all well above the minimum requirement of 76 kg/hL.

Table 2 shows grain yield as a percentage average of Yitpi for the years 2012 to 2016. The standout varieties, (Phantom, Cobra, Wyalkatchem, Mace, Cosmick, Shield and Grenade CL), all yielded higher than Yitpi on average for this period. However not all varieties have data available over the full period. Data for Cosmick has been derived from the past two years only.

Of the more commonly grown varieties, Wyalkatchem and Mace have both shown to perform well. Differences can be seen in average to lower yielding years where Mace yielded higher, and adversely in 2016 where Wyalkatchem proved to have higher yield potential.

Grenade CL Plus has shown to be a relatively consistent performer and only showed a

significant yield limit during 2016, an exceptional year. Kord CL Plus yielded marginally lower.

Wharminda district wheat trial How was it done?

Sown on 10 May 2016, fifteen wheat varieties were replicated three times in a randomised plot design. Pre-sowing, 2.5 L/ha Boxer-Gold, 1.6 L/ha Avadex, 3 L/ha Roundup and 0.1 L/ha oxyflourfen @ 240 g/L were applied to the trial. Upon sowing, 80 kg/ha of DAP was applied, having been treated with flutriafol @ 400 ml/ha.

On 11 June, around GS 30, urea was applied @ 50 kg/ha. On 28 June the trial received a broadleaf spray in the form of 1.4 L/ha Bromicide MA as well as 0.15 L/ha Lontrel alongside 3 L/ha of Smart Trace Triple. Alpha-cypermethrin at 0.15 ml/ha was applied to control cutworm.

Table 3 Wharminda district wheat trial results in 2016

Variety	Yield (t/ha)	*Maturity	Protein (%)	Test weight (kg/hL)	Screenings (%)
Cutlass	3.77	ML	11.3	80.9	4.0
Yitpi	3.72	ML	11.5	81.1	5.4
Trojan	3.64	ML	11.3	81.6	4.7
Scepter	3.40	EM	11.5	79.6	2.8
Mace	3.14	EM	12.1	79.3	2.7
Shield	3.11	EM	12.5	76.0	4.6
Corack	3.03	EM	11.5	77.3	3.5
Scout	3.02	M	12.4	80.1	3.7
Wyalkatchem	3.02	EM	.3	77.9	3.1
Cosmick	2.85	EM	12.7	79.1	7.9
Kord ^{CL Plus}	2.80	EM	12.3	78.0	4.0
Grenade ^{CL Plus}	2.78	EM	12.4	79.3	3.2
Emu Rock	2.26	E	12.5	71.2	8.3
Axe	1.99	E	12.7	71.6	5.3
Hatchet ^{CL Plus}	1.57	VE	13.4	72.4	9.5
Site mean	2.94		12.16	77.7	4.8
LSD (P=0.05)	0.52				
CV (%)	10.7				

*VE = Very Early, E= Early, EM = Early to Mid, M = Mid, ML= Mid to Late

Table 4 Wharminda district wheat yields as a percentage of Yitpi (2014-2016)

Variety	2016	2015	2014
Corack	81	107	136
Mace	84	108	129
Shield	83	96	123
Wyalkatchem	81	109	122
Cobra	NA	107	120
Trojan	98	101	118
Justica ^{CL Plus}	NA	NA	115
Scout	81	100	115
Cutlass	101	NA	NA
Scepter	91	NA	NA
Cobra	NA	107	120
Cosmick	77	105	NA
Hatchet ^{CL Plus}	42	84	NA
Axe	53	87	114
Emu Rock	61	98	114
Grenade ^{CL Plus}	75	91	113
Phantom	NA	97	113
Kord CL Plus	75	85	109
Yitpi	100	100	100
Yitpi yield (t/ha)	3.72	3.56	2.87

What happened?

Later maturing Cutlass, Yitpi and Trojan were the top yielding varieties (Table 3), with mid maturing Scepter also performing well. Hatchet CL Plus, Axe and Emu Rock yielded the lowest. Test weights were well below the required 76 kg/hL for these varieties, and screenings were above 5%. Yitpi and Cosmick also exceeded the 5% limit for screenings. As a point of interest, Scepter yielded 8% higher than Mace.

This trial experienced a number of frost events from mid-late September. This included six days between 6-16 September and eight consecutive days between 21-28 September. This may have lined up with the flowering window of earlier maturing varieties and possibly limited yield in these varieties.

Table 4 displays the yield performances of commonly grown wheat varieties relative to Yitpi

over the past 3 years. Shown are 3 highly variable years with no consistency between seasons or varieties year to year. Of the varieties with all three years of data, Corack, Mace, Shield, Wyalkatchem and Trojan appear to yield consistently well across the seasons. Grenade CL Plus and Kord CL Plus appear to yield 10-15% lower than conventional varieties over the period. The season of 2016 saw dramatic yield penalties for early maturing varieties.

What does this mean?

Variety selection should be made by evaluating yield performance over more than one year. The disease resistance package (either root or leaf), sprouting tolerance, maturity, height, herbicide tolerance (Clearfield) and grain quality are all important characteristics that should be considered when choosing a variety to fit your farming system.

For more extensive options and details on any variety visit the National Variety Trials (NVT) website at www.nvtonline.com.au, or refer to the articles in the EPFS Summary 2016 NVT Cereal Yield Performance Tables and the Cereal Variety Disease Guide.

Acknowledgements

Thanks to Nigel and Debbie May for the use of their land at Elliston, and Tim Ottens for the use of his land at Wharminda.