Section Editor:
Amanda Cook
SARDI, Minnipa Agricultural Centre

Elliston and Wharminda district wheat trials 2017

Jacob Giles, Andrew Ware and Ashley Flint
SARDI, Port Lincoln

RESEARCH

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Location
Elliston
Nigel & Debbie May
Rainfall
Av. Annual: 427 mm
Av. GSR: 353 mm
2017 Total: 431 mm
2017 GSR: 280 mm
Yield
Potential: 6.7 t/ha
2017 trial Av. 2.6 t/ha
Paddock History
2016: Medic pasture
2015: Wheat
2014: Canola
Soil Type
Dark silt sand
Plot Size
1.8 m x 10 m x 3 reps
Yield Limiting Factors
Late sowing date

Location
Wharminda - Tim Ottens
Wharminda Ag Bureau
Rainfall
Av. Annual: 338 mm
Av. GSR: 253 mm
2017 Total: 344 mm
2017 GSR: 176 mm
Yield
Potential: 1.6 t/ha
2017 trial Av. 1.1 t/ha
Paddock History
2016: Medic pasture
Soil Type
Sand
Plot Size
1.8 m x 10 m x 3 reps
Yield Limiting Factors
Late sowing date, low GSR

Key messages

- **The season of 2017 started late and dry, having a strong influence on which varieties yielded well. A long soft finished allowed crops to get over the line.**
- **Corack, Mace and Scepter were consistent in high yields across both Elliston and Wharminda.**
- **Selecting mid-early varieties is important when sowing late as both yield and quality are affected.**

Introduction

These variety trials were undertaken to fill the gaps in regions where National Variety Trials were not undertaken and therefore did not provide information for the season. They continue to be highlighted as a subject of relative importance as they allow local growers to identify and evaluate any issues or successes from the season. The growing season of 2017 was widely late and dry. Despite this the trials yielded reasonably well and displayed helpful varietal differences. Both trials contained fifteen varieties each replicated three times.

Elliston

Crop agronomy

Roundup (2 L/ha), Boxer gold (1.5 L/ha), Treflan (1.5 L/ha), Avadex (1.6 L/ha) and Chlorpyrifos (500) (0.5 L/ha) were applied immediately prior to sowing on 21 June. DAP treated with Impact (0.4 L/ha) was applied at 80 kg/ha. Seed was sown slightly deeper than usual onto moisture resulting from May rainfall events. Rain followed shortly after and the crop emerged on 1 July.

On 14 August at GS23 Velocity (0.5 L/ha), Bromicide (0.5 L/ha), Lontrel 300 (0.15 L/ha), Le Mat (0.085 L/ha) and Smartrace Triple (3 L/ha) were sprayed to combat broadleaved weeds, RLEM and possible micronutrient deficiencies.

What happened?

Once the season broke, rainfall was steady and provided enough moisture for good growth and a short but steady finish. Spring temperatures were kind with no days over 30°C in September and 33, 35 and 30°C on the 16, 17 and 24 October allowing a steady finish for the late sown crop. This cool finish also resulted in low screenings and reasonable test weights (Table 2).

Corack, Scepter and Cosmick yielded the highest at Elliston in 2017. Clearfield varieties yielded considerably well but still had a yield penalty. The longer season varieties that yielded well in 2016 saw the lowest yields in 2017 due to late sowing date and insufficient season length to mature to their full potential.

Table 1. Elliston rainfall (mm) for 2017, Bureau of Meteorology, 2018.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
97.2	9.8	6.6	2.6	16.2	13.0	102.0	88.8	36.4	24.0	20.0	34.2
Growing season rainfall (May-October*)						280					
Annual rainfall						431					

**April not included in GSR due to minimal rainfall and late time of sowing*

Table 2. Elliston district wheat trial grain yield (t/ha) and quality results, 2017.

Variety	Yield (t/ha)	Test weight (kg/hL)	Screenings (%)	Protein (%)
Corack	2.97	81.6	0.8	11.4
Scepter	2.89	81.8	1.3	11.4
Cosmick	2.78	80.4	2.6	12.1
Axe	2.70	81.5	0.7	12.3
Wyalkatchem	2.67	80.3	0.8	12.2
Mace	2.65	80.5	2.1	11.9
Hatchet CL	2.60	81.3	2.0	12.9
Kord CL	2.58	82.0	0.5	12.3
Emu Rock	2.54	80.5	2.2	12.4
Grenade CL	2.52	80.8	0.6	12.5
Shield	2.49	78.7	2.8	12.4
Trojan	2.47	82.4	1.3	12.5
Scout	2.38	81.8	0.8	12.2
Yitpi	2.32	79.3	0.4	12.7
Cutlass	2.07	78.5	1.4	12.5
Site average	**2.58**	**80.8**	**1.3**	**12.2**
LSD (P=0.05)	*0.18*			
CV (%)	4.2			

Table 3. Elliston district wheat yields as a percentage of Yitpi (2013-2017).

Variety	2017	2016	2015	2014	2013	% mean
Axe	116	80	109	95	87	97
Cobra	NA	NA	111	109	NA	110
Corack	128	107	82	108	93	104
Cosmick	120	104	109	NA	NA	111
Cutlass	89	99	NA	NA	NA	94
Emu Rock	109	99	99	98	NA	101
Grenade CL	109	90	111	106	NA	104
Hatchet CL	112	79	91	NA	NA	94
Kord CL Plus	111	85	132	102	104	107
Mace	114	99	197	117	121	130*
Phantom	NA	NA	113	117	NA	115
Scepter	125	89#	NA	NA	NA	107
Scout	103	98	101	104	92	100
Shield	107	101	115	107	NA	108
Trojan	106	95	81	108	NA	98
Wyalkatchem	115	106	111	112	113	111
Yitpi	100	100	100	100	100	100
Yitpi (t/ha)	**2.32**	**5.49**	**0.47**	**2.87**	**1.41**	

**Mace is seen to have an exceedingly high average. Whilst being a strong performing variety, 2015 saw low yields where mace yielded at 197% of Yitpi (at 0.93 t/ha). This has skewed the % mean. Without 2015, Mace yielded 113% of Yitpi over the 4 remaining years.*

#Scepter yield affected by disease 2016

Protein was high across the board with most varieties achieving H2 grain quality. It appears protein dilution occurred, and nitrogen may have been lacking in higher yielding varieties (Table 2).

Table 3 shows the variety yields as a percentage of Yitpi over the last 5 years. Early and Clearfield varieties that didn't perform well in the decile 9 year of 2016, performed well in 2015 and 2017, both short, dry years. Mace, Wyalkatchem and Shield have all yielded well over this period of time, regardless of the seasonal conditions. Imi tolerant varieties, normally thought to possess a yield penalty have maintained a relatively high percentage through their ability to perform in dry seasons.

Wharminda

Crop agronomy

At Wharminda, the site was situated on sand with some non-wetting issues, following a medic pasture. Chemical applications of Roundup (2 L/ha), Hammer (0.045 L/ha), Avadex (1.6 L/ha), Treflan (1.5 L/ha) and Boxer gold (1.5 L/ha) was applied immediately prior to sowing on 11 July. 80 kg/ha of DAP treated with Impact (0.4 L/ha) was applied in furrow at sowing. Germination was poor and uneven due to low rainfall and non-wetting sands. No further inputs followed, and the trial was harvested on 10 November.

What happened?

Wharminda was a low yielding site in 2017 with a site average of 1.07 (t/ha) (Table 5). Despite the late time of sowing and low rainfall the site yielded higher than expected and top varieties Mace, Corack and Scepter yielded well with good grain quality in a tight season. Similarly to Elliston, a soft finish was seen with no days over 30°C in September and only 3 in October (16, 17 and 24). This allowed plants to flower and fill grain with relatively low levels of abiotic stress as is reflected by relatively low screenings and good test weights (Table 5). It can also be seen that some longer varieties produced a high percentage of screenings, as their required season length was cut short. This highlights the importance of varietal selection when sowing late.

Table 4. Wharminda rainfall (mm) for 2017, Bureau of Meteorology, 2018.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
45.8	14.4	0	15.8	6.6	6.8	39.8	75.0	33.6	27.4	49.4	29.4
Growing season rainfall (May-October*)						176					
Annual rainfall						344					

**Rainfall measured from July as prior rainfall was insignificant*

Table 5. Wharminda district wheat trial grain yield (t/ha) and quality results in 2017.

Variety	Yield (t/ha)	Test weight (kg/hL)	Screenings (%)	Protein (%)
Mace	1.33	80.9	2.5	12.2
Corack	1.27	79.6	3.1	12.3
Scepter	1.22	80.2	4.0	12.3
Emu Rock	1.15	79.8	2.7	13.1
Shield	1.13	78.6	4.2	12.9
Hatchet CL	1.12	79.9	2.5	13.6
Wyalkatchem	1.11	79.1	2.5	12.7
Axe	1.05	80.5	1.2	13.5
Kord CL	1.04	79.1	4.2	12.9
Scout	1.00	80.5	4.1	12.4
Cutlass	0.97	78.6	5.5	12.8
Cosmick	0.94	77.7	8.1	12.4
Yitpi	0.91	79.9	2.4	13.1
Grenade CL	0.88	79.5	4.5	12.6
Trojan	0.88	79.5	7.8	12.9
Site average	**1.07**	**79.6**	**4.0**	**12.8**
LSD (P=0.05)	*0.16*			
CV (%)	9.2			

Table 6. Wharminda district wheat yields as a percentage of Yitpi (2014-2017).

Variety	2017	2016	2015	2014	% mean
Axe	115	53	87	114	92
Cobra	NA	NA	107	120	114
Corack	140	81	107	136	116
Cosmick	103	77	105	NA	95
Cutlass	107	101	NA	NA	104
Emu Rock	126	61	98	114	100
Grenade CL Plus	97	75	91	113	94
Hatchet CL Plus	123	42	84	NA	83
Kord CL Plus	114	75	85	109	96
Mace	146	84	108	129	117
Phantom	NA	NA	97	113	105
Scepter	134	91	NA	NA	113
Scout	110	81	100	115	101
Shield	134	83	96	123	109
Trojan	97	98	101	118	103
Wyalkatchem	122	81	109	122	108
Yitpi	100	100	100	100	100
Yitpi yield (t/ha)	**0.91**	**3.72**	**3.56**	**2.87**	

Table 6 displays the variety averages as a percentage of Yitpi over the last four years at Wharminda. Corack and Mace have yielded the most consistently over this time despite rainfall variability between seasons. A consistent yield penalty is seen for Clearfield varieties despite yielding well compared to Yitpi in the 2017 season, and of these Grenade CL Plus appears to be the most consistent.

What does this mean?

Variety selection should be made by evaluating yields from more than one season, ideally a broad range of seasons such as the last five. Disease (root or leaf/stem), maturity, height, herbicide tolerance, sprouting tolerance and grain quality are all important characteristics to asses when selecting varieties to best fit your farming system.

For more extensive variety options and further information on any variety visit the National Variety Trials website at www.nvtonline.com.au, or refer to the articles in the EPFS Summary 2017 NVT Cereal Yield Performance Tables and the Cereal Variety Disease Guide.

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