

6a. SARDI Conmurra Wheat Nitrogen Trial

Amanda Pearce, SARDI, Amanda.pearce@sa.gov.au

Funding Body: SARDI

KEY MESSAGES:

- SARDI funded and managed a wheat nitrogen trial at Conmurra to value add to the MFMG field day.
- A nitrogen response was observed at Conmurra in 2016.
- Split applications of 200 kg N/ha and 250 kg N/ha resulted in higher grain yields and grain reaching maximum grade.

Trial Background

In 2016 SARDI funded a wheat nitrogen trial at Conmurra to value add to the MFMG field day. The trial evaluated nine different nitrogen rates and application timings.

Trial Design

The trial was sown on 17 May. Trojan wheat (max. grade APW1) was used in the trial. Nitrogen (N) was applied at three different timings; at sowing, at growth stage (GS) 31 and GS 39 (Table 1). All treatments were sown with 20 kg N/ha. Single applications of N were applied at GS 31 in five treatments and split applications at GS 31 and GS 39 were applied in three treatments. GS 31 was reached on 5 August and GS 39 on 22 September.



Table 1: The nine different treatments evaluated at Conmurra wheat nitrogen trial, product applied at sowing and the rates applied at different growth stages.

Variety	Yield t/ha	% site mean	1000 grain weight (g/1000 seeds)	Test weight (kg/hl)	Protein (%)	Screenings (%<2.0mm)
Beckom	5.13	117	41.02	80.03	8.7	0.4
Cutlass	5	114	50.82	82.8	8.5	0.24
Cobra	4.8	110	44.05	81.93	9.2	0.46
DS Pascal	4.7	108	43.47	80.85	9.5	0.17
Cosmick	4.58	105	42.24	81.01	8.8	0.48
Trojan	4.57	105	53.26	83.62	8.7	0.24
LRPB Arrow	4.56	104	45.4	81.91	9.3	0.44
Scout	4.56	104	47.82	82.24	8.9	0.49
Barham	4.55	104	47.03	79.99	9	0.36
Scepter	4.53	104	50.8	81.97	8.8	0.61
Harper	4.44	102	47.44	82.34	8.9	0.49

Trial Results

Grain yield averaged 6.1 t/ha and significant differences in treatments were observed (P value <0.001, l.s.d 0.58, cv% 4.4). Treatment 1 (20 kg N/ha at sowing) had significantly lower grain yield than all other treatments. The single and split applications of 100 kg N/ha resulted in similar grain yield (Treatments 4 and 5).

Treatments 6 and 8 (single applications) and Treatments 7 and 9 (split applications) had significantly higher grain yield than all the other treatments. These treatments had the higher rates of N applied 200 kg N/ha and 250 kg N/ha.

The higher N rate split applications, Treatments 7 and 9 achieved maximum grain grade, APW1, compared to all other treatments which achieved ASW1. Protein was the limiting factor for other treatments not achieving maximum grade, with all treatments test weights and screenings adequate for APW1.

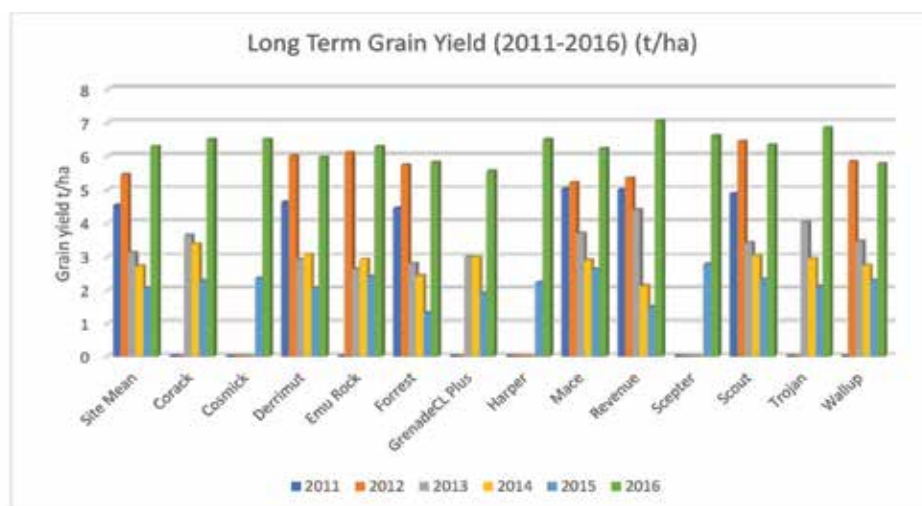


Figure 1: Conmurra wheat nitrogen trial grain yield (t/ha).

Table 2: Conmurra wheat nitrogen grain quality and grain grade achieved.

Variety	Yield t/ha	%	1000 grain weight (g/1000 seeds)	Test weight (kg/hl)	Protein (%)	Screenings (%<2.0mm)
Cobra	5.86	111	39.8	83.1	10.4	0.44
Trojan	5.86	111	44.44	84.83	9.5	0.48
LRPB Arrow	5.74	109	41.83	83.48	9.9	0.84
DS Pascal	5.68	108	38.87	83.76	10.2	0.39
Beckom	5.67	107	35.6	84.2	9	0.79
Chief CL Plus	5.54	105	50.85	83.6	10	0.21
Scout	5.53	105	43.16	85.17	9.8	0.5
Cutlass	5.48	104	41.82	83.62	9.2	0.33
Harper	5.36	102	40.44	84.24	9.3	1.28
Impala	5.28	100	37.85	84.2	10.1	0.61
Phantom	5.28	100	41.98	81.79	9.5	0.88
Yitpi	5.25	100	39.34	82.74	10.1	0.61
Corack	5.24	99	47.77	83.24	10	0.18
Mace	5.24	99	43.68	82.2	9.8	1
Scepter	5.24	99	45.47	83.1	9.2	0.81
Wallup	5.23	99	37.86	83.1	10.7	0.7

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