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Response of eighteen wheat varieties to three sowing dates – Trangie 2011

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Introduction

Sowing time of wheat is a balance between avoiding frost and heat at flowering and grain fill and also ensuring that water use is optimised. Trials have been conducted at Trangie Agricultural Research Centre from 2009–2011 as part of the GRDC funded Variety Specific Agronomy Packages project to determine optimum sowing dates of a range of varieties and maturity groups of wheat. This paper reports the results of the 2011 trial only.

Site details

Location: Trangie Agricultural Research Centre

Previous crop: Faba beans

Plant Available Water: 180 mm

RLN (*P. thornei*): 9150 nematodes/kg soil in the 0–30 cm zone

Soil type: Grey vertosol

Treatments

Sowing dates:

TOS 1. 30th April

TOS 2. 16th May

TOS 3. 9th June

Varieties:

18 wheat varieties, broadly grouped into three maturities

Early: Axe$^{\Phi}$, LongReach Crusader$^{\Phi}$, Lincoln, Livingston$^{\Phi}$, Merinda$^{\Phi}$, LongReach Spitfire$^{\Phi}$

Mid: EGA Bounty$^{\Phi}$, Bolac$^{\Phi}$, Gauntlet, EGA Gregory$^{\Phi}$, SUN595B, SUN627A, Sunguard$^{\Phi}$, Sunvale$^{\Phi}$

Late: EGA Eaglehawk$^{\Phi}$, QT15047, Sunzell$^{\Phi}$, EGA Wedgetail$^{\Phi}$

Results

Grain yield was maximised from treatments that flowered in the window from the 3rd to the 21st of September (Figure 1). Treatments that flowered prior to early September had a yield reduction compared to the optimum period, even in the absence of significant frost events. Treatments that flowered later than 21st September also suffered a yield reduction as temperature increased.

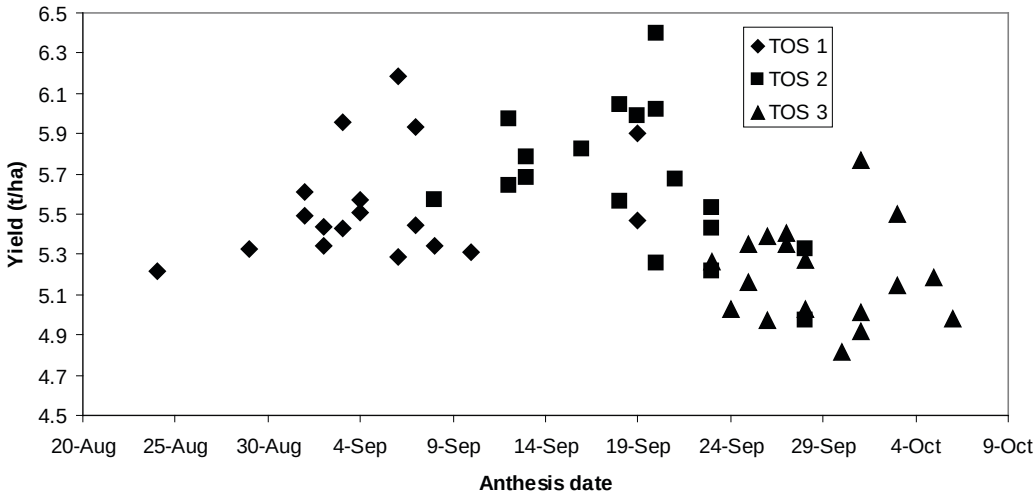

Figure 1. Relationship between anthesis date and grain yield of 18 wheat varieties sown at 3 sow dates – Trangie 2011

EGA Bounty(ф) had the highest yield from time of sowing (TOS) 1, while EGA Gregory(ф) had the highest yield from TOS 2 and 3. EGA Gregory(ф) yielded 0.96 t/ha more from the 16th May sow time than the 30th April sow time (Table 1).

Table 1. Grain yield, rank within sow time and anthesis date of 18 wheat varieties sown at three dates at Trangie in 2011.

Variety	Yield (t/ha) and rank within sow time						Anthesis date		
	30th April		16th May		9th June		30th April	16th May	9th June
Axe(ф)	5.22	18	5.57	11	5.26	8	24-Aug	8-Sep	23-Sep
Bolac(ф)	5.93	3	5.25	16	5.14	11	7-Sep	20-Sep	3-Oct
EGA Bounty(ф)	6.18	1	5.68	8	4.81	18	6-Sep	21-Sep	30-Sep
LongReach Crusader(ф)	5.61	5	5.97	5	5.03	12	1-Sep	12-Sep	24-Sep
EGA Eaglehawk(ф)	5.90	4	5.33	15	5.19	9	19-Sep	28-Sep	5-Oct
Gauntlet	5.43	11	5.99	4	5.27	7	3-Sep	19-Sep	28-Sep
EGA Gregory(ф)	5.44	10	6.40	1	5.77	1	7-Sep	20-Sep	1-Oct
Lincoln	5.43	11	5.68	8	4.98	15	2-Sep	13-Sep	26-Sep
Livingston(ф)	5.33	15	5.64	10	5.16	10	29-Aug	12-Sep	25-Sep
Merinda(ф)	5.49	8	5.82	6	5.39	4	1-Sep	16-Sep	26-Sep
QT15047	5.35	13	5.53	13	5.50	2	8-Sep	23-Sep	3-Oct
LongReach Spitfire(ф)	5.34	14	5.78	7	5.35	5	2-Sep	13-Sep	25-Sep
Sunguard(ф)	5.57	6	5.56	12	5.03	12	4-Sep	18-Sep	28-Sep
Sunvale(ф)	5.28	17	5.43	14	4.91	17	6-Sep	23-Sep	1-Oct
Sunzell(ф)	5.31	16	5.21	17	5.02	14	10-Sep	23-Sep	1-Oct
SUN595B	5.96	2	6.02	3	5.35	5	3-Sep	20-Sep	27-Sep
SUN627A	5.51	7	6.05	2	5.41	3	4-Sep	18-Sep	27-Sep
EGA Wedgetail(ф)	5.47	9	4.97	18	4.98	15	19-Sep	28-Sep	6-Oct
Mean of sow time	5.54		5.66		5.20				
l.s.d. p = 0.05	0.36								
c.v. (%)	5.30								

The yield loss in the late maturity varieties was on average 9 kg/ha per day from the 30th April sowing to the 9th June sowing. The yield loss of the mid-maturity and early maturity varieties from the 16th May sow time to the 9th June sow time was on average 23 kg/ha per day.

There was a yield penalty for early maturity varieties when sown early, even though frost was not a significant issue. The relatively short days in the period leading up to flowering that these varieties experienced resulted in a reduction in the number of grains/m^2. The early maturity group had, on average, a 330 kg/ha yield penalty from the 30th April sow date compared to the 16th May sow date (Figure 2).

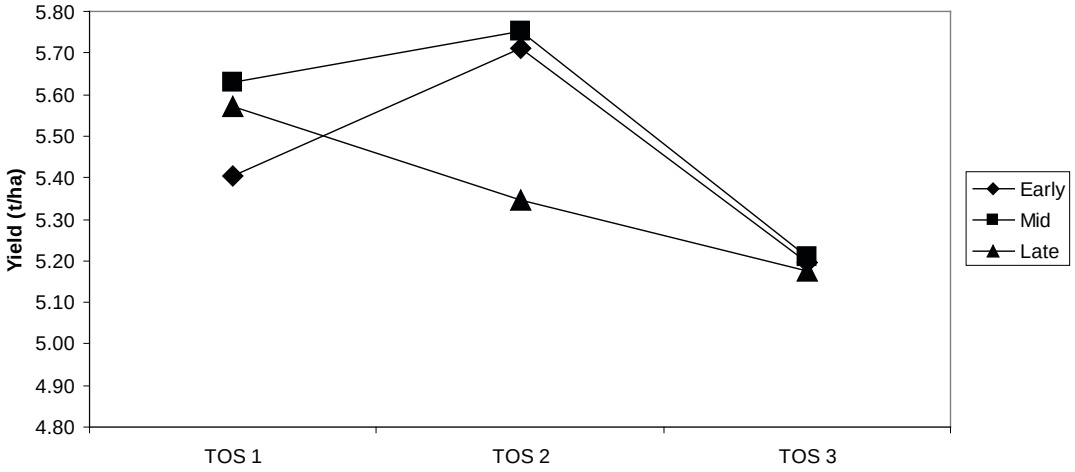

Figure 2. Grain yield comparison of late maturity, early maturity and mid-maturity varieties sown at three dates – Trangie 2011

Acknowledgements

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