Wheat Variety trial – yield and quality response to sowing time

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Purpose:	To support growers with agronomic decisions such as sowing time and variety selection to enhance industry profitability through improved wheat yields and grain quality
Location:	Badgingarra Research Station
Soil Type:	Sandy gravel
Rotation:	2009 canola; 2008 wheat; 2007 lupins
GSR:	300mm

BACKGROUND

This time of sowing trial is one component of a DAFWA/GRDC funded research program which aims to provide growers in the northern agricultural region with information needed for making decisions on wheat variety choice, sowing time and management.

TRIAL DESIGN

Plot size: 1.54 x 20m

Machinery: Cone seeder -25cm rows

Repetitions: 3

Crop details: Annuello, Calingiri, Carnamah, EGA Bonnie Rock, EGA Eagle Rock, Espada, Fortune, GBA Sapphire, Gladius, IGW 2886, IGW 2944, IGW 3097, IGW 3119, IGW 3167, IGW 3186, King Rock, Mace, Magenta, RAC 1683, Westonia, Wyalkatchem- all sown at 75kg/ha

Treatments:

17-May-10	1st sowing time with 100 kg/ha Agstar Extra drilled +80kg/ha Urea and 1 L/ha Irrigator Extender top dressed
	1.5 L/ha Treflan, 100mL/ha Dominex and 200 mL/ha Talstar
4-Jun-10	2nd sowing time with 100 kg/ha Agstar Extra drilled +80kg/ha Urea and 1L/ha Irrigator Extender top dressed
	1.5 L/ha Treflan, 100mL/ha Dominex and 200 mL/ha Talstar
17-Jun-10	1st TOS 380 g/ha Achieve, 0.5 L/ha Supercharge
22-Jun-10	1st & 2nd TOS- 2.5g/ha Ally , 1L/ha Triple Cu 10%, Zn 25%, Mn 30% and 0.8L/ha Barracuda
23-Jun-10	3rd sowing time –with 100 kg/ha Agstar Extra drilled and 80kg/ha Urea and 1L/ha Irrigator Extended
	1L/ha SpraySeed, 1.5 L/ha Treflan, 100mL/ha Dominex and 200 mL/ha Talstar
29-Jun-10	2nd TOS- 0.5 L/ha Supercharge

20-Jul-10 Whole Trial 50 L/ha Flexi N and 0.8 L/ha Barracuda

28-Jul-10 3rd TOS- 1 L/ha ripple Cu 10%, Zn 25%, Mn 30%

RESULTS

	Yield (t/ha)			Protein (%)			Screenings (%) (whole and cracked)		
Variety	17-May	4-Jun	23-Jun	17-May	4-Jun	23-Jun	17-May	4-Jun	23-Jun
Magenta	3.1	2.5	2.2	11.2	11.8	12.7	5.7	5.9	3.8
Fortune	2.9	2.6	2.3	11.6	11.6	12.2	3.3	3.6	3.5
RAC 1683	2.8	2.7	2.1	11.9	12.2	11.7	3.0	4.4	3.7
IGW 2944	2.8	2.9	2.3	11.9	11.2	12.2	4.3	3.8	3.6
IGW 3186	2.7	3.0	2.3	12.4	11.3	11.1	2.3	3.6	4.9
Espada	2.6	2.7	2.2	12.1	11.9	12.2	4.5	5.6	3.8
Calingiri	2.5	2.5	2.0	11.2	11.6	12.3	4.6	3.9	2.6
Wyalkatchem	2.5	2.3	1.9	12.2	11.8	11.4	2.4	2.7	4.0
Annuello	2.5	2.4	2.1	11.6	11.9	12.8	3.3	3.7	2.1
EGA Eagle Rock	2.5	2.6	2.0	12.3	12.4	12.4	2.5	2.4	2.5
Mace	2.4	2.4	2.1	11.1	12.6	10.9	3.2	3.6	4.3
Westonia	2.4	2.7	2.1	11.5	11.4	12.0	5.5	5.2	4.1
Carnamah	2.4	2.7	2.0	11.2	11.8	11.9	5.8	4.2	3.5
IGW 3167	2.4	2.6	2.0	12.7	11.6	12.3	5.7	4.6	6.0
Gladius	2.3	2.4	1.7	11.5	12.1	12.6	4.6	5.3	6.3
IGW 3119	2.3	3.1	2.1	11.8	11.4	11.3	3.4	3.7	4.9
IGW 2886	2.2	2.5	1.9	12.1	12.1	13.0	6.6	7.8	5.1
EGA Bonnie Rock	2.0	2.5	2.1	12.1	12.8	12.4	2.7	4.0	4.3
GBA Sapphire	2.0	2.5	1.9	12.4	11.6	12.0	3.2	3.8	4.2
King Rock	1.7	2.5	1.9	12.7	12.7	12.3	3.1	3.6	5.2
IGW 3097	1.4	1.8	2.0	13.4	13.0	12.1	1.4	1.8	3.9
Average within each TOS	2.8	2.9	2.4	11.9	11.9	12.0	4.1	4.3	4.28
TOS (lsd)	0.02	0.33		0.807	0.7		0.89	1.3	
Var (lsd)	<.001	0.25		<.001	0.6		<.001	0.6	
Var (lsd) between TOS	<.001	0.49		0.007	1.1		<.001	1.5	
Var (lsd) within TOS		0.43			1.0			1.1	
%CV		9.9%			5.2			16.1%	

FINANCIAL ANALYSIS OF RESULTS

	Gross Income			Grade paid		
Variety	17-May	4-Jun	23-Jun	17-May	4-Jun	23-Jun
Fortune	1355	1239	1078	ANW2	ANW2	ANW2
Calingiri	1212	1189	932	ANW1	ANW2	ANW2
Magenta	1030	837	748	AGP1	AGP1	APW2
EGA Eagle Rock	937	963	734	H2	H2	H2
Mace	909	896	728	H2	H2	APW2
Espada	891	889	746	APW2	AGP1	APW2
Wyalkatchem	871	784	646	APW2	APW2	APW2

Annuello	869	813	735	APW2	APW2	APW2
Gladius	802	785	576	APW2	AGP1	AGP1
Westonia	799	889	708	AGP1	AGP1	AGP1
Carnamah	793	1012	758	AGP1	H2	H2
EGA Bonnie Rock	744	931	785	H2	H2	H2
GBA Sapphire	738	947	730	H2	H2	H2
King Rock	637	923	672	H2	H2	AUH2

Price notes: on 13/12 ex Kwinana- APW2 $345, H2 $375, AUH2 $345, ANW1 $480, ANW2 $470, AGP1 $330. EPR not applied to gross income

DISCUSSION

- The performance of the wheat varieties sown at the first sowing time was influenced by drought induced copper deficiency (visual assessment). These symptoms were not observed in the other sowing times.
- Noodle varieties Fortune and Calingiri had the highest economic returns due to the exceptional prices received for noodles in 2010. If noodle prices return to traditional premiums then returns for these varieties will significantly reduce.
- Magenta was the highest yielding variety at the first sowing time however there was a 600kg/ha drop in production when seeding was delayed by 18 days. Screenings (whole and cracked) were greater than 5% at time of sowing 1 and 2 which influenced economic returns.
- Mace and Wyalkatchem yielded similarly at each sowing time however economic returns were greater for Mace because it is classified as Aust. Hard wheat.
- The performance of EGA Bonnie Rock and King Rock was higher when sown on the 4th June compared to the 17th May.
- There was no significant difference in the yield of varieties when sown on the 23rd June.
- Sprouting was not observed at this site in 2010.
- A number of unreleased cultivars were assessed at this site in 2010. The two IMI wheats' in the trial, AGT1683 and IGW3097, both has screenings of less than 5%. However AGT1683 yielded significantly higher than IGW3097. IGW2944 (a noodle type) yielded similarly to Calingiri and Fortune. The potential APW and hard wheats (IGW 3119, IGW 3186 and IGW 3167) all yielded similarly to EGA Bonnie Rock and King Rock.

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