"Wheat Agronomy Trials"

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Outcomes:

- In high rainfall areas, the inclusion of an insecticide to control aphids, and therefore reducing the incidence of Barley Yellow Dwarf Virus (BYDV) should becoming common practice.
- Yield responses continue to be seen by controlling BYDC (particularly in susceptible varieties).
- In 2011, the control of BYDV also appeared to improve the response to later applied nitrogen.

Trial Objectives: To assess the yield of a range of agronomic treatments on wheat varieties at several sites

Trial Duration: 2011-12
Location: Frances, Conmurra, Bool Lagoon
Soil Type: Various
Paddock History: Various
Farmer Co-operators: Chris & Tim Fry, Lachie Seears, Jack Kay
Monthly Rainfall:

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	April-Oct	Total	*Jan - Mar*
Frances (NRM)	115	38	61	24	35	54	41	82	50	18	22	28	304	568	*214*
Conmurra (NRM)	47	71	62	42	53	83	97	70	64	30	55	10	438	682	*180*
Moyhall (Robertson)	88	70	95	37	55	59	93	76	30	14	33	34	364	685	*254*

Yield Limiting Factors: Some temporary waterlogging at Bool Lagoon site
Type of Trial: Replicated Plot Trial
Trial Design: 8m Plots x 8 Rows at 15cm spacings (1.2m);
3 replicates

Treatments:

Wheat agronomy trials were sown at both Conmurra and Frances. Treatments included;

- Variety Treatments
- +/- BYDV (Barley Yellow Dwarf Virus Treatment)
- Varying Nitrogen rates (x 4)
- Varying Nitrogen application timings (x2)

The Winter wheat agronomy trial at Bool Lagoon, sown on 31 March 2011 focussed on;

- Variety Treatments (x3)
- +/- BYDV Treatment

- Varying Nitrogen rates (x3) at GS31

All trials were sown with small plot equipment and managed as per usual agronomic treatment. Grain yield was determined by machine harvest.

NB/ Quality data will be available for this trial at a later date

Results:

Table 1: 2011 Frances Agronomy; Wheat Variety x N Treatment (- BYDV control)

N-Treatment	0N		25N				50N				100N			
Timing →			Sowing		GS31		Sowing		GS31		Sowing		GS31	
Variety↓	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%
Preston	3503	98	3643	102	3505	98	3927	110	3893	109	4521	127	4198	118
Pugsley	2405	67	2712	76	2786	78	2617	73	2882	81	3181	89	3054	86
Scout	3063	86	3581	100	3461	97	4302	120	3977	111	4409	123	4102	115

Table 2: 2011 Frances Agronomy; Wheat Variety x N Treatment (+BYDV control)

N-Treatment	0N		25N				50N				100N			
Timing→			Sowing		GS31		Sowing		GS31		Sowing		GS31	
Variety↓	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%
Preston	3398	95	3896	109	3412	96	4082	114	4176	117	4304	121	4774	134
Pugsley	2574	72	2757	77	2845	80	2844	80	2876	81	3260	91	3021	85
Scout	3530	99	3902	109	3747	105	4156	116	4072	114	4323	121	4399	123

Table 3: Frances Agronomy; effect of variety and control of BYDV on grain yield in 2011 (25KgN/ha at sowing)

	- BYDV Treatment		+ BYDV Treatment	
Variety	Yield (kg/ha)	% site mean	Yield (kg/ha)2	% site mean3
Preston	3643	102	3896	109
Pugsley	2712	76	2757	77
Scout	3581	100	3902	109

Site Statistics for all tables (Frances Agronomy Treatments)

Site mean	3573
CV%	9.203
lsd(0.05)	629.5

Note:

- All yields in these trials are expressed as kg/ha
- All % are yields expressed as a percentage of the site mean

Table 4: 2011 Conmurra Agronomy; Wheat Variety x N Treatment (- BYDV control)

N-Treatment	0N		25N				50N				100N			
Timing→			Sowing		GS31		Sowing		GS31		Sowing		GS31	
Variety↓	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%
Bolac	8677	*104*	7573	*91*	8153	*98*	8368	*101*	8162	*98*	8206	*99*	8800	*106*
Brennan	7015	*84*	6496	*78*	6622	*80*	6520	*78*	6174	*74*	6706	*81*	5728	*69*
Mackellar	8114	*98*	7860	*95*	7836	*94*	7945	*96*	8791	*106*	8430	*101*	7931	*95*
Preston	8632	*104*	8412	*101*	8842	*106*	8612	*104*	9144	*110*	8638	*104*	8581	*103*
Scout	8032	*97*	8826	*106*	8682	*104*	8473	*102*	8509	*102*	9171	*110*	8969	*108*

Table 5: 2011 Conmurra Agronomy; Wheat Variety x N Treatment (+BYDV Control)

N-Treatment	0N		25N				50N				100N			
Timing→			Sowing		GS31		Sowing		GS31		Sowing		GS31	
Variety↓	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%
Bolac	8976	108	8819	106	8944	108	9210	111	9134	110	9615	116	9500	114
Brennan	7399	89	7345	88	7472	90	7093	85	7188	86	7011	84	6782	82
Mackellar	8287	100	8071	97	8150	98	8115	98	7709	93	8288	100	7454	90
Preston	9302	112	9234	111	9495	114	9269	111	9474	114	9532	115	9751	117
Scout	9145	110	8798	106	9412	113	9192	111	8801	106	9187	110	9547	115

Table 6: Conmurra Agronomy; effect of variety and control of BYDV on grain yield in 2011 (25KgN/ha at sowing)

	- BYDV Treatment		+ BYDV Treatment	
Variety	Yield (kg/ha)	% site mean	Yield (Kg/ha)2	% site mean3
Bolac	7573	91	8819	106
Brennan	6496	78	7345	88
MacKellar	7860	95	8071	97
Preston	8412	101	9234	111
Scout	8826	106	8798	106

Site Statistics for all tables (Conmurra)

Site mean	8319
CV%	4.898
lsd(0.05)	748.2

Table 7: Conmurra Wheat Fungicide Trial

Treatment	kg/ha	% site mean
AmistarXtra_800ml/ha	4702	112
Prosaro_300ml/ha	4620	110
Opus_500ml/ha	4577	109
Opus_250ml/ha	4565	109
Prosaro_150ml/ha	4432	105
Folicur_145ml/ha	4399	105
AmistarXtra_400ml/ha	4303	102
Folicur_75ml/ha	4092	97
Triad_1l/ha	3874	92
Nil	2468	59

Site mean	4203
CV%	9.087
lsd(0.05)	554.4

Wheat Variety:

Fungicide Treatment Sprayed at GS47.

Table 8: 2011 Bool Lagoon Winter Wheat Variety x Nitrogen application x BYDV Yield and Quality Results

		Nil BYDV Treatment					Plus BYDV Treatment				
Variety	N (Kg/ha)	Yield (kg/ha)	Prot-ein	1000 grain wt	test weight	scree-nings	Yield (kg/ha)	Prot-ein	1000 grain wt	test weight	scree-nings
Brennan	60	4599	10.3	40.68	81.69	1.73	5333	10.1	41.24	82.39	0.37
Brennan	90	4747	10.6	40.74	81.44	0.9	5442	10.6	42.64	83.14	0.48
Brennan	120	4970	10.6	41.08	82.24	0.43	5192	11	41.54	82.79	1.12
Mackellar	60	3933	9.4	32.26	78.81	2.79	3479	11.2	29.30	78.68	3.48
Mackellar	90	3743	10.4	30.86	78.90	3.33	3196	10.2	30.00	78.41	3.92
Mackellar	120	3359	10.8	31.00	78.02	3.51	3141	10.9	29.84	78.97	3.24
Preston	60	3182	11.1	33.82	75.30	3.03	3392	10.9	36.28	76.18	1.05
Preston	90	3326	11.4	36.86	76.22	2.77	3372	11.6	35.84	75.25	2.34
Preston	120	3402	11.7	36.46	76.00	1.32	3384	11.4	35.54	75.48	1.21

Comments:

In general, at the Frances site (Refer to Tables 1-3), Barley Yellow Dwarf Virus (BYDV) treatment resulted in an increased yields. Where there was no BYDV treatment, the pre-seeding Nitrogen application was generally more effective than the later application (this may have been due to the drier spring). Once the BYDV treatment was applied, the responses to later nitrogen applications improved and were more effective (generally) than the pre-seeding treatments.

At Conmurra (Tables 4-6) there was a marked increase in yields across all varieties with the inclusions of a BYDV treatment. This kind of treatment should be becoming common

among all cropping programs. The results from the timing of Nitrogen varied from Frances, with the crops responding more to the later Nitrogen treatments, however like Frances, this response was further increased with aphid control.

The site at Bool Lagoon (Winter wheat variety and agronomy trial) got quite wet during the winter months, and in the centre of the plots, there was a large area of herbicide resistant ryegrass.

The results in Table 7, do however show a response of Brennan to BYDV control. Mackellar has good resistance to BYDV, so wouldn't expect a large response to treatment which is what was seen, however Brennan which was the variety with the highest yielding potential, saw increases in yield of up to 700kg/ha with the inclusion of a BYDV treatment. There was not a large response to different top-dressing rates of nitrogen; again a dry spring may have contributed to the lack of response.

Conclusion and into the Paddock:

Know your wheat varieties, especially in the wetter environments. Ensure that those varieties that are more susceptible to BYDV receive the correct treatment from the word go.

Nitrogen management is always going to be seasonally dependent, knowing what is there to start with can assist in management, but a dry spring is always going to result in reduced effectiveness of later applications of Nitrogen.

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