Wheat inputs experiment

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Location: Balldale

Growing season rainfall:
Annual: 355mm (avg 504mm)
GSR: 135mm (avg 319mm)
Stored moisture: 72mm

Soil:
Type: Red chromosol
pH ($CaCl_2$): 5.1
Colwell P: 82mg/kg
Deep soil nitrogen: 73kg/ha

Sowing information:
Sowing date: 23 May 2008
Fertiliser: Double super
Variety: Ventura

Row spacing: 18cm

Paddock history:
2007 — wheat
2006 — canola

Plot size: 1.5 x 16m

Replicates: 3

KEY POINTS

- **Similar yield results can be obtained using a number of combinations of seed and fertiliser.**
- **Low tiller numbers can be recovered by using light amounts of nitrogen.**
- **There may be opportunities to use much lower initial inputs and still produce high-yielding and profitable crops.**

Aim

To assess the affect of varying the seed and fertiliser rates on the yield of wheat grown after wheat.

Method

A replicated experiment was established to test the effect of varying seed and phosphorus and nitrogen fertiliser inputs.

Results

See Table 1.

Observations and comments

A sowing rate of 35kg/ha was the optimum rate. No significant yield increase was achieved by increasing the seeding rate beyond this. The 70kg/ha sowing rate produced the optimum number of tillers but due to the dry season this did not produce the best yield.

Addition of nitrogen significantly increased yield at all sowing and phosphorus fertiliser rates, except at the 120kg/ha sowing rate.

Initially, low inputs (5kg/ha of phosphorus and 35kg/ha of seed as in 5P 35 S 40 N++) can be recovered by an early application of nitrogen fertiliser. Due to the dry season it was not possible to determine if the recovery would produce near maximum yields.

Similar yields could be produced with input savings of up to $78/ha during 2008.

Sponsors

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TABLE 1 Summary of plant counts, tillers, yield and gross margin for wheat inputs for 2008

Treatment description	Plant count (plants/m^2)	Tillers (Z15 t/m^2)	Tillers (Z32 t/m^2)	Tillers (Z70 t/m^2)	Yield (t/ha)	GM ($/ha)
12P 35S 0N	81	367	479	387	0.9	94
12P 35S 40N	86	458	351	378	1.4	221
20P 35S 0N	84	351	343	327	1.0	202
20P 35S 40N	93	472	336	409	1.4	303
12P 70S 0N	167	462	334	288	1.1	158
12P 70S 40N	174	495	351	405	1.4	303
20P 70S 0N	176	437	329	264	1.1	227
20P 70S 40N	180	523	338	323	1.5	246
12P 70S 80N	171	456	312	421	1.2	113
12P 120S 0N	223	561	342	260	1.0	190
12P 120S 40N	238	501	360	224	0.8	70
20P 70S 80N	164	481	574	329	1.0	51
20P 120S 0N	235	462	344	365	0.9	177
20P 120S 40N	239	479	339	318	1.0	120
12P 35S 20N	168	478	366	421	1.0	63
12P 70S 40N++	171	457	345	396	1.4	290
20P 70S 40N++	164	431	363	325	1.3	208
5P 35S 20N	86	258	327	298	1.1	180
5P 35S 40N++	91	294	340	409	1.4	268
5P 35S 80N++	78	306	357	427	1.3	208
5P 70S 40N++	162	507	497	386	1.5	246
12P 70S 40N No Fung	167	453	344	354	1.4	226
Average	154	440	367	351	1.2	
LSD	37	72	84	67	0.33	
CV	9.6%	12.4%				

Treatment nominated as rate of phpsphorus (XP) rate of seed (XS) rate of nitrogen (XN). ++ — Split nitrogen application with the first application of half the nitrogen at Z15 with the rest applied at Z31. Phosphorus applied as double super at sowing and nitrogen as urea at Z31 except for the split applications. All plots, except no fungicide, had two applications of 500ml/ha of 125g/L Triademefon at growth stages Z30 and Z39. Gross Margin (whole $/ha) based on $280/t (delivered local silo) and nitrogen @ $1.74/kg delivered.