

RIVERINE PLAINS INC – RESEARCH AT WORK

Barley maximum yield experiment

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Key messages:

- Barley responded to inputs of nitrogen (N) and fungicide in 2006 and 2007.
- 20-40 kg/ha of N was required to maximise yield.
- Fungicide response was independent of N application.

Aim:

To assess the level of input required to maximise the yields of barley grown after wheat.

Method:

A replicated experiment was established using differing levels of post emergent N and fungicide to assess yield.

Results:

Table 2: Summary of 2007 yield, protein, screening and retention, gross margin and 2005 to 2007 yield

Treatment Description	Yield (t/ha)	Protein ⁵ (%)	Retention ⁶ (%)	Gross Margin ⁷ (\$/ha)	Yield ⁸ 2005 to 2007 as % of N40 yield
Nil 0N ¹	1.0	11	99	182	69
Nil 20N ¹	1.3	11	98	277	88
Nil 40N ¹	1.7	12	96	380	100
Nil 60 N ¹	1.6	15	82	321	99
Nil 80N ¹	1.5	15	73	262	103
Nil 100N ¹	1.3	15	59	177	100
Nil 120N ¹	1.6	16	45	254	104
SD ² , Z31 + Z39 ³ 0 N	1.3	10	97	264	82
SD ² Z31 + Z39 ³ 20 N	1.7	11	97	380	105
SD ² , Z31+ Z39 ³ 40 N	2.1	11	97	512	125
SD ² , Z31+ Z39 ³ 60 N	1.6	15	64	327	115
SD ² , Z31+ Z39 ³ 80 N	1.6	16	60	302	129
SD ² , Z31+ Z39 ³ 100 N	1.5	17	38	245	112
SD ² , Z31+ Z39 ³ 120 N	1.4	16	46	164	110
SD ² , Z31 40 N ⁴	1.9	11	95	453	113
SD ² , Z39 40 N ⁴	1.9	11	90	445	123
SD ² , Z45 40 N ⁴	1.9	10	94	455	105
SD ² , Z31 80 N ⁴	1.6	16	66	293	108
SD ² , Z39 80 N ⁴	1.6	16	47	319	106
SD ² , Z45 80 N ⁴	1.7	16	74	346	103

Location: Balldale
Growing Season Rainfall:
 Annual: 392 mm (avg 504 mm)
 GSR: 221 mm (avg 319 mm)
Soil:
 Type: Red Chromosol
 pH (H₂O): 4.8
 P (Colwell): 37 mg/kg
 Deep Soil N: 86 kg/ha
Sowing Information:
 Sowing date: 23/5/2007
 Fertiliser: 90 kg/ha MAP
Row Spacing: 180 mm
Paddock History:
 2006 – Wheat
 2005 – Wheat
 2004 – Canola
 Variety: Baudin
Plot Size: 1.5 m x16 m
Replicates: 4

Treatment Description	Yield (t/ha)	Protein ⁵ (%)	Retention ⁶ (%)	Gross Margin ⁷ (\$/ha)	Yield ⁸ 2005 to 2007 as % of N40 yield
SD ² , FolZ31 80 N ⁴	1.7	15	91	343	118
SD ² , FolZ31+ Z39, 40N	1.9	11	95	440	122
SD ² , FolZ31+ FolZ39, 80N	1.7	16	55	317	113
SD ² , FolZ39, 80N	1.6	15	48	308	108
SD ² , OpusZ31+ Z39, 40N	1.8	12	98	409	123
SD ² , OpusZ31+ OpusZ39, 80N	1.7	15	78	307	114
SD ² , OpusZ39, 40N	1.9	11	92	438	112
SD ² , OpusZ31, 40N	1.9	12	88	463	108
Average	1.6				
LSD	0.1				
CV	14%				

Z – Zadok's Growth Stage. 1- Rate of post emergent N applied at Z23. 2 – SD – Seed Dressing as 1.5 L/t of Baytan. 3 – Two applications of 500 ml/ha of 125 g/L Triadimefon fungicide at Z30 and Z39. 4- One application of 1 L/ha of 125 g/L Triadimefon fungicide at Z30, Z39 or Z45. 5 & 6- Protein and retention one sample from rep 4 only. 7- Gross Margin (whole \$/ha) based on \$360 /t (del local silo) and N @ \$1.50 /kg delivered. 8 - Average 2005 to 2007 yield expressed as a % of the N40 yield of 2.2 t/ha.

Observations and comments:

- N increased the yield to 40 kg/ha. Yield decreased with additional N applications.
- Fungicides increased yield in the absence of additional N. The response was relatively uniform to 40 kg/ha of N at 0.3 t/ha. Above 40 kg/ha of N there was no response to either N or fungicide.
- No N resulted in good protein and excellent retention for the production of malting barley. 40 kg N/ha resulted in protein levels and grain retentions that are suitable for malting.
- A single application of fungicide at about Z31 gave the best results.
- Using 40 kg/ha of N and one fungicide spray (applied by ground) gave the highest gross margin.
- A preliminary extension program for improved growing barley was begun in 2007. There were no results due to the dry conditions. N or fungicide was not used by the cooperating farmers. It will be run again in 2008 and 2009.

Sponsors:

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