P Nutrition of Wheat

Aim: To investigate the response of wheat to phosphorus fertiliser grown on an alkaline crumbly clay soil type.

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Location: Nugadong East Rd - Dalwallinu

Background: Phosphorus is most readily available in neutral to slightly acid soils. In soils dominated by 2:1 type clays (eg cracking clay soils), the solubility of various phosphorus compounds is largely determined by pH. In alkaline soils, phosphorus becomes fixed as insoluble calcium or magnesium compounds.

Trial Details:

Plot size and replication	20m x 1.8m * 3 reps
Soil type	Heavy clay
Sowing date	22nd May 2003
Conditions at sowing	Drying soil
Machinery	Conserva Pak 9" spacings
Seeding rate	82 kg Wyalkatchem (with Jockey)
Herbicides and Insecticides	1 L/ha Sprayseed + 1.2 L/ha Treflan
Paddock History	2002 = Pasture

Soil Test:

	N Nitrate - Ammonium		P	K	S	pH	PRI	Reactive Iron	ECEC
0-10cm	16	2	24	534	5.3	8.0	40	439	34.6
10-20cm	4	1	6	280	5.7	8.3	54	492	35.1

Results:

	Treatments Banded at sowing kg/ha	TD at sowing	P	Yield
1	**Nil**	**130 Urea**	**0**	**1.93**
2	**28 Agflow**	**123 Urea**	**5**	**2.13**
3	**56 Agflow**	**115 Urea**	**10**	**2.09**
4	**113 Agflow**	**99 Urea**	**20**	**2.35**
5	**256 Agflow**	**59 Urea**	**40**	**2.42**
6	**48 L/ha Liquid NP**	**90 Urea**	**10**	**2.19**
7	**110 Agras Extra**	**90 Urea**	**10**	**2.14**
			LSD (5%)	0.22

Summary:
- Drying soil conditions at the time of sowing, caused a poor initial germination of seedlings (10-15%). The remainder germinated in late June, about one month after being sown. As a consequence this was detrimental to the yield potential of the site, which probably limited the yield response to the phosphorus fertiliser.
- Grain yield tended to increase as the rate of phosphorus fertiliser applied increased. Tissue testing at late tillering was suggesting that mild zinc deficiency might have been limiting the response at 40 kg/ha of phosphorus fertiliser.
- The liquid NP source performed no better or worse than the solid NP source.

Technically reviewed by: Luigi Moreschi