

4.2 ZINC COTE AND DAP EVALUATION IN WHEAT

Gnarwarre

Trial ID: HIF 2000

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Location: Gnarwarre

Aim:

To compare the effects of zinc coted fertilizers and Sulphur coted fertilizer to standard products at varying rates of Phosphorus and to compare their effect on grain yield and quality.

Background:

In some area's of acid soil cropping there has been responses to the application of zinc. Last years trial at Streatham showed a tissue response to added zinc but no yield improvement, this is in part a continuation of that work.

Research from America indicated that sulphur coating of Ammonium Phosphates (MAP and DAP) may improve P uptake hence inclusion of DAP'S cote.

Annual Rainfall mm:

Growing season (A-N) rainfall: 376 mm

Soil Type: Clay Loam

Soil Test:

Extract:

Depth: 0 - 10 cm

pH CaCl_2	5.0	NO_3	54ppm
P Colwell	34	NH_4	6ppm
K Colwell	525	OC %	3
S (KCL)	14.8	DTPA Zn	0.47
		Al CaCl_2	0

Paddock History:

Year	Crop / Pasture
1998	
1999	Pasture
2000	Crop
Notes: (crop, grazing management, weeds, disease, trace element history etc.)	

Treatment Details:

Treatment		Nutrient Applied (kg/ha)			
		N	P	S	Zn
1 Nil	Nil				
2 DAPS		20	25	17.0	
3 DAPS	DAPS	32	35	24.0	
4 DAPS	DAPS	40	50	34.0	
5 DAP Zinc 5%		20	25	2.5	6.25
6 DAPS		20	25	17.0	
7 DAPR1		20	25	2.5	
8 DAP		20	25	2.5	

Plot Management Notes:**Sown:** 5/6/00**Seed - Rate:** 100kg /hectare**Seed - Variety:** Kelalac (Wheat)**Base Nutrition:****Measurements:** Tissue tests taken

Grain yield and Protein %

Summary of Results:

Treatment	Sowing	Pre - Sowing	Yield (tonnes/ha)	WUE/kg/mm	Protein %	% Screen
1	Nil	Nil	6.609	25.0	11.58	<3%
2	DAPS		7.028	26.4	11.23	<3%
3	DAPS	DAPS	6.874	25.8	11.20	<3%
4	DAPS	DAPS	7.141	26.8	11.25	<3%
5	DAP Zinc 5%		6.552	24.6	11.43	<3%
6	DAPS		6.668	25.0	11.35	<3%
7	DAPR1		6.507	24.5	11.10	<3%
8	DAP		7.291	27.4	11.30	<3%
LSD (5%)			0.74 T			
C.V = 8.5 %						

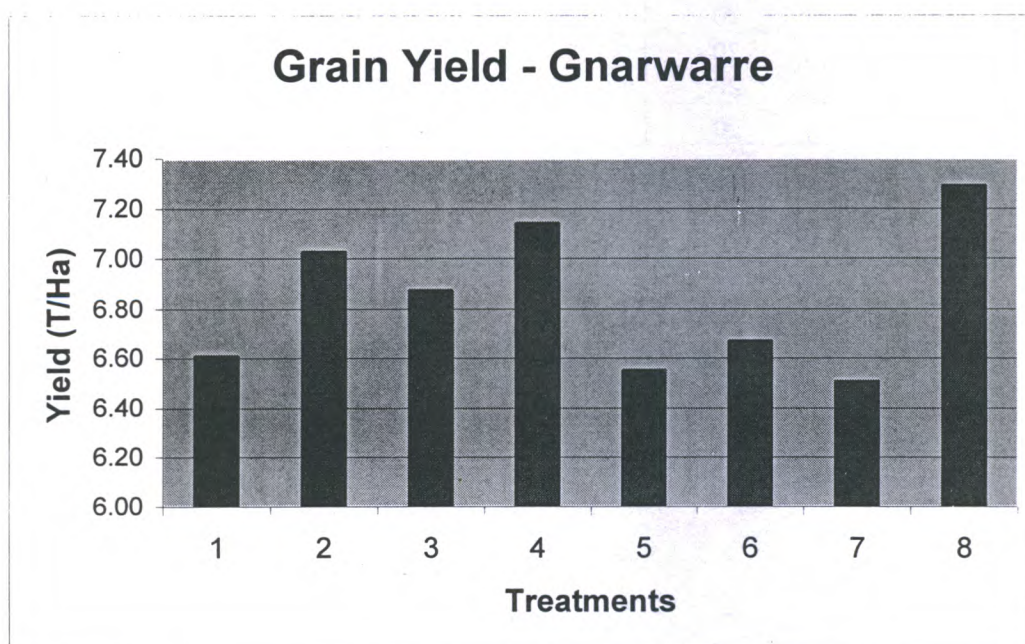
Comments and Discussion:

There was no significant difference between treatments, water use efficiency is very high indicating we do need to consider Jan to April rainfall as well. There was a trend for yields to increase with increasing rate of P applied

Stored nitrogen in the 0 - 60 cm was 260 ppm hence no pre sown nitrogen. The site was sprayed with a fungicide (Impact) at 500 ml hectare to control leaf rust at head emergence. Tissue test data indicated no difference in zinc tissue levels.

Conclusions:

There was not a significant response to added zinc or sulphur at this site. In highly fertile situations such as this, maintenance Phosphorus and some starter nitrogen would be the best long term recommendation, as soil nitrogen levels fall either additional nitrogen would need to be applied or the paddock could be returned to pasture.



Streatham

Location: Streatham Richard Jamieson
Soil Type: Clay Loam

Growing Season (A-N) rainfall: 487mm

Soil Test:

Extract:	pH CaCl_2	5.2	NO_3	77ppm
Depth: 0 - 10 cm	P Colwell	50	NH_4	7ppm
	K Colwell	310	OC %	4.09
	S (KCL)	74.9	DTPA Zn	0.69
			Al CaCl_2	0

Paddock History:

Year	Crop / Pasture
1998	
1999	
2000	Lupins
Note: (crop, grazing management, weeds, disease, trace element history etc.)	

Treatment Details:

Treatments			Nutrient Applied (kg/ha0)			
			N	P	S	Zn
1	Nil	Nil	50	25	2.0	
2	DAPS	UREA	50	25	17.0	
3	DAPS	UREA	50	35	24.0	
4	DAPS	DAPS/Urea	50	50	34.0	
5	DAP Zinc 5%	Urea	50	25	2.5	6.25
6	DAPS	Urea 5% Zn	50	25	17.0	4.40
7	DAPR1	Urea	50	25	2.5	
8	DAP	Urea	50	25	2.5	

Plot Management Notes:

Sown: 5/16/00
Measurements: Tissue tests taken
Seed - Rate:: 100kg /hectare
Grain yield and Protein %:

Seed - Variety:
 Kelalac (Wheat) APW
 Based on 2001 Fertilizer pricing, AWB pool estimates delivered Portland
 Quarterly Pool \$202 at 10 % protein

Summary of Results:

	Sowing	Pre - Sowing	Yield T	Fert cost	Net return	WUE/kg/mm	Protein %	% Screens
1	Nil	Nil	4.570	0.00	978.00	12.1	11.0	3.5
2	DAPS	UREA	5.142	90.50	1028.19	13.6	11.0	2.7
3	DAPS	UREA	5.899	105.87	1174.45	15.6	11.0	2.65
4	DAPS	DAPS/Urea	5.952	129.65	1167.59	15.8	12.0	2.8
5	DAP Zinc 5%	Urea	5.909	103.15	1198.19	15.7	12.0	2.45
6	DAPS	Urea 5% Zn	5.826	104.17	1178.72	15.5	12.0	2.7
7	DAPR1	Urea	6.031	104.00	1201.65	16.0	12.0	2.7
8	DAP	Urea	5.598	82.25	1129.66	14.8	11.0	2.85

LSD at 5% 0.133

C.V = 5.6%

Comments and Discussion:

There was a response to increase P rate at 25 P with DAPS yielding 5.142 T/ha and DAPS at 50 P 5.952 T/ha. There was a significant response to applied zinc with both DAP zinc cote 5% and the Urea zinc cote treatment's out performing DAP at the same rate of phosphorus applied. Tissue tests indicated no zinc deficiency, however a yield response was achieved, zinc levels in the grain will be tested to see if a difference can be detected.

Conclusions:

There was a significant response to increase P applied. There was a significant response to applied zinc with an increased return per hectare of \$ 68.53 after accounting for the cost of the zinc when using DAP zinc cote 5%.

Further Information:

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