Summit Zinc & Liquid Fertiliser Comparison on High pH Soils

Aim: To evaluate various zinc strategies and compare liquid phosphorus in wheat on high pH soils.

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Background: Zinc deficiencies are common on high pH soils. To correct deficiencies, zinc can be applied as a raw fertiliser, seed dressing or foliar spray. To maximise effectiveness, zinc is best applied as a fully compounded granular fertiliser. Zinc added as a blend to fertilisers, is not as effective as having zinc in every fertiliser granule. This trial aims to evaluate different zinc strategies as well as compare the effectiveness of a liquid phosphorus product. Summit's new compound granular product, Zincstar, is also compared.

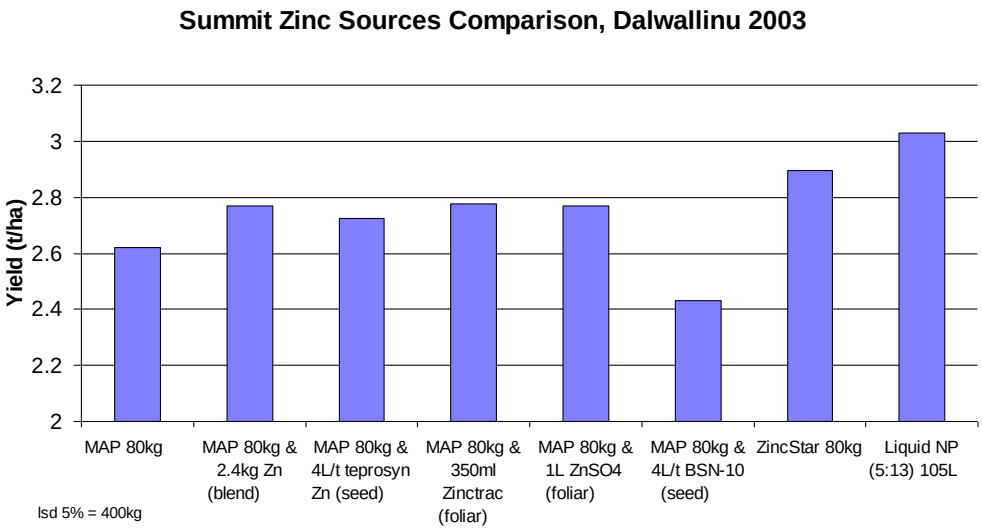
Trial Details:

Plot size and replication	1.8 x 20m * 3 reps
Soil type	Heavy red clay
Sowing date	2nd June 2003
Conditions at sowing	Moist
Machinery	Harrington point with Gumbo boot
Seeding rate	Wyalkatchem @ 75 kg/ha
Fertiliser	Various plus N Basal to 60 kg with Urea Traces basal with foliar application
Herbicides and Insecticides	Roundup P/Max 1.5 L/ha Trifluralin 2 L/ha Chlorpyrifos 1 L/ha Giant 900 mL/ha
Paddock History	2002 =Wheat, 2001 = Pasture, 2001= Peas

Soil Test results:

Depth (cm)	P (ppm)	K (ppm)	Cu (ppm)	Zn (ppm)	S (ppm)	PRI	pH
0 – 10	23	746	3.1	0.2	8	37	7.8

Results:



The addition of zinc as a fertiliser, seed dressing or foliar spray gave a greater grain yield than the control treatment of MAP. There were no significant differences between the seed dressings and the foliar sprays, although the addition of the seed dressing, BSN-10 reduced yield.

Summit's new product, ZincStar produced almost 300 kg/ha more grain yield than the control treatment and nearly 150 kg/ha more grain than the zinc blend fertiliser. The zinc blend treatment also contained 600% more zinc than the ZincStar treatment, confirming past research that blended fertilisers are less efficient in delivering nutrients to plants.

At equivalent rates of phosphorus, the liquid fertiliser treatment produced significantly (lsd = 5%) more grain yield than the control. Liquid phosphorous fertilisers have been shown to be effective on the calcareous soils of the Eyre Peninsula. These soils have very high pH and effectively lock up both P and Zinc mainly due to their calcareous mineralogy. Zinc and phosphorus deficiencies are common on high pH soils in Western Australia, however this is mainly due to iron oxides and not calcium. Little research has been conducted on liquid P fertilizers in Western Australia. The better grain yield responses of the liquid fertilisers have been a source of much conjecture. Many researchers now believe it is due to less soil sorption of P in the liquid phosphorus fertiliser compared to the granular. These liquid P fertilisers are also thought to help release 'fixed P' from the soil.

Summary:

- Liquid fertiliser significantly increased grain yield above the control at equivalent P rates.
- There were no significant differences between the zinc treatments.
- Summit Zincstar produced 10% more grain yield than the equivalent MAP treatment.