Wheat trace element experiment

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Key messages:

- There was no response to any trace elements or mixtures of trace elements, except zinc.
- Zinc responses may occur in red soils particularly if a Chlorsulphuron herbicide, like Logran, is used.
- Zinc produced significantly more tillers but not a yield response.

Location: Boomahnoomoonah East Victoria
Growing Season Rainfall:
Annual: 360 mm (avg 520 mm)
GSR: 236 mm (avg 320 mm)
Soil:
Type: Red Chromosol
pH ($CaCl_2$): 5.0
Sowing Information:
Sowing date: 5/6/2007
Fertiliser: MAP 70 kg/ha
Urea 80 kg/ha
Row Spacing: 220 mm
Paddock History:
2007 – Logran applied
2006 – Canola
2005 – Wheat
Plot Size: 2 m x 20 m
Replicates: 4

Aim:
To test a number of trace elements and mixtures of trace elements for responses in wheat.

Method:
An exclusion experiment was established to test responses to zinc (Zn), manganese (Mn), molybdenum (Mo), copper (Cu), boron (B) and sulphur (S).

Results:

Table 8: Trace element treatment results for wheat, 2007

Treatment	First Tiller Count*	Second Tiller Count*	Yield (t/ha)
Nil (no trace elements)	342	492	2.4
Half rate of Zn, Mn, Cu, B, Mo**	328	471	2.5
Zn Mn Cu B Mo	418	599	1.9
Zn Mn Cu B	423	582	2.1
Zn Mn Cu Mo	422	595	2.0
Zn Mn B Mo	399	601	1.8
Zn Cu B Mo	410	588	2.0
Mn Cu B Mo	328	471	2.5
Zn Mn Cu B Mo S	420	588	2.0
Liquid Zn Mn Cu B Mo S	407	583	2.1
Average for all Full Rate of Zn treatments	342	492	2.4
No Zn	414	593	2.0
Average	403	565	2.1
LSD	62	87	0.4

*- Tillers/m^2, ** - Elements applied at approximately half the recommended rates of the products.

Observations and comments:
No trace elements, except the full rate of Zn, resulted in a significant increase in tiller numbers or yield over the nil treatment. Applications of Zn produced visible responses in early crop growth and significantly more tillers at both the first count (early August prior to Z31) and the second count (late September). This did not relate to a yield response. Plots treated with the full rate of Zn produced significantly less yield than the non Zn treated plots. The visual Zn responses may have been enhanced by the use of a Chlorsulphuron herbicide (Logran) that can induce Zn deficiencies. The lack of spring rain probably resulted in the thicker plots (those with Zn applied) yielding less than the thinner plots.

The response in tiller numbers to Zn application suggests that Zn may produce yield rises, particularly if a Chlorsulphuron herbicide is used. It should be tested by farmers.

Sponsors:
Farmer co-operator: Malcolm Bruce, Boomahnoomoonah East.