

Trace elements and alternative nutrition products

Summary There were no significant yield effects of foliar applied trace elements to wheat, barley, canola and lentils at the Woomelang site in 2001. The trace elements were applied as Zincsol, Coppersol and TopFoliar (which contains a mix of trace elements). The alternative nutrient product, Hibrix, had no significant yield effect on wheat and barley and depressed the yield of canola and lentils.

Background

Many farmers are starting to apply additional nutrients (in addition to P and N) to crops in order to achieve maximum yield. These additional fertiliser often come in the form of zinc, copper, or products which contain a multitude of nutrients. Many farmers are also investing in alternative nutrient products. It is well known that zinc is an essential nutrient especially on the alkaline soils in the Wimmera and Mallee and many farmers are including zinc as part of the fertiliser program every 3 to 4 years. In this study we looked at the potential benefits of applying additional nutrients as foliar sprays during the season, and we also investigated an alternative nutrient product called Hibrix.

Methods

Wheat (variety Yitpi), Barley (variety Sloop), Canola (variety Outback) and Lentils (variety Digger) were sown on May 18, 2001 with 80kg/ha of MAP at the Woomelang site. The site has a good fertiliser history and zinc was last applied as part of the fertiliser program in 19XX. Three trace element products were applied as foliar sprays at the 5 leaf stage of the crops: Zincsol (Zn 17%, S 8% w/v) (at 2L/ha), Coppersol (Cu 7%, S 8% w/v) (at 1.5L/ha), and Top Foliar (containing Boron, Copper, Manganese, Molybdenum and Zinc) (at 5L/ha). The alternative nutrient product Hibrix was applied at 6L/ha at the same time. The manufacturers of Hibrix claim their product contains natural organic chelators, saccharides, proteins, trace elements and various organically bound elements which are argued to promote a proliferation of soil organisms and soil health which improves the transfer of nutrients to the crops. All foliar treatments were fully replicated. Weed and disease control was carried out during the season using normal application of registered products.

Results

There were no positive yield effects of the foliar nutrient products on wheat, barley, canola and lentils. It appeared that Hibrix depressed the yield of canola and lentils, whereas it had no significant effect on wheat and barley (Table 1).

Table 1. Yield (t/ha) of wheat, barley, canola and lentils following the application of foliar nutrient products and the alternative nutrient product – Hibrix.

Treatment	Wheat	Barley	Canola	Lentils
Control	3.6	3.6	0.7	1.8
Zincsol	3.5	3.6	0.6	1.6
Coppersol	3.5	3.5	0.6	1.7
Topfoliar	3.6	3.5	0.6	1.7
Hibrix	3.3	3.7	0.2	1.0
Zincsol + Hibrix	3.4	3.7	0.3	1.1
Coppersol + Hibrix	3.4	3.7	0.4	1.2
Topfoliar + Hibrix	3.2	3.9	0.3	1.3
Significant difference	NS LSD=0.622	NS LSD=0.297	P<0.01 LSD=0.2	P<0.01 LSD=0.4

Interpretation

There were no benefits from applying additional foliar nutrients to the crops at the Woomelang site in 2001. The site has had a good fertiliser history and there were no apparent nutrient disorders in the crop during the growing season. Nitrogen, Phosphorus and Zinc are the critical nutrients and at this stage, the addition of Copper or other nutrients is not required. The alternative nutrient product Hibrix did not show any benefit to the crop during the season and the product showed a yield depression in lentils and canola, whereas it had no positive or negative impact on yield in wheat and barley.

Commercial Practice

Phosphorus is an essential macro-nutrient which needs to be applied every season. Nitrogen is also an essential nutrient and needs to be applied to crops such as wheat, barley and canola if the available nitrogen levels in the soil at sowing are low. Zinc is an essential nutrient on the alkaline soils in the Mallee and Wimmera and needs to be applied as part of the fertiliser program on a regular basis (once every three to four years). Other nutrients such as copper are not limiting but in time as the soil reserves are used it may become an essential nutrient to apply (similar to zinc).

Alternative nutrient products have been in the BCG trial work for many years and at no stage has any product shown a positive yield response. The BCG recommend that growers undertake their own trial work with alternative nutrition products before investing significant amounts of money in applying these products over the whole farm.