

## Plant Testing - Critical for reaching crop potential

Plant testing is a powerful complement to soil testing. Soil testing prior to crop establishment provides an estimate of what should be available to plants, while plant testing measures if it is available.

A key attribute of plant testing is that it could identify inadequate nutrient supply, even in crops and pastures that may appear to be growing well. Yield lost from inadequate nutrient supply can be significant, especially compared with the relatively cheap cost of plant testing and opportunity to restore the correct nutrient balance.

An effective testing program should include regular testing of healthy plants to see if they are as 'healthy' as they appear, or if they have marginal nutrient levels which may be limiting the paddock's overall yield potential.

Therefore, plant testing is an excellent tool to:

- monitor nutrient uptake by crops during the growing season;
- provide a more accurate measure of the trace element status of the soil;
- optimise crop nutrition during the season; and
- let you know when to correct nutrient deficiencies, before they are visible on the plant.

### Key Results - Wyalkatchem 1995

Plant analysis of a nitrogen response trial at Wyalkatchem in mid-July 1995 indicated that copper levels were low, although deficiency symptoms were not visible.

If copper deficiency symptoms do appear it is normally during or after grain fill, by which time yield has been lost.

Copper sprayed on the crop in mid August at a cost of \$4/ha allowed the crop to utilise the applied nitrogen and increased wheat yields by up to 0.67 t/ha (Figure 1), boosting income by up to \$107/ha (Table 1).

In the absence of the copper spray, there was no yield response to the applied nitrogen and no extra return from the money spent on nitrogen. This is a good indicator that copper was a major limiting factor.

### Summary

**Yield potential of crops may not be reached as a result of a limited supply of key nutrients.**

Plant testing can provide information on nutrient status of crops that appear to be performing adequately.

Levels of plant-available trace elements, such as copper and zinc, are not readily determined from soil tests. Plant testing is the only reliable way to determine whether trace elements are limiting production.

With nutrients like copper that are not mobile within the plant and can affect grain potential late in the season - plant testing allows this to be determined and corrected within the growing season.

Figure 1:

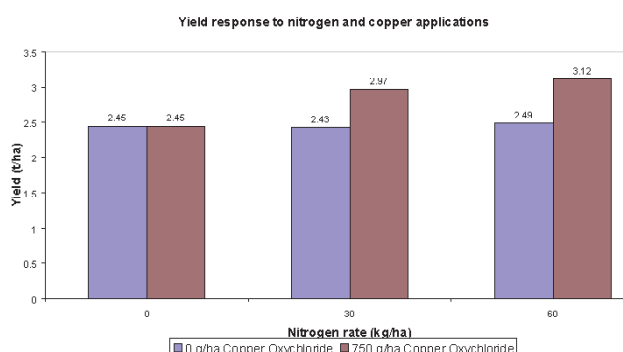


Table 1: Extra return from nitrogen (\$/ha) after applying copper

	Nitrogen Rate (kg/ha)		
	0	30	60
0 g/ha Copper Oxochloride	\$0	-\$7	\$3
750 g/ha Copper Oxochloride	\$0	\$82	\$107

(Assuming wheat price on farm of \$165/t and copper oxochloride cost of \$4/ha)

