

Does a Zinc based foliar spray reduce the crop effect of some herbicides?

SUMMARY

Zinc is an essential nutrient to crops and on alkaline soils in the Mallee and Wimmera zinc deficiencies are common. The regular (once every three to four years) use of a fertiliser with a zinc additive overcomes most of these deficiencies. Some crops such as faba beans may require more zinc. In the 2000 season many farmers added a zinc foliar spray with a herbicide mix to overcome any potential crop effect resulting from the herbicide application. The addition of a zinc foliar to three different herbicide mixes on barley was demonstrated against unsprayed control plots. There was no benefit from the zinc foliar in reducing the crop effect from the herbicide or in improving crop yield.

The aim of this trial was to observe whether additions of a zinc based liquid fertiliser to a herbicide reduces the crop effect often seen when using broadleaf and grass herbicides in cereals.

BACKGROUND

Zinc deficiencies have been identified on alkaline soils in low rainfall areas. It is recommended practice in the Mallee and Wimmera to regularly use fertilisers with zinc additives when sowing a crop. Zinc seed treatments or zinc foliar sprays on crops susceptible to zinc deficiency such as fababeans can be beneficial. Foliar applications can also work when zinc based fertilisers have not been used.

It is known that metsulfuron (Ally(r)) can increase any zinc deficiency and can cause damage in crops grown in a zinc deficient environment. There is no experimental evidence that metsulfuron, when applied to crops with a good zinc history causes a zinc deficiency or damage to a cereal crop. Many farmers have added a foliar zinc to their normal herbicide spray mix to help overcome possible crop effect from the herbicide. This demonstration was designed to see if any negative effects of a herbicide on a cereal crop, were overcome by the addition of a zinc foliar spray to the herbicide.

METHOD

Sloop barley was sown on May 15 with MM1 at 80kg/ha. At the six leaf stage of the crop (Z16,23) on July 29, the herbicide treatments were applied. Zinctrac(r) was used at 0.3L/ha. The herbicide treatments were:

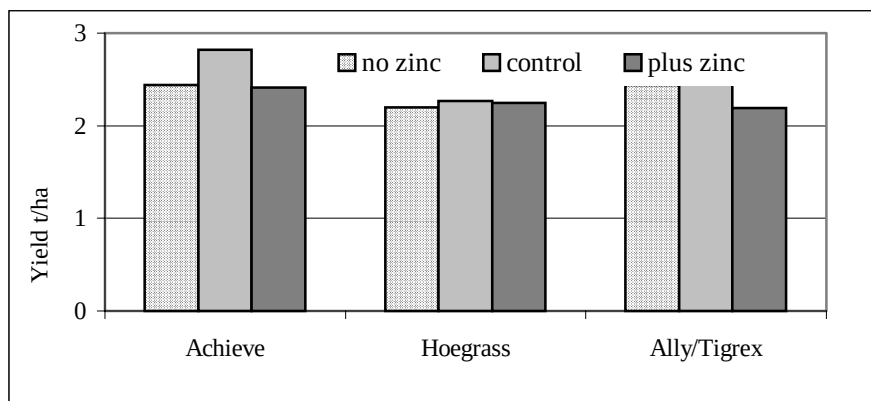
- (i) Achieve 380g/ha + 0.75% supercharge - with and without Zinctrac
- (ii) Hoegrass 1.5L/ha + 0.25% wetter - with and without Zinctrac
- (iii) Ally 3g + Trigrax 0.5L + 0.1% wetter - with and without Zinctrac

The treatments were sprayed so that there was always a control (no spray) between the herbicide and the herbicide + zinc treatments.

RESULTS

There was a visible effect of the Achieve on the barley crop. The crop in both Achieve plots turned yellow five days post spraying and the crop effect remained visible for approximately 3 weeks. The crop recovered from the yellowing but a height difference remained throughout the rest of the season between the control and the Achieve treatments. And it appears this carried through to harvest with both the Achieve treatments yielding 0.4t/ha less than the unsprayed control. The addition of a zinc foliar did not reduce the extent of crop yellowing nor did it improve crop yield. There were no visible and yield crop effects from the Hoegrass or Ally/Tigrax, and in neither situation did the zinc foliar improve the crop (Figure 1).

Figure 1. Barley yield in relation to three herbicides, with and without a zinc foliar additive



INTERPRETATION

In the 2000 season there were no benefits from adding a zinc foliar additive to a herbicide mix to reduce crop effect. The Birchip site has a reasonably good zinc fertiliser history (zinc based fertilisers were used in 1997 and 2000) and it appears that crop effects when visible are not alleviated by a zinc foliar additive to the herbicide mix, when used on soils with a good zinc history.

COMMERCIAL PRACTICE

On alkaline soils in the Mallee and Wimmera it is important to include a zinc additive to the fertiliser every three to four years. It is only for highly zinc sensitive crops such as faba beans that additional zinc, as a seed treatment or foliar spray, may be required.

Even though in wide spread commercial use there is no experimental evidence that a zinc foliar addition to a herbicide mix is beneficial in reducing the possible crop effect from the herbicide. It is recommended that farmers use zinc regularly as part of their fertiliser program and not spend additional inputs on questionable additives such as zinc in herbicide mixes to reduce crop effect.