

Is Zinc required every time you sow a crop?

The aim of this replicated trial was to determine whether highly zinc responsive crops such as faba beans and lentils would respond to additional zinc when grown on a paddock which has had a good zinc history.

Summary: Zinc needs to be applied as part of the fertiliser program every three to four years in the Wimmera and Mallee. The use of zinc as a seed dressing or foliar application will only be beneficial when the paddock has had a poor zinc history. In trials at the Rupanyup site where zinc had been applied 2 out of the last 5 years there were no yield benefits of adding more zinc even to responsive crops such as faba beans and lentils.

Background

Many farmers believe that adding zinc to their fertiliser program on a regular basis is beneficial for yield and is economically worthwhile. There is no question that zinc is an essential nutrient and is required by all crops grown in the Mallee and Wimmera. The question is whether it is of benefit to apply it at every occasion when a pulse crop is sown.

Methods

The effect of zinc applied as (i) part of the fertiliser program, (ii) seed dressing, (iii) foliar spray, (iv) and a combination of these options was investigated at the Rupanyup site. Lentils (variety Digger) and Faba beans (variety Fiesta) were sown on June 19, 2001 at 50 and 120 kg/ha respectively. Normal registered herbicides and fungicides were used for in crop weed and disease control. The treatments were fully replicated:

Treatment	Rate	Timing
MAP	70 kg/ha (15kg of P)	at sowing
Mallee Mix 1 (MM1)	81 kg/ha (15kg P, 1.6kg Zn)	at sowing
Teprosyn seed dressing, MAP	4 L/t seed dressing (60% Zn) and MAP 70 kg/ha	at sowing
Zincsol foliar, MAP	2 L/ha (17% Zn) and MAP 70 kg/ha	at five leaf
Zincsol foliar, seed dressing, MAP	2 L/ha (17% Zn), seed dressing 4 L/t and MAP 70 kg/ha	at five leaf and sowing

Results

There were no significant effects on faba bean or lentil yield of zinc applied as part of the fertiliser program (Mallee Mix 1), as seed dressing (Teprosyn zinc seed dressing), foliar application (Zincsol) or a combination of these application techniques (Table 1).

Table 1. The effect of a number of zinc treatments on Faba bean and Lentil yield (t/ha)

Treatment	Faba beans	Lentils
MAP	2.7	2.2
MM1	2.8	2.1
Seed dressing + MAP	2.8	2.2
Foliar + MAP	2.8	2.5
Foliar + seed dressing + MAP	2.7	2.3
Significant difference	NS	NS

Interpretation

Zinc is an essential nutrient and needs to be applied regularly to crops. The Rupanyup site has had 2 applications of zinc (as part of the fertiliser program) over the last 5 years. It is therefore not surprising that zinc treatments had no effect on yield of faba beans or lentils.

Zinc as part of the fertiliser program costs an additional \$5/ha when 1.3kg/ha of zinc is applied (depending on P rates used). At this rate the beneficial effects of the zinc will last several years and it is recommended that zinc is applied as part of the fertiliser program every three to four years. The application of zinc as a seed dressing or as a foliar application only adds sufficient zinc for the crop grown in the year of application (there is no residual benefit). This is essential practice when it is known that zinc is deficient in the year of growing the crop (must apply early in crop for economic benefit), but is not required where zinc has been used as part of the fertiliser program.

Savings can be made by farmers by making sure that crops are not over fertilised.

Commercial Practice

Zinc is an essential nutrient and should be applied as part of the fertiliser program every three to four years in the Mallee and Wimmera. The use of zinc as seed dressings and foliar applications should only be used as a last resort when it is known that the zinc fertiliser history has been poor.