

## ZINC SUPPLEMENTED TO AVOCADO TREES IN CONJUNCTION WITH ROOT ROT CONTROL INJECTIONS

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### **OPSOMMING**

*Sinksulfaat was mengbaar met fosetiel-Al en inspuitings met mengsels van hierdie produkte het nie net die Zn-inhoud hoog gehou nie, maar ook 'n effektiewe beheer van wortelvrot op produserende avokadobome verseker.*

### **SUMMARY**

*In the present study  $ZnSO_4$  was compatible with fosetyl-Al and injections with mixtures of these products not only keep foliar Zn content high, but also ensure a more rapid remission of root rot symptoms in bearing avocado trees.*

### **INTRODUCTION**

Zinc compounds can be applied in various ways to correct deficiencies in avocado trees. In California, the commonly recommended treatments are foliar sprays and soil applications (Gustafson, 1973). Kadman and Cohen (1977) in Israel showed that there was inadequate uptake of this element through mature foliage and they injected  $ZnSO_4$  and Zn-chelate into avocado trees with good results.

An injection technique with fosetyl-Al has been recently developed for the control of Phytophthora root rot of avocados in South Africa (Darvas, Toerien and Mine, 1983).

The effect of ZnSO<sub>4</sub> injected into bearing trees in mixtures with fosetyl-Al solution was investigated in this study.

## **MATERIALS AND METHODS**

Bearing avocado trees, cv. Fuerte and Edranol were injected for the control of Phytophthora root rot with fosetyl-Al (Darvas *et al* 1983) and in some of the treatments GPR grade ZnSO<sub>4</sub> solution was administered into the trees at a rate of 0.4 per m<sup>2</sup> canopy area, dissolved in fosetyl-Al solution. Two fosetyl-Al injections were applied to all trees in the experiment each year (August and October) whereas ZnSO<sub>4</sub> was added only once with the first (August) injection in the first year. One and two years later leaf samples were drawn from the various treatments and analyzed for Zn content by the Chemistry Laboratory of the Northern Transvaal Cooperative in Potgietersrus.

Simultaneously, Fuerte trees were evaluated for root rot severity on a 0 (healthy) to 10 (dead) disease index scales.

## **RESULTS**

Zn-content of the leaves tended to increase in trees injected with fosetyl-Al only. Substantially higher Zn readings were found in leaves of both cultivars in the first year of ZnSO<sub>4</sub> injection in mixtures with fosetyl-Al but Zn content sharply decreased in the second year. The recovery of Fuerte trees injected with fosetyl-Al alone was slight in the first year with a remarkable improvement in the second, ZnSO<sub>4</sub> plus fosetyl-Al-treatment resulted in a rapid improvement even in the first year (Table 1).

## **DISCUSSION**

The Zn level increased in leaves of avocado trees that received fosetyl-Al injections only, may be attributed to a better nutrient uptake by a healthier root system of the treated trees.

A much higher foliar concentration of Zn was produced by the single ZnSO<sub>4</sub> injection in the first year of the experiment. The Zn levels were back to the level of the fosetyl-Al (alone) treatment in the second year.

While the improvement in the condition of the trees was most significant in the second year with fosetyl-Al alone, good recovery occurred in the first year of the ZnSO<sub>4</sub> plus fosetyl-Al injected trees. This would seem to indicate that an annual supplementation of Zn in the form of a single ZnSO<sub>4</sub> injection at the rate of 0.4 g per m<sup>2</sup>, canopy area, would be sufficient to keep Zn at suitable levels in bearing avocado trees under Westfalia conditions.

## **REFERENCES**

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