

REDUCTION IN YIELD IN AVOCADO ORCHARDS BORDERING ON EUCALYPTUS PLANTATIONS

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INTRODUCTION

Avocado growers in high rainfall areas of the north-eastern Transvaal often grow Eucalyptus on their farms as well. Where avocado orchards and Eucalyptus plantations have a common border, reduction in avocado yield is often experienced. The following study was undertaken to quantify the reduction in yield.

MATERIALS AND METHODS

The study was carried out in a six-year-old Hass avocado orchard planted at a spacing of 7 x 7 meters. The southwestern part of the orchard borders on a twenty-year-old *Eucalyptus grandis* plantation of approximately 34 meters in height. The distance between the Eucalyptus plantation and the first row of avocado trees was 14 meters. The next three rows of avocado trees were planted at distances of 21, 28 and 35 meters from the border of the Eucalyptus plantation.

During the 1987 harvest, single tree yields were recorded for 15 trees at random in each of these four rows. In order to compare the yield of trees in these border rows with the yield of trees unaffected by Eucalyptus, 15 trees in the middle of the orchard were also harvested individually. The distance between these control trees and the border of the Eucalyptus plantation was 70 meters.

A one-way analysis of variance was conducted for the data obtained.

RESULTS AND DISCUSSION

In the orchard used for this study, 13 per cent of the avocado trees were influenced by Eucalyptus, resulting in a yield reduction of 2,6 tons. Yield of avocado trees planted 14 meters from the border of the Eucalyptus plantation was reduced by 66 per cent ($P = 0,05$), as compared to control trees (Figure 1). Yield of trees planted 21 meters from the border of the Eucalyptus plantation was reduced by 33 per cent ($P = 0,05$) as compared to the control. Yield of trees planted 28 and 35 meters from the border of the Eucalyptus did not differ significantly from the control.

This Eucalyptus plantation shades a large part of the avocado orchard in the afternoon. All avocado trees of this or-

chard are under the same irrigation and fertilisation regime. Therefore, Eucalyptus trees compete with avocado trees for light, water and mineral nutrients.

In another avocado orchard at Westfalia Estate, similarly affected by nearby Eucalyptus trees, tensiometers placed in the zone of severely affected avocado trees indicated drastically increased water uptake (Slabbert, personal communication). In the orchard studied, the reduction in yield found in the first two rows of avocado trees along the Eucalyptus plantation, could be compensated to some extent by adjusting irrigation and fertilisation.

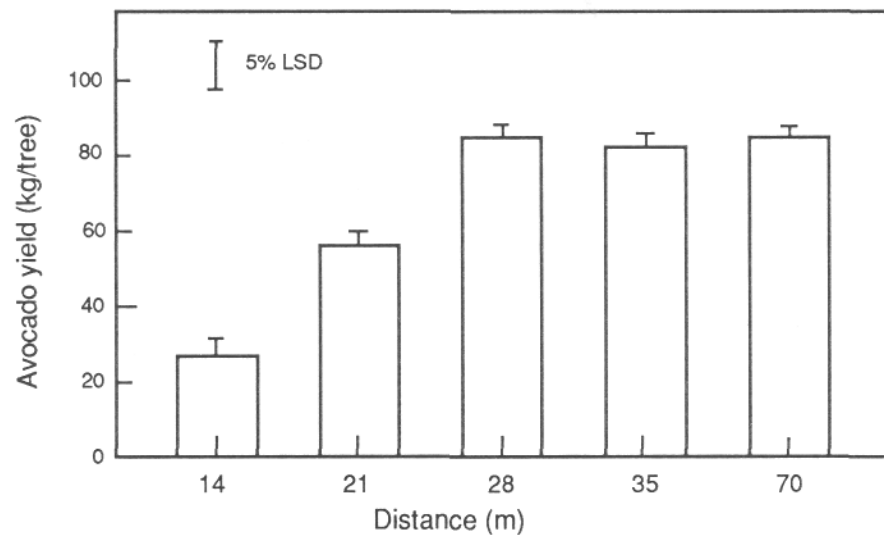


Fig 1 Yield of avocado trees (cv Hass) planted at a distance of 14, 21, 28, 35 and 70 meters from a twenty-year-old *Eucalyptus grandis* plantation. Bars indicate SE of means, 15 trees per mean.