Effect of copper fungicide on *Colletotrichum gloeosporioides* and other microorganisms on avocado leaves and fruit

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Abstract

An investigation into the effect of copper fungicide on non-target microorganisms on avocado (cvv. Hass and Nabal) showed that populations of filamentous fungi, yeasts, and bacteria on leaves were at least 10-fold less after a single application of copper than on unsprayed leaves. This detrimental effect of copper on microorganisms on the phylloplane was confirmed in random samples collected from 5 commercial avocado orchards with regular pesticide spray programs but where isolated unsprayed trees were also available. An intensive 16-month study was carried out on 2 adjacent orchards, 1 that was sprayed with copper fungicide at monthly intervals from October to April each year, and the other that had not been sprayed for at least 6 years. Populations of filamentous fungi, yeasts, and bacteria on leaves and fruit were 10–100-fold lower in the sprayed orchard than in the unsprayed orchard. However, populations in the sprayed orchard recovered during the winter non-spray periods to levels comparable to the unsprayed orchard. In 1993 and 1994, fruit were harvested from both orchards, ripened, and assessed for anthracnose caused by *Colletotrichum gloeosporioides*. In both years, there was significantly less disease in unsprayed fruit (mean disease rating 1.13 and 0.32, respectively) than in sprayed fruit (mean disease rating 1.83 and 2.18, respectively). These results show that copper fungicide is detrimental to phylloplane microorganisms and suggest that those organisms are providing some natural suppression of *C. gloeosporioides* on avocado.

Keywords: disease suppression, anthracnose.

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