Title Evaluation of alternatives to copper oxychloride for the control of bacterial black spot and post harvest diseases in mango

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Citation ISHS Acta Horticulturae 820:535-540. 2009.

Keyword mango; bacterial black spot; *Mangifera indica*; *Xanthomonas campestris* pv. *mangiferae indicae*

Abstract

Bacterial black spot caused by *Xanthomonas campestris* pv. *mangiferae indicae* is often responsible for excessive fruit loss in susceptible cultivars such as Keitt and Kent. Extensive spraying with copper oxychloride is the most common means to control the disease in South Africa. However, copper may become phytotoxic in the soil and threaten the sustainability of farming operations. Therefore the aim of this investigation was to evaluate alternative low copper-content products for the control of bacterial black spot and post harvest diseases, thereby reducing the amount of copper applied to orchards. During the 2003/04 season four copper products were evaluated in comparison with an untreated control on one hectare of Keitt mangoes in the Mooketsi area of the Limpopo Province. In the 2004-05 season three copper products and an integrated program were compared to an untreated control in a nearby orchard on the same estate. In both seasons fruit loss due to bacterial black spot was monitored weekly from December onwards, and the total fruit loss due to disease was determined for each treatment. Fruit samples were taken at harvest in February, for shipment simulation and evaluated for post harvest diseases and disorders upon ripening. In the 2003-04 season, Nordox (cuprous oxide) was as effective as Demildex (copper oxychloride) for the control of bacterial black spot, while Kocide (copper hydroxide) and Cuprotect (copper acetate) were significantly less effective. Demildex, Kocide and Nordox were equally effective in controlling anthracnose, stem end rot and soft brown rot. In the 2004-05 season no bacterial black spot was detected in the trial orchard, therefore no conclusions could be reached in this regard. Copstar (copper hydroxide), Nordox and Nordox alternated with Agromos were not significantly less effective than Demildex for the control of anthracnose. Nordox, when compared to Demildex, resulted in half the amount of copper being applied in one season and is the most promising alternative thus far.