

Fuerte Fruit Quality as Influenced by Post-harvest Chlorine and Wax Treatments

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ABSTRACT

The effect of post-harvest chlorine and wax treatments on the quality of Fuerte fruit with sooty blotch marks was evaluated. Removal of sooty blotch marks by dipping affected fruit in a 0,5 % calcium hypochlorite solution for 1 min and subsequent waxing showed no negative effect on fruit quality when compared to fruit that were waxed only.

INTRODUCTION

A chlorine solution may be used in the packhouse to remove sooty blotch marks from avocado fruit (Bezuidenhout, 1991) prior to waxing. The purpose of this study was to evaluate the effects of post-harvest chlorine and wax application on the quality of Fuerte fruit.

MATERIALS AND METHODS

This study was carried out at the Westfalia Estate packhouse in 1994 and 1995. Fuerte fruit (count 14) were picked in June at a moisture content of 70 % and underwent the following treatments:

- *Control:* Fruits were left untreated and sent over the packline to evaluate the effect of the rollers and brushes.
- *Chlorine treatment:* Applied in a bath at a calcium hypochlorite concentration of 0,5 %. The pH was adjusted to 7,2. Treatment duration was 1 minute. Thereafter the fruit were rinsed with water (Bezuidenhout, 1991).
- *Wax treatment:* Polyethylene wax (Tag) was applied by means of a spinning disc applicator at 1 l / per ton of fruit.
- *Chlorine plus wax treatment:* After chlorine treatment, rinsing and drying, the fruits were waxed, as above.

One hundred and forty fruits were used per treatment. The fruits were stored for four weeks at 5 °C to simulate sea shipment to Europe. Thereafter the temperature was increased to 18 °C to induce ripening. Ripe fruits were inspected and assessed for anthracnose, stem end rot, black and brown cold damage symptoms as well as lenticel damage and the internal physiological disorders, pulp spot and grey pulp. Symptoms were rated on a scale of 0 (no symptom) to 3 (severe symptom).

RESULTS

The chlorine treatment effectively removed sooty blotch marks from the fruits. The incidence of anthracnose and stem-end rot was very low in all treatments. The incidence of black and brown cold damage was also very low, and treatments did not differ significantly (data not shown).

In 1994, lenticel damage was significantly higher in the control and the chlorine treatment than in the wax treatment and the chlorine plus wax treatment. In 1995, the incidence of lenticel damage was generally higher than in 1994, but there were no significant differences between treatments (figure 1).

In 1994, the pulp spot incidence was lowest in the control, and highest in the chlorine plus wax treatment, while chlorine or waxes on their own were intermediate. In 1995, however, the control, the chlorine and the chlorine plus wax treatments did not differ, whereas the wax treatment had the highest incidence of pulp spot. Overall levels in both years were, however, very low (figure 2).

In 1994, grey pulp was increased in the chlorine and chlorine plus wax treatments when compared to the control and wax only treatment. In 1995, no differences could be detected between treatments (figure 3).

With regard to days to ripen, there were big differences between the two years. In 1995, the fruit ripened much faster than in 1994. In 1994, fruit treated with chlorine alone ripened significantly faster than the others (figure 4).

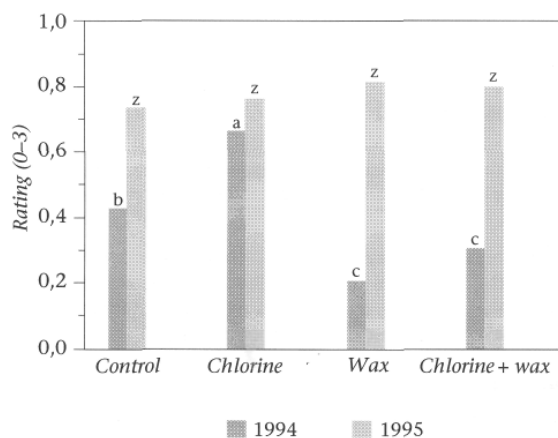


Figure 1

Effect of chlorine and wax treatments on lenticel damage in Fuerte fruit

Bars within a single year not accompanied by the same letter are significantly different according to Duncan's multiple range test ($P = 0,05$)

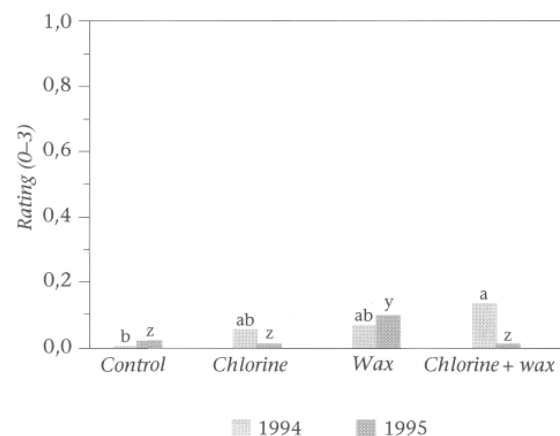


Figure 2

Effect of chlorine and wax treatments on the incidence of pulp spot in Fuerte fruit

Bars within a single year not accompanied by the same letter are significantly different according to Duncan's multiple range test ($P = 0,05$)

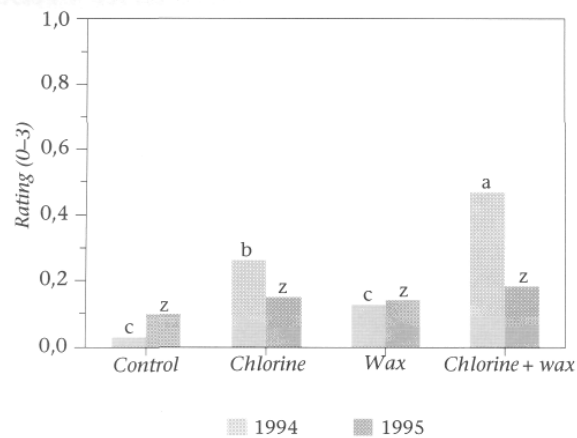


Figure 3

Effect of chlorine and wax treatments on the incidence of grey pulp in Fuerte fruit.

Bars within a single year not accompanied by the same letter are significantly different according to Duncan's multiple range test ($P = 0,05$)

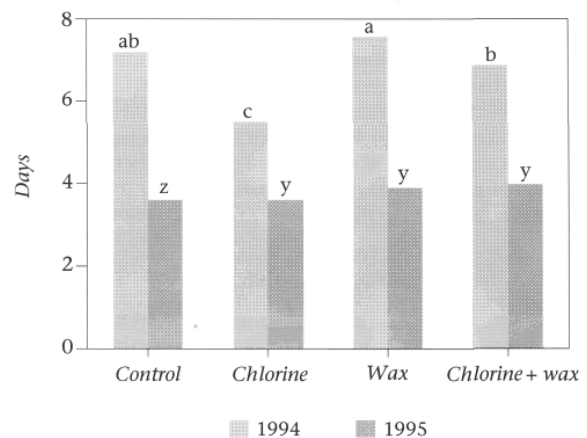


Figure 4

Effect of chlorine and wax treatments on the days to ripen in Fuerte fruit

Bars within a single year not accompanied by the same letter are significantly different according to Duncan's multiple range test ($P = 0,05$)

CONCLUSIONS

In both years untreated control fruit had a lower incidence of the physiological disorders, pulp spot and grey pulp than the treated fruit. However, the chlorine plus wax treatment had no negative effect on fruit quality when compared with fruits that were waxed only. As waxing is presently the standard post-harvest treatment in the South African avocado industry, the use of chlorine to remove sooty blotch marks will not have a negative impact on the fruit quality.

REFERENCE

BEZUIDENHOUT, J. J. 1991. Verwydering van roetvlek vanaf avokadovrugte. *South African Avocado Growers' Association Yearbook*. 14: 60.