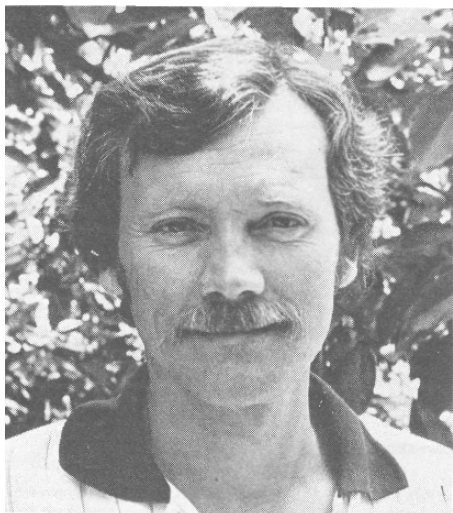


## THE CONTROL OF POST-HARVEST AVOCADO DISEASES WITH PROCHLORAZ



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### OPSOMMING

*Antraknose op avokados is doeltreffend beheer deur die doop van vrugte in 700 dpm ab prochloraz suspensie vir een minuut en ook deur die ULV toediening van prochloraz teen 5 000 dpm ab met Prolong waks teen 'n dosis van 1,6 liter per ton vrugte. Die behandelings het Dothiorella / Colletotrichum kompleks vrugtevrot en stingelendbederf ook onderdruk.*

### SUMMARY

*Anthraco-nose of avocados was effectively controlled by dipping fruit into 700 ppm ai prochloraz suspension for one minute and also by the UL V application of prochloraz at 5 000 ppm ai with Prolong wax added at a rate of 1,6 litre per ton fruit. The treatments suppressed Dothiorella-Colletotrichum complex fruit rot and stem-end rot as well.*

### INTRODUCTION

The control of post-harvest diseases in South Africa is presently based on pre-harvest fungicidal sprays, which also control *Cercospora* spot. Apart from stem-end rot, little success has been achieved in the past with post-harvest treatments to control post-harvest diseases in South Africa (Darvas, 1977; Darvas 1978; Darvas, 1982; Kotzé and Kuschke, 1979) and Australia (Muir-head, 1977).

Recently, a newly developed fungicide, prochloraz, showed considerable promise against post-

harvest diseases when fruits are dipped into a water suspension of the chemical (Muirhead, 1981; Rowell, 1983).

Different application methods and various concentrations of prochloraz, alone and in combinations with other chemicals, were tested during the past season at Westfalia Estate,

## **MATERIALS AND METHODS**

Fuerte fruits were used in the experiment. The moisture content of the fruits averaged 76,5 percent.

The following chemicals were included in the test:

Prochloraz 45% ai EC formulation

"Penetrex" experimental material to facilitate the penetration of fungicides into the fruit.

TAG wax

Prolong wax

Dip treatments entailed the submersion of fruits into water suspension of the various chemicals for one minute and the ultra low volume (ULV) application of water suspended chemicals by means of a portable ULV applicator (model ULVA 8) at a rate of 1,6 litre suspension per ton fruit. Fruits were air dried in wind tunnels for about three minutes. TAG wax was applied by way of brush rollers as a rate of about one litre per ton of fruit.

Fruits were packed in cardboard cartons and cold stored at 6 °C for 28 days. After cold storage, fruits were ripened at ambient temperature and checked daily for firmness. The fruit was assessed for the presence of post-harvest diseases externally and internally as soon as they reached the eat-ripe stage. Diseases were rated on a 0 (no symptoms) to 10 (entire fruit affected) disease index scale. There were 10 carton replications of count 14 fruit in each treatment.

## **RESULTS**

Significant increases in disease incidence were recorded in all treatments that significantly extended shelf-life of the fruits. While prochloraz dip and ULV treatments with Prolong did not influence ripening time in comparison with TAG waxed controls, they tended to reduce all post-harvest diseases. However, due to large variations, only in the case of anthracnose was the reduction statistically significant.

## **DISCUSSION**

The increase in disease incidence with retarded ripening of the fruit is in agreement with the basic principle of plant disease relationships confirmed in several experiments (Darvas, 1982) and cannot be attributed to the direct action of the chemicals on the organisms involved.

The two treatments that were effective against anthracnose and showed some activity against *Dothiorella* / *Colletotrichum* complex fruit rot and stem-end rot were the prochloraz dip and the ULV prochloraz plus Prolong wax treatments. For practical reasons the ULV treatment would be preferable under Westfalia circumstances and a thorough investigation of this technique is now envisaged.

TABLE 1. Control of post-harvest avocado diseases by various post-harvest treatments.

Treatments	Mean disease severity (0-10 index)			Ripening time in days
	Dothiorella/ Colletotrichum complex	Anthracnose	Stem-end rot	
1. ULV prochloraz undiluted, dry, TAG wax	1,65 ab —	0,15 c —	0,21 bc —	8,32 b —
2. ULV prochloraz 5 000 ppm ai, dry, TAG wax	1,35 b —	0,49 b —	0,28 b —	8,28 b —
3. ULV prochloraz 5.000 ppm ai with 10% penetrex, dry, TAG wax	1,78 a —	0,88 a —	0,43 a —	10,08 a —
4. Dip into 700 ppm ai prochloraz suspension, dry TAG wax	0,65 c a	0,03 c b	0,07 d a	6,26 c a
5. ULV prochloraz 5.000 ppm ai with 1,5% Prolong wax	0,67 c a	0,007 c b	0,09 d a	6,48 c a
6. Control TAG wax	0,78 c a	0,16 c a	0,15 cd a	6,33 c a

Means followed by same letter do not differ significantly at P = 0,05 level (Duncan's multiple range test).

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