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EFFECTIVENESS OF CHEMICAL POSTHARVEST TREATMENTS FOR AVOCADO ANTHRACNOSE CONTROL

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ABSTRACT

Suspensions of Benomyl and prochloraz were compared as postharvest control of anthracnose (*Colletotrichum gloeosporioides*) on 'Pinkerton' avocados (*Persea Americana* Mill). Mature-green avocados were immersed for 20 seconds in the chemical suspension. Fruit were then held for 16 days at 13°C followed by ripening at 24°C before evaluation for anthracnose. Treatment in 0.2% prochloraz and in 0.05% Benomyl plus 0.05% prochloraz satisfactorily controlled anthracnose after 16 days storage at 13°C.

Avocado (*Persea Americana* Mill.) production throughout the world, including Florida has increased dramatically over these past 50 years. The production in California and Florida has reached a level that has affected marketing so severely that numerous acres have been removed from production in both states. Florida now has 10,076 acres (4,080 ha) of avocado producing a crop valued at over $17 million (1). Probably the most serious pest which threatens avocado production and marketing throughout the tropical world is avocado anthracnose caused by *Colletotrichum gloeosporioides* (Penz.) Sacc. (2, 4, 8, 12). Avocado anthracnose comes from fruit infected prior to harvest by *Colletotrichum gloeosporioides* (11.12).

It is almost impossible to obtain anthracnose-free avocado fruit in spite of rigorous field applications of fungicides effectively reducing the disease (5,7,8,1). Once *C. gloeosporioides* establishes itself in the fruit of avocado, it becomes impossible to control, especially in the cultivars 'Fuerte' and 'Pinkerton' (10). In the early 1980's, researchers reported successful use of prochloraz in postharvest dip for the control of avocado, citrus, custard apple, guava, lychee, and mango ripe fruit rots (3, 6, 9, 10).

This paper reports the results of comparative trials of fungicides added to tap water for the control of avocado anthracnose.

MATERIALS AND METHODS

The green mature avocado fruits (cv Pinkerton), naturally infected with anthracnose were harvested in December 1989. The fruits were randomized into three equal groups of 9 fruit each for each treatment. All fruits were washed, dried and treated within 24 hours after harvest. Each test was repeated at least three times. The fungicides used were methyl 1 -(butylcarbamoyl)-2-benzimidazole-carbamate (benomyl) at 0.2% and l-(N-propyl-N-(2-6-(trichlorophenozy)ethyl)carbamoyl) imidazole (IUPAC)

(prochloraz) at 0.2%.

The fruits were dipped in water or fungicides at 26-32°C for 20 sec. After treatment, the avocadoes were air dried, repacked in commercial flats and stored at 13°C for 16 days. After storage for 16 days to stimulate storage and transportation time, the fruits were transferred to 24°C for ripening. Evaluations were made daily and data were recorded for severity of decay, injury and ripeness as the fruits became fully ripe.

RESULTS AND DISCUSSION

Results with the avocado cultivar, 'Pinkerton' are shown in Table 1. All postharvest fungicides on the dip-treated avocado fruit reduced the incidence of anthracnose compared with the control. Overall percent marketable fruit was 80.3% for 0.2% benomyl, 84.2% for 0.2% prochloraz and 87.5% for 0.05% benomyl plus 0.05% prochloraz. The increase in avocado anthracnose control with prochloraz supports reports by others (6, 10). However, none of the researchers reported a benomyl dip or the combination of benomyl plus prochloraz. No fruit injury with benomyl, prochloraz, or the combination of the two was observed. Benomyl and prochloraz alone or in combination with each other had no effect on ripening of 'Pinkerton' cultivar. These data are not to be construed as a postharvest avocado anthracnose control recommendation until cleared for this purpose by the State of Florida and the Environmental Protection Agency.

Table 1. Combination of fungicide dips for anthracnose control in avocado cv Pinkerton

Treatment[1] 20 sec dip	Days to soften	Decay Index[2] Anthracnose	Percent Marketable
Water control	10.3	9.0	00.0
0.2% benomyl	9.4	2.6	80.3
0.2% prochloraz	9.6	1.8	84.2
0.05 benomyl + 0.05 prochloraz	10.0	1.9	87.5

[1]Mean percentages for the treatments were based on four replications, repeated three times.
[2]Injury and decay were rated on a scale of 1 to 9 with 1 = none, 3 = trace, 5 = slight, 7 = moderate, and 9 = severe.

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