

scope corrugated fiberboard boxes or in tray-type fiberboard boxes. Tomatoes are packed with 5 to 7 kg per box. The preferred method for larger "beef stake" tomatoes is 7 kg per box. Uniform size and color within a box is of utmost importance. Cherry tomatoes are generally packed in clear and rigid plastic consumer packages containing 500 g per package. Ten to 12 packages are packed per tray-type fiberboard box.

Conclusions

Exporters should be aware that Western Europe is a major market for high quality fresh produce from many exporting countries. Normally, Florida producers of fresh produce can supply the European market during the winter months. However, competition from Southern Hemisphere countries can be expected. These countries are dependent on the export of their produce to Western Europe. But, more importantly, their shippers are willing to pack and ship the product the way the European receivers and consumers want. In order for U.S. shippers to compete on the European market, we must also supply what the market wants. If the market wants green beans packed in 5 kg fiberboard boxes, then we must comply in order to be successful exporters.

In general, we can conclude that fresh produce must be clean, well graded and sized, and packed the way the importers want. Sizing within the European market is much more vigorous than within the U.S. European importers must market within Europe according to the European regulations. Commodities must be clean and free of foreign residues. We see fresh grapes rejected for import to Western Europe because of dust residue and celery with soil residue on the stalks being refused entry. Net weight preferences per shipping container are of utmost importance. Importers generally expressed a strong preference of a certain net weight for a given commodity. In the fu-

ture, a maximum of 10 to 12 kg per shipping container may be enforced by the labor unions. Some retail chainstores are already requesting apples, pears and citrus to be packed in smaller-sized shipping units. Packaging needs to be functional and attractive. Multi-colored shipping containers are becoming the norm.

Fresh produce shippers in Florida and the remainder of the U.S. can be successful in exporting to Europe. However, they must be willing to make changes in their methods of product presentation and packaging. Successful exporting also depends on supplying what the market wants as far as cultivars of fresh produce are concerned. For example, European importers have asked for smaller watermelons for many years. The ultimate derived benefit from fresh produce exports will be increased returns from your production efforts.

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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

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'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 1-(N-propyl-N-(2-6-(trichlorophenoxy)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 avocados 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

¹Mean percentages for the treatments were based on four replications, repeated three times.

²Injury 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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