

## Pliofilm in the Preservation of Florida Avocados

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The investigation on pliofilm-wrapped avocados covered a period of two seasons (1939-1941). During 1939-40, 40-gauge sheet wrappers were used on several varieties each of the West Indian, Guatemalan and hybrid types. Not less than three dozen fruit of each variety were wrapped in 40-gauge pliofilm and an equal number not wrapped and placed in each of three temperatures— 37°F., 42°F. and room temperature (70-80°F.) The fruit was packed with excelsior in the regular avocado lugs. Losses in weight and observations as to quality, texture, taste and percent decay were recorded at regular intervals. Trapp, Waldin, Booth 8, Lula and Taylor varieties were used. These were picked in the mature green, hard stage from the groves of the Sub-Tropical Experiment Station, Homestead, and were shipped by express to Gainesville, where they were placed at the various temperatures within 24 hours.

**Lula and Taylor**—Loss in weight of Lula avocados at the three temperatures over a nine-week period was from three to 10 times more in unwrapped than in wrapped fruit. After nine weeks the wrapped avocados at 37°F. had lost only 85 hundredths of 1 per cent of their original weight. Loss in weight was about the same for all varieties but differences were found between the reaction of varieties to wrappers and temperatures. Lula and Taylor varieties were held in good condition when wrapped in pliofilm (see illustration). Best results were obtained at 42°F., when the keeping quality after removal to room temperature also was considered. The fruit remained marketable longer at 37°F. but did not soften up normally when removed from this temperature. Also the vascular bundles in the edible tissue had a tendency to darken in the fruit held at 37° F.

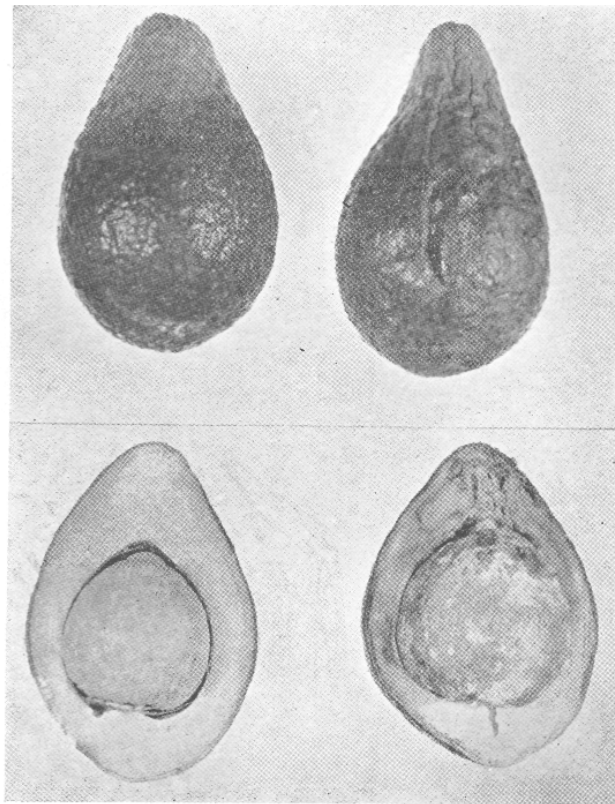
At 42°F. pliofilm-wrapped fruit remained marketable from two to three weeks longer than that not wrapped. The wrapped fruit remained in good firm condition six weeks in cold storage and from seven to 14 days after removal to room temperature (70-80° F.) while unwrapped fruit remained in good condition three to four weeks in cold storage and four to eight days after removal to room temperatures.

Wrapped fruit which had been held at room temperatures softened to an edible state after 10 to 18 days and remained marketable for five to seven days after softening, while that not wrapped softened in six to 14 days and remained marketable for two and three days after softening. These results indicate a retarding effect on the softening process by the pliofilm wrapper, thus doubling the life of the fruit at ordinary room temperatures (70-80°F.).

**Trapp and Pollock.**—Similar results were obtained with Trapp and Pollock varieties. These also reacted best at a temperature of 42°F as there was no darkening of the edible flesh at this temperature. The pulp darkened after two weeks storage at 37°F. These varieties showed the same reactions at room temperature as did the Lula and Taylor varieties.

**Booth 8 and Waldin.** Booth 8 and Waldin varieties did not react well to either cold storage temperature or pliofilm wrappers. By wrapping in pliofilm slight advantage was obtained in the length of time the fruit remained marketable, and in the condition of the fruit, but the results were not comparable with those obtained with wrapped Lula and Taylor varieties.

The investigations were repeated the following season, 1940-41, using 20-gauge sheet wrappers and the plioseal. In most cases a slight advantage in the 20-gauge was observed over the 40-gauge but the results so nearly duplicated those of the 40-gauge that they are not given here. The plioseal had the added advantage of a more attractive appearance. It made a beautiful package, lending a glistening sheen to the already beautiful green coloration of the fruit. The loss in weight was approximately the same for the plioseal fruit as for that wrapped in 40-gauge pliofilm.



Lula avocades after four months storage at 42° F.  
Left—wrapped in Pliofilm. Right—unwrapped.

**COMPARISON OF THE LOSS IN WEIGHT OF LULA AVOCADOS  
WRAPPED IN 40-GAUGE PLIOFILM WITH THOSE NOT WRAPPED**

Temperature	Wrapper	Percentage Loss in Weight After Weeks				
		1	2	3	4	9
37° F. (Cold Storage)	40-gauge Sheet	0.14	0.21	0.26	0.33	0.85
	None (Control)	0.76	1.75	3.36	4.69	11.98
42° F. (Cold Storage)	40-gauge Sheet	0.13	0.23	0.38	0.49	0.97
	None (Control)	1.89	3.59	5.26	6.91	14.14
Room Temperature 70°-80° F.	40-gauge Sheet	0.21	0.86	1.36		
	None (Control)	6.04	9.84			

In general, the earlier varieties, which are mostly West Indians, did not react well in pliofilm wrapper or cold storage as the later varieties, such as Lula and Taylor. The latter varieties were very definitely benefited from the standpoint of taste, quality, appearance, and marketability, by both sheet-wrap and plioseal.