A small mite (*Eriophes* sp.) closely related to the citrus rust mite, attacks the leaves and causes small wart-like galls on the upper surface, while the under side becomes hairy. Eventually the infested leaves are of little value to the tree. Nicotine sulfate controls this mite.

Minor pests include a small June-bug closely related to the blossom anomala which attacks avocados and mangos, a web caterpillar, and a bark borer with habits akin to those of the peach tree borer.

VARIETIES

More than 100 varieties of lychee have been described in the three ancient treatises on lychee culture in Fukien, Kwantung and Szechwan provinces respectively, but many of the names are probably synonymous and others may no longer be represented in cultivation. No modern descriptions of varieties are available for the most part. Only a few varieties are grown in Hinghwa area, and these are briefly characterized here.

Chen Purple is the most famous variety in Hinghwa and is the same as the variety grown in Florida as Brewster. It ripens from July 15 to August 15 and is very good quality. The shell of the fruit is very rough with sharp points.

Red Jade Hall is another variety commonly grown, with some trees over 500 years old. It ripens in late June and early July and is good quality. The shell is rough but without sharp points, and similar to Chen Purple in size but more rounded.

Mid-Autumn Red is a variety of great vigor, making large trees, whose fruits are oval and have smooth shells. They ripen in late July and are sweet but acidulous, of excellent quality.

Fire Mountain is the earliest variety, maturing in late May, and is rather rare. The fruits have thin yellowish flesh, somewhat sour, and sell only because no other variety is yet in season.

Black Leaf is a variety introduced in 1910 from Canton and is very rare. The quality is excellent, the flesh fragrant and sweet.

Hanging Green is another Cantonese variety introduced to Hinghwa long ago, but is also very rare there. The delicious fragrant fruits are mostly used as gifts.

Ten other varieties of less importance are cultivated in Hinghwa.

PACKAGING AND STORAGE OF MANGOS AND AVOCADOS

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Coral Gables

The information on packaging of mangos and avocados presented here is a report of the investigations completed to date at the Tropical Plant and Food Research Center of the University of Miami. It is presented at this time in answer to numerous requests by individuals interested in the progress of this investigation and should not be interpreted to mean that we have arrived at final conclusions with regard to the packaging materials to be used. Before such conclusions can be reached, it will be necessary to further investigate the factors responsible for the pathological and physiological breakdown which occur both in mangos and avocados during storage. The following information does show clearly, however, that a number of wrapping materials will retard ripening and moisture loss from these fruits during storage.

MANGOS

The work done during the 1947 and 1948 seasons was directed at determining the effectiveness of different wrapping materials in the retardation of moisture loss and rate of ripening of Fascell and Haden mangos. During the 1948 season, the effect of storage temperature on the storage life of mangos wrapped in a number of materials was investigated.

TABLE 1. EFFECT OF VARIOUS WRAPPING MATERIALS ON THE KEEPING QUALITY OF FASCELL MANGOS STORED AT ROOM TEMPERATURE[1] 1947

Wrapping Material	Percent Loss in Weight After Days					Average Stage of Ripeness After days				
	2	3	5	7	12	2	3	5	7	12
No wrapper	2.51	3.88	5.52	9.08	......	Firm	Soft	Soft	Overripe	
Pliofilm 20ga N1	0.28	0.69	0.98	1.41	2.10	Unripe	Firm	Firm		Soft
Pliofilm 75ga FF	0.69	1.15	1.82	2.79	3.65	Unripe	Unripe	Firm	Soft	
Pliofilm 75ga NF	0.41	0.85	1.33	2.62	3.71	Unripe	Unripe	Unripe	Firm	
Sylphwrap 300ga Pl	2.27	3.74	5.47	7.50	......	Firm	Soft	Soft	Soft	
Cellophane 300ga MSAT	0.27	0.75	1.15	1.87	2.71	Unripe	Unripe	Soft	Soft	
Vinylite 20 ga P9V	0.72	1.20	1.67	......	4.74	Unripe	Unripe	Firm	Soft	
Cellophane Exp. 148	1.64	2.74	3.35	2.78	10.65	Unripe	Unripe	Soft	Soft	
Sylphwrap 300ga PB6DS	0.73	1.38	2.06	......	5.77	Unripe	Unripe	Firm	Soft	

[1] Room Temperature 75-85°F.

The results of both years' investigations are summarized in Tables 1, 2, and 3.

It is evident from these results that considerable differences exist with regard to the effectiveness of some of the wrapping materials in retarding the loss of moisture and rate of ripening. The prominence of both pathological and physiological breakdown in these fruit directed attention toward the need for additional research in this field.

Among the numerous factors which effect the storage life of fruits is that of storage atmosphere. Since fruits, when placed in storage are still living, they continue to respire utilizing oxygen and releasing carbon dioxide. In addition to the respiratory gases, ethylene and possibly other gases are also evolved. It has been known for years that ethylene gas increases the rate of ripening of fruit and more recently it has been found that storage scald of pears and apples is due, at least in part, to the accumulation of such gases. Numerous methods of control of this physiological breakdown have been investigated, including the use of mineral-oil wraps, shredded oil paper, more adequate ventilation, and more recently activated carbon filters have been used to absorb these gases. The latter method of atmospheric purification has met with considerable success in the storage of apples and pears[3, 4].

In view of the high percentage of physiological and pathological breakdown which were noted, both in those fruits which were wrapped and those which were not wrapped in 1947 and 1948 experiments, it was deemed advis-

TABLE 2. EFFECT OF VARIOUS WRAPPING MATERIALS AND DEGREE OF RIPENESS ON THE KEEPING QUALITY OF HADEN MANGOS STORED AT ROOM TEMPERATURE[1]—1948

Wrapping Material	Initial Degree of Ripeness	Percent Loss in Weight After Days				
		4	7	11	14	18
No wrapper	Green	5.01	8.23	12.29	14.54	......
Vinylite 20 ga P9V (Chem treated)	Green	1.38	2.38	4.05	5.63	......
Sylphwrap 330 ga PMB 6 CSX	Green	1.18	2.17	3.57	4.84	......
Cellophane 300 MSAT 86	Green	0.54	1.37	2.36	3.27	......
Aluminum Foil .00035	Green	0.75	1.47	3.95	3.28	......
Lumarith 100 ga P-912	Green	5.52	6.38	10.11	13.54	......
Pliofilm 100 ga (Stretch-wrapped)	Green	1.25	2.07	3.29	......	......
Pliofilm 75 FF	Green	1.21	2.07	3.61	4.39	......
No wrapper	Firm	1.16	2.28	3.27	4.17	5.21
Vinylite 20 ga P9V (chem treated)	Firm	0.18	0.57	0.83	1.02	1.25
Sylphwrap 330 ga PMB 6 CSX	Firm	0.13	0.44	0.78	1.06	1.29
Cellophane 300 MSAT 86	Firm	0.11	0.28	0.46	0.70	0.93
Aluminum Foil .00035	Firm	0.18	0.34	0.50	0.67	0.80
Lumarith 100 ga P-912	Firm	0.71	1.47	2.19	2.98	3.60
Pliofilm 100 ga (Stretch-wrapped)	Firm	0.22	0.57	0.79	1.00	1.20
Pliofilm 75 FF	Firm	0.27	0.59	0.59	1.08	1.28
No wrapper	Beginning to Soften	0.97	2.02	2.85	3.79	4.57
Vinylite 20 ga P9V (Chem. treated)	Beginning to Soften	0.29	0.70	0.98	1.26	1.51
Sylphwrap 330 ga PMB 6 CSX	Beginning to Soften	0.20	0.62	0.98	1.27	1.52
Cellophane 300 MSAT 86	Beginning to Soften	0.10	0.20	0.43	0.63	0.79
Aluminum Foil .00035	Beginning to Soften	0.10	0.25	0.43	0.55	0.66
Lumarith 100 ga P-912	Beginning to Soften	0.85	1.73	2.49	3.30	3.95
Pliofilm 100 ga (Stretch-wrapped)	Beginning to Soften	0.30	0.65	0.91	1.17	1.33
Pliofilm 75 FF	Beginning to Soften	0.23	0.58	0.79	1.06	1.24

[1] Room Temperature 75-85° F.

able to investigate the possibilities of the use of an activated carbon filter in the storage of this fruit. For this purpose, an activated carbon unit was installed in one of the storage boxes. This filter unit consists of two perforated double walled canisters, the space between the double walls of which is filled with the activated carbon, and is equipped with a blower fan. This blower fan circulates the gases of the storage box through the filter allowing for their absorption by the carbon.

TABLE 3. EFFECT OF VARIOUS WRAPPING MATERIALS AND TEMPERATURE ON LOSS OF WEIGHT OF HADEN MANGOS [1]—1948

Wrapping Material	Storage Temperature	Percent Loss in Weight after Days 3	6	9
No wrapper	R.T.[1]	4.00	8.00	12.07
	45°F	1.47	2.60	3.68
Vinylite 20 ga P9V	R.T.	0.98	2.19	3.44
(chem. treated)	45°F	0.29	0.49	0.69
Sylphwrap 330 ga	R.T.	0.82	1.94	3.04
PMB 6 CSX	45°F	0.11	0.24	0.40
Cellophane	R.T.	0.36	1.10	1.88
300 ga MSAT 86	45°F	0.02	0.11	0.17
Aluminum Foil	R.T.	0.53	1.24	1.61
.00035	45°F	0.07	0.16	0.22
Lumarith 100 ga	R.T.	3.30	7.00	10.62
P-912	45°F	0.95	1.77	2.56
Pliofilm 100 ga	R.T.	1.04	2.08	3.07
(Stretch-wrapped)	45°F	0.13	0.24	0.38
Pliofilm 75 FF	R.T.	1.02	2.19	3.86
	45°F	0.30	0.46	0.64
Vinylite 100 ga	R.T.	1.88	4.07	6.15
P9V	45°F	0.43	0.76	1.07

[1] R.T.—Room Temperature—(75-85°F)

Sixty firm ripe Haden mangos were divided into six groups of ten fruit each and treated as indicated in Table 4. The Good-rite VL-600 referred to in this table is an experimental plastic dip manufactured by B. F. Goodrich Chemical Co., of Cleveland, Ohio. This mixture was prepared by diluting one volume of the concentrated material with four volumes of water containing a small amount of Triton X-30 as a wetting agent.

A comparison of the data in this table shows that both the Pliofilm wrap and Goodrite dip were effective in reducing the moisture loss from the fruit. All of the samples stored in the box containing the activated carbon filter showed considerably less rot than did those stored in the box without a filter. Pitting was also less severe in the treated fruit stored in the box containing the carbon filter.

Some mangos in addition to those reported in this experiment were also stored in the box without the filter which may have affected these results to some extent. If, however, the larger volume of fruit stored in the box without the filter increased the rot and pitting of the thirty fruit in question, it should substantiate the supposition that some of the breakdown of this fruit may be caused by the accumulation of gases given off by the fruits themselves.

These results indicate the advisability of more extensive research on the purification of the air in mango storage rooms.

AVOCADOS

During the 1948 season, an experiment was undertaken to determine the effect of various wrapping materials on the storage life of avocados. The avocados used in this experiment were mature, firm fruits of the Trapp and Waldin varieties. Twenty fruit of each variety were wrapped in the six materials listed in Table 5, and twenty left unwrapped as checks. Ten fruit of each group were stored at room temperatures and ten stored at 45°F.

TABLE 4. EFFECT OF ACTIVATED CARBON FILTER, PLIOFILM, AND PLASTIC DIP ON THE KEEPING QUALITY OF HADEN MANGOS STORED AT 45° F 1949

Fruit Treatment	Percent Loss in Weight After Days 6	13	20	28	35	Period of Ripening Days	Percent Showing Rot After 35 Days	Pitting After 35 Days
No Filter								
Check	1.81	4.82	6.26	8.48	11.55	13	100	Severe
Pliofilm 20 ga	0.27	0.76	1.59	1.50	2.50	25	60	Severe
Goodrite VL-600 Latex 1:4 [1]	0.47	1.57	2.51	3.54	4.85	25	30	Severe
Activated Carbon Filter								
Check	2.10	4.77	7.02	9.24	11.50	13	20	Severe
Pliofilm 20 ga	0.70	1.09	1.12	1.56	1.80	25	0	Medium
Goodrite VL-600 Latex 1:4 [1]	0.81	2.09	2.96	4.06	5.10	25	0	Slight

[1] Experimental Product of B. F. Goodrich Chemical Company.

TABLE 5. EFFECT OF VARIOUS WRAPPERS AND TEMPERATURES ON LOSS OF WEIGHT OF TRAPP AND WALDIN AVOCADOS—1948

Variety	Wrapping Material	Storage Temperature	Percent Loss in Weight after Days 4	6	8	11	13	14	17	18	20	27	Percent Marketable Fruit After Days 4	6	8	11	13	18	19	27
Trapp	Pliofilm NF 75	R.T. [1]	1.12	1.49	......	2.97	3.74	......	......	4.74	......	......	40	40	......	......	10	0	......	......
		45°F	......	0.37	......	......	......	(0.75	......	......	1.12	1.50	100	90	......	......	60	(....	30	10
		45°F-R.T. [2]	......	......	......	......	......	(......	......	......	2.57	......	......	......	......	......	......	(....	10	0
Trapp	Vinylite 20 ga P9V (Chem. Treated)	R.T.	......	2.18	3.40	6.05	......	......	......	......	......	......	100	90	50	0	......	......	......	......
		45°F	......	0.56	......	......	......	(1.04	......	......	1.54	2.14	100	100	......	......	100	(....	40	20
		45°F-R.T.	......	......	......	......	......	(......	......	......	3.00	......	......	......	......	......	......	(30	30	......
Trapp	Sylphwrap PMB 6 CSX 330 ga	R.T.	1.36	2.04	......	5.16	......	......	......	......	......	......	90	30	20	0	......	......	......	......
		45°F	......	0.37	......	......	......	(0.96	......	......	1.50	2.08	100	100	......	......	100	(....	50	40
		45°F-R.T.	......	......	......	......	......	......	......	......	2.59	......	......	......	......	......	......	(40	10	0
Trapp	Cellophane 300 ga MSAT 86	R.T.	0.61	1.06	......	......	......	......	......	......	......	......	50	0	......	......	......	......	......	......
		45°F	......	0.21	......	......	......	(0.53	......	......	0.72	1.10	100	90	......	......	90	(....	50	40
		45°F-R.T.	......	......	......	......	......	(......	......	......	1.84	......	......	......	......	......	......	(40	0	......
Trapp	Lumarith (Cellulose Acetate) 100 P-912	R.T.	......	8.02	10.95	16.11	......	......	......	......	......	......	100	90	80	10	......	......	......	......
		45°F	......	3.17	......	......	......	(6.65	......	......	......	......	100	90	......	......	0	(....	......	......
		45°F-R.T.	......	......	......	......	......	(......	......	......	......	......	......	......	......	......	......	(....	......	......
Trapp	Aluminum Foil .00035 ga	R.T.	......	0.97	1.99	3.56	3.62	......	......	6.50	8.15	......	100	90	80	......	20	......	......	......
		45°F	......	0.28	......	......	......	(0.76	......	......	1.30	......	100	100	......	......	100	(....	50	0
		45°F-R.T.	......	......	......	......	......	(......	3.63	......	......	......	......	......	......	......	......	(50	......	0
Trapp	Check	R.T.	......	11.45	15.38	21.46	......	......	......	......	......	......	100	90	80	0	......	......	......	......
		45°F	......	4.15	......	......	......	(6.80	......	......	12.00	......	100	100	......	......	100	(....	50	0
		45°F-R.T.	......	......	......	......	......	(......	15.83	......	......	......	......	......	......	......	......	(50	......	0
Waldin	Pliofilm NF 75	R.T.	......	1.24	1.89	2.39	2.62	......	......	......	......	......	100	80	60	10	0	(....	......	......
		45°F	......	0.28	......	......	......	(0.61	......	......	0.94	1.24	100	100	......	......	100	(....	50	40
		45°F-R.T.	......	......	......	......	......	(......	......	......	2.16	......	......	......	......	......	......	(40	0	......
Waldin	Vinylite 20 ga P9V (Chem. Treated)	R.T.	......	1.96	3.21	3.72	4.44	......	......	......	......	......	100	90	70	20	0	......	......	......
		45°F	......	0.45	......	......	......	(1.01	......	......	1.44	2.02	100	100	......	......	100	(....	50	20
		45°F-R.T.	......	......	......	......	......	(......	......	......	3.45	......	......	......	......	......	......	(40	30	0
Waldin	Sylphwrap PMB 6 CSX 330 ga	R.T.	......	1.60	......	3.61	3.83	......	......	......	......	......	100	80	......	10	0	......	......	......
		45°F	......	0.47	......	......	......	(1.15	......	......	1.55	2.07	100	100	......	......	100	(....	50	30
		45°F-R.T.	......	......	......	......	......	(......	......	......	3.44	......	......	......	......	......	......	(30	10	0
Waldin	Cellophane 300 ga MSAT 86	R.T.	......	0.84	......	2.20	......	......	......	......	......	......	90	60	50	0	......	......	......	......
		45°	......	0.18	......	......	......	(0.48	......	......	0.91	1.41	100	100	......	......	100	(....	50	......
		45°F-R.T.	......	......	......	......	......	(......	......	......	2.05	......	......	......	......	......	......	(....	40	10
Waldin	Lumarith (Cellulose Acetate) 100 P-912	R.T.	......	6.89	9.28	14.56	......	......	......	......	......	......	100	90	40	30	0	......	......	......
		45°F	......	2.28	......	......	......	(4.85	8.96	......	6.89	......	100	100	......	100	100	(....	0	......
		45°F-R.T.	......	......	......	......	......	(......	......	......	......	......	......	......	......	......	......	(0	......	......
Waldin	Aluminum Foil .00035 ga	R.T.	......	0.89	......	3.68	2.92	......	......	4.57	......	......	100	100	......	100	30	......	......	......
		45°F	......	0.24	......	......	......	(0.69	3.37	......	1.40	......	100	100	......	......	100	......	......	......
		45°F-R.T.	......	......	......	......	......	(......	......	......	3.91	......	......	......	......	......	......	......	......	......
Waldin	Check	R.T.	......	10.72	14.48	19.44	......	(......	......	......	......	......	100	100	100	0	......	......	......	......
		45°F	......	3.07	......	......	......	(6.48	......	......	8.85	......	100	100	......	......	100	......	......	......
		45°F-R.T.	......	......	......	......	......	......	13.67	......	......	......	......	......	......	......	......	......	......	......

[1] R.T.—Room Temperature—(75-90°)

[2] 45°F—R.T.—Fruit held 2 weeks at 45°F then removed to room temperature.

TABLE 6. EFFECT OF VARIOUS WRAPPING MATERIALS ON THE KEEPING QUALITY OF TRAPP AVOCADOS—1949

Type of Storage	Wrappers	Percent Loss in Weight after Days							Percent Ripe After Days			Percent & Severity of Pitting After 19 days			Percent Showing Browning of Skin after 19 days
		4	6	10	13	16	19	21	16	19	21	Slight	Medium	Severe	
No Filter 45°—R.T.[2]	No wrapper	1.12	1.67	2.60	3.37	4.57	9.34	12.31	0	70	100	0	0	100	20
	Pliofilm 20 ga	0.28	0.31	0.36	0.52	0.49	1.15	1.92	0	50	100	0	60	30	50
	Polythene 150 ga	0.25	0.32	0.28	0.40	0.52	1.00	1.48	0	50	60	40	10	30	90
	Aluminum Foil .00035	0.18	0.32	0.77	1.10	1.21	2.91	3.28	0	70	100	50	40	10	60
	Cellophane 300 ga LSAT	0.12	0.32	0.79	1.01	1.60	4.34	6.01	0	30	90	50	20	30	60
	Latex 1:2[1]	0.73	1.27	2.17	2.58	2.82	6.28	8.90	0	50	90	20	20	60	60
Carbon filter 45°—R.T.[2]	No wrapper	1.87	2.68	4.25	5.43	6.52	11.68	14.85	10	70	90	10	80	10	50
	Pliofilm 20 ga	0.24	0.28	0.29	0.41	0.53	1.22	1.39	0	10	60	30	50	0	70
	Polythene 150 ga	0.05	0.06	0.09	0.27	0.33	0.92	1.02	0	20	90	10	40	50	90
	Aluminum Foil .00035	0.36	0.42	0.84	1.33	1.71	3.68	5.27	0	50	100	40	50	0	70
	Cellophane 300 ga LSAT	0.52	0.73	1.25	1.69	2.04	4.57	6.42	0	20	70	10	40	40	20
	Latex 1:2[1]	0.97	1.48	2.32	2.95	3.51	6.08	8.00	10	50	80	10	60	10	50
Moss Filter 45°—R.T.[2]	No wrapper	1.11	1.63	2.72	3.50	4.18	9.86	12.69	0	70	100	0	100	0	40
	Pliofilm 20 ga	0.16	0.21	0.31	0.39	0.36	1.15	1.57	0	0	50	30	40	30	40
	Aluminum Foil .00035	0.11	0.25	0.74	1.15	1.18	3.19	3.24	0	50	80	20	50	20	50

[1] Experimental Product of B. F. Goodrich Chemical Company.
[2] 45°—R.T.—Fruit held 16 days at 45°F then removed to room temperature (75-90°).

for two weeks after which time half of those remaining in each of the latter groups were transferred to room temperature.

Table 5 summarizes the data obtained regarding the percentage of moisture loss and number of marketable fruit throughout the period of storage. Fruit were designated as not marketable when they became overripe or showed signs of pathological or physiological breakdown. Although this table shows the actual number of marketable fruit, it does not indicate the superiority in appearance of some of these marketable fruit as compared with one another. It was noted that the Trapp and Waldin avocados wrapped in aluminum foil and stored at either temperatures were superior in appearance to the majority of the other wrapped or unwrapped fruits, with the possible exception of the Trapp avocados wrapped in 300 gauge MSAT, Cellophane and stored at 45°F.

It is evident from the data presented in Table 5 that differences in wrapping materials and storage temperature materially effect the rate of moisture loss and period of marketability of both varieties of avocados. Pathological and physiological breakdown were observed to at least some extent in each group of fruit regardless of whether they were wrapped, unwrapped, stored at 45°F., or at room temperature.

In view of the amount of pathological and physiological breakdown which occurred in the avocados of the previous year's investigation, it was decided to focus more attention on possible means of controlling such breakdown.

Three identical storage boxes equipped with draft fans were set at 45°F, which is within the temperature ranges recommended by Lynch and Stahl[2] for the storage of Trapp avocados, the variety used in this investigation. The first storage box, which served as a control, contained no filter for the removal of storage gases; the second, contained the activated carbon filter described above; and the third, contained a Spanish moss filter. The Spanish moss filter is an adaptation of the "Krebser" method of fruit preservation[1]. This technique, which originated a few years ago in Switzerland, consists of circulating the air of the storage room through layers of fresh, living, sphagmum moss. The workers in that country have found that the sphagnum moss helps maintain a constant relative humidity, retards the development of microorganisms on fruits, and absorbs the volatile substances evolved by the fruit such as ethylene and acetaldehyde.

"Field run" Trapp avocados were obtained from a local packer and carefully graded so as to obtain as near uniform samples as possible.

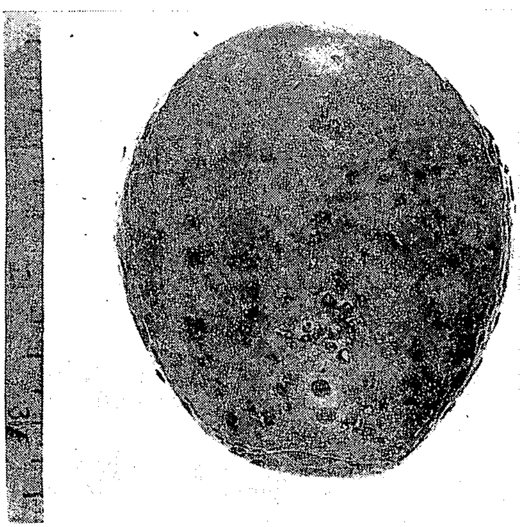

FIG. 1—Pitting of Trapp Avocado

Each sample consisting of ten fruit was treated as indicated in Table 6 and placed in the respective storage boxes for sixteen days after which they were transferred to a laboratory bench and allowed to ripen.

These data substantiate the findings of the previous year with regard to the ability of various wraps to decrease the rate of moisture loss from avocados. The greater moisture loss in the unwrapped fruits stored in the box containing the activated carbon filter can be attributed to the extra air circulation within this box due to the blower fan attached to the filter. A comparison of the data on moisture loss for the Trapp avocados stored in 1948 as compared to 1949 will show similar discrepancies. As the avocados were stored in different storage rooms equipped with different sized fans on the two consecutive years, this difference in moisture loss can also be attributed to difference in the rate of air circulation.

During the first sixteen days storage at 45°F, very few of the fruit ripened; however, most of the fruit ripened within three to five days after being transferred to room temperature. Apparently the activated carbon filter and the Spanish moss filter were both effective to some degree in absorbing the ethylene gas which is partially responsible for fruit ripening as almost all the wrapped fruit which had been stored in the boxes containing the filter ripened more slowly when transferred to room temperature than did those removed from the box which contained no filter.

A very high percentage of pathological and physiological breakdown occurred in all of the avocados. Pitting of the skin, which occurred in both the wrapped and unwrapped fruit, first appeared after ten days storage and gradually increased thereafter until the fruit ripened. Although no browning of the skin occurred after sixteen days storage at 45°F., it rapidly developed after the fruits were transferred to room temperature. Almost all of the ripe fruits showed browning of the flesh between the vascular bundles and the

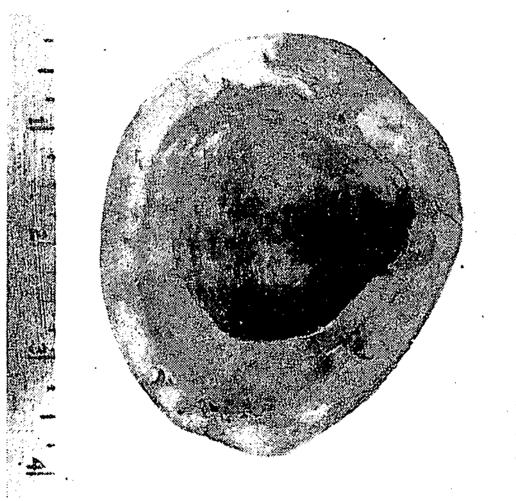

FIG. 2—Internal Browning of Trapp Avocado.

seed. This type of breakdown is similar to that described by Lynch and Stahl[2] as "cold damage." Figures 1 and 2 show the typical appearance of the pitting and internal browning which occurred on these avocados. Neither the wraps, dips, nor filters seemed to have any appreciable effect on retarding any of this pathological or physiological breakdown.

SUMMARY

This report describes the preliminary work which has been completed to date on the storage of mangos and avocados at this institution. A comparison is made of the effect of various packaging and dipping materials, temperature, and filters for the removal of ethylene upon the storage life of these fruits. Although various means have been found to decrease the moisture loss and rate of ripening of mangos and avocados in storage, additional work is needed to determine means for the control of pathological and physiological breakdown which are prevalent during the storage of these fruits.

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INVESTIGATION OF THE PROPER MATURITY OF TAHITI LIMES FOR MARKETING

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This paper is a report of preliminary work done on an assignment to study the behavior of Tahiti limes, which contained definite amounts of juice, such as 40, 45, 50, 55 percent of their volume. The Florida Lime Fruit Maturity Law has the single requirement that limes for marketing shall on the average yield 40 percent of their volume in juice. Officially this juice is obtained for inspection by the use of a Hamilton Beach Extractor No. 32. This is a hand pressure type of extractor in which a half of the fruit is forced onto a stationary perforated metal cone. In this investigation the juice was extracted with the above equipment and reported as percent of the volume of the fruit. It is not uncommon to find limes that will yield 60 percent of their volume in juice. The official inspection procedure is to make the juice determination on a sample of ten fruits, the volume of which is measured by the amount of water it displaces. The study being reported was started in August of 1949 which was toward the end of the lime production for that year. Even though the Tahiti lime is an everbearing tree the bulk of the crop is harvested during the middle of the summer.

This preliminary study was to determine the variability in samples of limes and what change in juice yield could be expected in fruit stored and similar fruit allowed to remain on the tree for a longer time.

A study on the effect of increased age of Tahiti limes on the yield of juice, acid, and soluble solids has been made by S. J. Lynch[1]. In the cases where the yield of juice was determined on the individual fruit of the sample, one is impressed with the wide variation within a sample of fruit of the same age. From this, one would not be encouraged to look in fruits of the same age for a working sample of fruits having individually the same definite juice content.

H. J. Reitz and J. W. Sites[2] have made a very detailed study of sampling Valencia oranges from one tree. In their study the values for the internal quality for 1800 individual fruits from a single tree are related to their positions on the tree. These authors make this statement: "Definite trends were noted in the case of soluble solids, ratio, and