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THE LOSS IN WEIGHT OF STORED JONATHAN APPLES

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THE Jonathan is recognised as a low density apple and light weight packs are often a problem with this variety. During 1954 a small scale test was carried out to illustrate the effect of handling procedure prior to cool storage on the loss in weight and quality of the fruit. Orchard pick Jonathans were obtained from the Illawarra Orchard Company, Karragullen and from Mr. A. McAlinden of Bridgetown. After subjecting the fruit to various pre-cool storage treatments, it was placed in commercial chambers at Illawarra and Tropical Traders Patersons Ltd., respectively.

Six cases of Jonathans harvested at Illawarra on March 2 were packed in seasoned dumps of standard measurements. The packs consisted of 175 and 193 counts. The packed cases were treated as follows:—

1. Two cases were wrapped in sulphite paper and cool stored immediately.
2. One case was kept one week in the packing shed before wrapping and placing in cool store.
3. One wrapped case was shed stored for one week before cool storage.
4. Two wrapped cases were shed stored for two weeks before cool storage.

At Bridgetown three cases of Jonathans were harvested on March 9, wrapped in sulphite paper and forwarded by rail to Perth where they were treated as follows:—

1. One case was placed in cool store on arrival.
2. One case was held in common store one week before cool storage.
3. One case was held in common store two weeks before cool storage.

At the commencement of the test the tare of the case and the net weight of fruit were recorded for both lots and similar details were obtained after 10 weeks storage. The gross weight of the pack was obtained immediately after the fruit was removed from cool store and the case re-weighed after the fruit had been taken out to determine the net weight.

A summary of the weight variations is shown in the following tables.

TABLE 1.—SHOWING THE LOSS IN WEIGHT AFTER 10 WEEKS STORAGE OF JONATHANS EX ILLAWARRA HANDLED IN VARIOUS WAYS

		Weight at Picking February 2, 1954		Weight after 10 Weeks Storage April 13, 1954		Loss in Weight of Fruit
Storage Treatment	Count	Weight of Fruit. lb.	Weight of Case lb.	Weight of Fruit lb.	Weight of Case lb.	
Immediate cool storage wrapped	175	42.5	10.5	41.25	10.25	1.25
do. do. do. do.	193	41.0	10.0	39.5	10.0	1.5
1 week shed stored unwrapped before cool storage	175	42.0	10.0	40.25	10.0	1.75
1 week shed stored wrapped before cool storage	175	42.5	9.5	40.25	9.25	2.25
2 weeks shed stored wrapped before cool storage	175 193	41.5 41.0	11.0 10.0	39.5 39.0	11.0 10.0	2.0 2.0

NOTE.—The weight of the case does not include the lid.

TABLE 2.—SHOWING THE LOSS IN WEIGHT AFTER 10 WEEKS STORAGE OF JONATHANS EX BRIDGETOWN HANDLED IN VARIOUS WAYS

Storage Treatment	Initial Weight February 11, 1954		Weight after 10 Weeks Storage May 18, 1954		Loss in Weight of Fruit
	Weight of Fruit	Weight of Case	Weight of Fruit	Weight of Case	
Immediate cool storage	lb. 41.25	lb. 11.5	lb. 40.0	lb. 12.0	lb. 1.25
1 week common storage before cool storage	40.75	10.5	39.25	11.0	1.5
2 weeks common storage before cool storage	41.5	11.75	39.5	12.0	2.0

NOTE.—The weight of the case does not include the lid.

To obtain figures which are strictly comparable it would be necessary to use a much larger number of cases. However, from a commercial point of view the data given in the above tables illustrate the type of weight variation which can be expected with normal commercial handling. Generally the loss in weight during storage was not very great. Losses varied from 1½ lb. to 2¼ lb. per case, being greatest for fruit subjected to various periods of shed storage prior to cool storage and least in the cases cool stored immediately after packing. There was practically no change in the tare of the Illawarra cases, but those from Bridgetown showed a slight increase during storage. It should be noted that the weights quoted are for unlidded boxes lined with cardboards.

The effect of delayed cool storage was more marked on the condition of the apples than on the loss in weight. When the fruit was removed from store 10 weeks after picking, it was found that apples subjected to various periods of shed storage were showing signs of overstorage. Varying degrees of yellowing, shrivelling, Jonathan Spot and breakdown were found and the fruit was generally of poor quality. On the other hand Jonathans cool stored immediately after packing were in good condition. The ground colour of Illawarra fruit was still showing a considerable amount of green—the Bridgetown apples which were harvested later and were two days

reaching cool store in Perth were more forward. It was quite evident that the storage life of Jonathans had been considerably reduced by delay in cool storage.

Some difficulty is often experienced in getting adequate weight of Jonathans into the case and this is borne out by the weights obtained in these tests. However, the net weights are lower than would be normally expected, particularly in the case of the Bridgetown apples, owing to the limited selection of fruit available at the time of packing. Light weight packs are more likely to originate from insufficient weight going into the cases than from loss of weight during subsequent storage. The problem may be aggravated by the use of wraps which are too large for the fruit.

The common storage of Jonathans should be avoided if at all possible. The loss in weight incurred as a result of shed storage, although not great, must in view of the difficulty of getting adequate weight into the cases, be reduced to a minimum. The reduction in storage life and loss of fruit quality which result from improper handling are also good reasons for cool storing as soon as possible after picking.

Acknowledgment is made to Mr. H. C. Price, of the Illawarra Orchard Company, Karragullen; Mr. A. McAlinden, of Bridgetown and Tropical Traders Patersons Ltd., who by providing the fruit, packing facilities and storage, made these tests possible.

