

THE HANDLING OF SOUTH AFRICAN AVOCADOS AT THE VARIOUS WAREHOUSES AT RUNGIS, FRANCE

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INTRODUCTION

What exactly happens to our avocados once they have landed in Europe? How are they transported, unloaded and stored and at what temperatures and for how long? With these points in mind information was collected during the 1982 season at Rungis which will hopefully answer some of these questions.

Information was collected on the following:

1. Transportation of containers from Zeebrugge to Rungis.
2. Time factor involved in the above mentioned journey, container refrigeration and the resulting age and temperature of fruit on arrival at Rungis.
3. Unloading of the containers.
4. Storage of avocados:
 - a). Period of storage of fruit at the warehouses.
 - b). Temperatures during storage.
 - c). Are cold rooms reserved for avocados only?
5. Airfreight fruit:
 - a) How old and at what temperature does air freighted fruit arrive at the various warehouses at Rungis.

METHOD

The age of fruit on arrival at Rungis was calculated from the packing date codes which appear on each carton. Age therefore refers to the number of days after packing to the date of arrival of a consignment or on which the survey was done.

Pulp temperatures were taken at the time of unloading the containers (sea freight) or trucks (airfreight) at the various warehouses. Averages of sea freight fruit represent the temperatures in the external top, middle and bottom layers of the pallet. Pulp temperatures of airfreight fruit were taken at random throughout the pallet. A probe thermometer was used to measure temperatures.

All information concerning date codes and temperatures of fruit, on arrival or in storage, was collected personally.

RESULTS

The journey by road from Zeebrugge to Rungis takes about 47 hours. This time includes a stop at an inspection control point. The containers are not refrigerated during this journey or at any stage after they have left Zeebrugge until they are unloaded at Rungis or any other point in France eg. to Marseilles.

Containers arrive at Rungis at an average of 36,1 hours after the vessels have docked at Zeebrugge. Sometimes as soon as 7,0 hours and other times as late as 85,0 hours. Vessels usually dock on a Thursday or Friday. Most fruit is still delivered to the warehouses before or during the weekend. Delays do occur at this stage, resulting in some fruit reaching the warehouses at Rungis 2472 hours after the arrival of the first containers. Indications are that the importers are responsible for these delays. Occasionally delays may be caused by mechanical breakdowns.

The average number of days taken for fruit to reach Rungis was 27,5 days (calculated from packing codes). This time varied from an average of 24,6 to 29,0 days, depending on the packer. Pulp temperatures at this point were much the same for all packers, but they all tended to increase slightly during the course of the season (see Table 1).

The unloading of the containers usually takes place immediately after they arrive at the warehouses. About 1530 minutes are needed to unload each container and only one or two are ever unloaded simultaneously. Delays of a few hours may be caused by 1) the amount of containers arriving on one day, 2) the general work load at the warehouse.

Most fruit goes directly into the cool rooms, but at times fruit that is to go out on order on the same day may stand at ambient temperature for 15 hours.

The cold storage facilities at the various warehouses at Rungis vary from one importer to another. Most are situated in the warehouse section, right next to the actual market while others are on the market itself. They vary in size and number as well as cooling and ventilation systems. There are no plastic curtains in any of the doorways and so the set thermostat temperature and the actual air and fruit pulp temperature are seldom the same. Doors are often left open for hours on end in order to move fruit going out on order.

Fruit from 3 to 61 days old, at pulp temperatures varying from 1,7°C to 13,5°C, in cool rooms with ambient temperatures of 3,0°C to 12,0°C and stored alone or with crops such as apples, pears, and vegetables, were to be found in warehouses at times during the 1982 season. Fruit pulp and ambient temperatures seldom registered 5,5°C. These temperatures tended to increase during the season, as did the incidence of storing avocados together with other crops (see Table 2).

Airfreight fruit took an average of 6,3 days after packing to reach the warehouses at Rungis. The average pulp temperatures at this point were 20,5°C. (see Table 3).

The analyses of work done over the past two seasons have shown that the time from packing to arrival at Rungis and the higher the temperatures during this period, the higher the incidence of post harvest problems. It is, therefore, clear that delays in getting fruit to Rungis will result in a poorer quality fruit eg. delays in getting containers from Zeebrugge to Rungis and in packing until arrival at Rungis. Another point worth mentioning is that Thursdays are known to be good "market days". The fact that fruit usually arrives over weekends could result in the delayed distribution of this fruit.

The higher the temperature during the later part of the transit period has been correlated to an increase in some post harvest problems eg. lead, anthracnose, soft fruit. Fruit temperatures on arrival (and also on the Ryan bands) tended to increase during the season.

This could, to some extent, have been responsible for a few of the problems experienced during the second half of the season.

Depending on the Physiological stage of fruit, temperatures and duration of cold storage could have a very detrimental effect on the quality of avocados. The age of fruit found in storage at times during the season is distressing and the resulting quality can hardly be expected to be good. Research has shown that the gasses (eg. ethylene) given off by crops such as apples and pears can be detrimental to avocados. Although most of the importers know how to handle avocados there are a few who do not have all the information and others who seem to be lax in applying it.

TABLE 1: The vessel, date of arrival at Rungis, time lapse (hrs.) from docking at Zeebrugge to the arrival of the containers. The average age and the average pulp temperature at point of unloading the containers, sent by various exporters, at the warehouses at Rungis.

Vessel	Date of arrival at Rungis	Hrs. from Zeebrugge to Rungis	Average age of fruit				Average fruit pulp temperatures							
			West. Cap.	War. Halls.	Let.	KK.	West. Cap.	War. Halls.	Let.	KK.				
1. Table Bay	19.03.82	17,0	24	25	-	-	-	-	6,6	6,3	-	-	-	-
2. Helderberg	27.03.82	22,0	25	-	-	-	-	26	6,5	6,5	-	-	-	6,6
3. Winterberg	02.04.82	13,0	25	-	-	-	-	-	7,3	-	-	-	-	-
	05.04.82	85,0	-	-	*	-	-	-	-	-	-	-	-	-
4. City of Durban	09.04.82	19,25	25	24	29	-	-	3 0	8,8	7,8	7,8	-	-	8,0
5. Ortelius	17.04.82	27,5	29	25	-	-	30	-	7,6	7,8	-	-	7,8	-
	19.04.82	7,55	-	-	*	-	-	-	-	-	-	-	-	-
6. Waterberg	22.04.82	19,0	27	-	-	-	27	-	7,3	-	-	-	7,3	-
	23.04.82	43,0	-	-	29	-	-	-	-	-	11,0	-	-	-
7. Transvaal	29.04.82	7,0	23	22	-	27	27	-	7,3	7,5	-	8,8	7,1	-
8. Sederberg	06.05.82	8,5	28	23	-	-	-	-	8,0	7,8	-	-	-	-
9. Table Bay	15.05.82	25,0	29	26	-	29	29	-	10,3	10,3	-	10,6	9,5	-
	17.05.82	49,0	-	*	-	*	-	-	-	-	-	-	-	-
10. Helderberg	22.05.82	26,5	29	-	-	-	30	-	9,5	-	-	-	9,3	-
11. Winterberg	27.05.82	7,0	28	22	-	-	28	-	-	-	-	-	-	-
	28.05.82	31,0	-	*	-	-	-	-	-	-	-	-	-	-
12. City of Durban	05.06.82	20,0	29	24	-	-	-	-	10,6	11,1	-	-	-	-
13. Ortelius	11.06.82	11,0	28	22	-	-	-	-	10,8	8,5	-	-	-	-
14. Waterberg	18.06.82	26,75	28	-	-	32	-	-	11,0	-	-	10,8	-	-
15. Transvaal	24.06.82	9,75	-	23	-	-	27	-	-	10,3	-	-	8,1	-
16. Sederberg	03.07.82	-	26	-	-	-	-	-	-	12,5	-	-	-	-
17. Table Bay	08.07.82	-	23	-	-	-	-	-	-	-	-	-	-	-
18. Helderberg	16.07.82	-	26	-	-	-	-	-	-	11,3	-	-	-	-
19. Winterberg	22.07.82	-	24	24	-	28	-	-	11,3	8,5	-	12,1	-	-
	23.07.82	-	*	-	-	-	-	-	-	-	-	-	-	-
20. City of Durban	02.08.82	-	-	28	-	-	-	-	-	-	-	-	-	-
21. Ortelius	03.08.82	-	-	26	-	-	-	-	-	9,6	-	-	-	-
22. Waterberg	11.08.82	-	-	29	-	-	-	-	-	9,6	-	-	-	-
23. Transvaal	17.08.82	-	-	27	-	-	-	-	-	10,5	-	-	-	-
		36,1	264	24,6	29,0	29,0	28,0	28,0	8,7	9,1	9,4	10,5	8,1	7,3

* = Containers of various exporters of avocados arriving at Rungis after the arrival of the first containers in the same consignment.

TABLE 2: Results of visits to warehouses showing date, importer, exporter, age of fruit, average fruit pulp and air temperature.

Date of visit to warehouse	Importer	Exporter	Age of fruit in days	Av. fruit pulp temp.	Av. air temp in cool-room.	Comment
16.03.82	Azoulay	Waring	21	4,5	5,0	Doors closed
	Pomona	Caprice	12	7,2	—	Fruit standing on warehouse floor.
17.03.82	Azoulay	Waring	15-23	3,7	4,5	Doors closed.
31.03.82	Azoulay	Waring	4-37	4,2	4,0	Doors closed.
	Pomona	Caprice	30-38	4,9 5,3	6,5 5,0	Doors open. Doors closed.

Date of visit to warehouse	Importer	Exporter	Age of fruit in days	Av. fruit pulp temp.	Av. air temp in cool-room.	Comment
	Klein	Koolkat Caprice	12-21	5,7	6,0	Doors closed.
	Pascual	Koolkat Marimba	23-25	3,2	4,5	Doors closed.
08.04.82	Agrunord	Koolkat Caprice Waring	6-44	8,9 5,9 5,2	10,0 6,0 4,5	Doors open. Doors closed. Doors closed. Some avocados being stored with grapes and carrots
	Pomona	Caprice	37-46	4,2	5,0	Doors open.
	Klein	Caprice Koolkat Sabi	9-37	7,5	5,5	Doors closed.
15.04.82	Helfer	Westfalia	29	6,0	4,5	Doors closed.
	Klein	Caprice Koolkat Sabi	10-41	7,1 6,2	6,5 5,5	Doors open. Doors closed.
	Pomona	Caprice Koolkat	46-54	3,8	4,5	Doors closed.
15.04.82	Azoulay	Waring	10-45	5,4 7,3	5,3 9,0	Doors closed Doors open. Some avocados being stored with strawberries.
26.04.82	Helfer	Westfalia Letaba	34-38	6,5 7,8	5,0 6,5	Doors closed. Doors open.
	Azoulay	Waring Koolkat	29-47	4,7 4,1	4,5 6,0	Doors closed. Standing open.
	Pomona	Caprice	47-53	5,5	7,0	Not in coolroom - on floor.
	Klein	Caprice Koolkat Sabi	11-47	6,8	6,0	Doors closed.
	Agrunord	Caprice Koolkat	25-39	5,4	5,5	Doors closed. Most avocados stored together with pears.
29.04.82	Helfer	Westfalia Letaba	34	7,0	7,5	Doors open
	Azoulay	Waring	34-52	6,1 4,7	5,5 6,3	Doors closed. Standing open.
	Pomona					No fruit in storage
	Klein	Caprice Koolkat Sabi	30-54	6,8	5,8	Doors closed.
	Agrunord	Caprice Koolkat	22-55	7,3	6,7	Doors open — Most avocados stored together with pears.
05.05.82	Helfer	Westfalia	35	6,5	6,5	Doors open.
	Azoulay	Waring	33-51	5,1	5,0	Doors closed.
	Pomona					No fruit in storage.
	Klein	Caprice Koolkat Sabi	15-61	6,0 6,6	5,5 5,7	Doors closed Doors open. A lot of soft fruit to be found here.
	Agrunord	Caprice Koolkat Halls	14-60	6,7 7,4	7,0 6,0	Doors open. Doors closed. Some soft fruit and fruit stored with peaches and pears.

Date of visit to warehouse	Importer	Exporter	Age of fruit in days	Av. fruit pulp temp.	Av. air temp in cool-room.	Comment
	Fruits	Caprice	28-40	1,7	3,0	Doors closed.
	Unis			3,0	5,5	Doors open. Some fruit stored together with grapes
	Lacour	Caprice	33-40	4,5	6,0	Doors closed.
17.06.82	Azoulay	Waring Koolkat	3	8,5	8,5	Doors closed. Fruit stored with apples & limes.
	Pomona	Caprice	13	6,3	6,5	Doors closed. Some soft fruit here.
	Klein	Caprice	6-8	13,5	11,0	Doors closed.
	Agrunord	Caprice	6-12	7,5	6,5	Doors closed. Fruit stored together with apples.
	Lacour	Caprice	7-13	11,0	12,0	Doors closed. Fruit stored together with peaches.
01.07.82	Agrunord	Caprice	5-36	8,0	8,0	Doors closed.
	Lacour	Caprice Avoridge	9-30	12,7	10,0	Doors closed.

* Calculated from packing codes.

TABEL 3: The date, average age (days after packing) and average temperature of air-freight avocados on arrival at the various warehouses at Rungis.

Date of arrival at Rungis	Age of fruit (days after packing)					Temperature (av pulp temps on arrival at Rungis)				
	West.	Capr.	War.	Let.	KK.	West.	Capr.	War.	Let.	KK.
01.04.82	-	-	-	-	-	-	-	-	-	-
14.06.82	7	-	-	-	-	-	-	-	-	-
17.06.82	-	-	8,5	-	10	-	-	-	-	-
23.06.82	-	-	-	-	6	-	-	-	-	-
01.07.82	-	-	16	5,6	6	-	-	-	21,0	-
05.07.82	4	-	-	-	-	20,0	-	-	-	-
07.07.82	2	-	6	-	-	-	-	-	-	-
14.07.82	5	-	5	-	-	-	-	-	-	-
21.07.82	-	-	5,5	-	-	-	-	-	-	-
26.07.82	3	-	4	-	-	22,5	-	24,0	-	-
29.07.82	5	-	-	-	-	18,8	-	-	-	-
03.08.82	-	6,5	-	-	-	-	-	-	-	-
05.08.82	7	-	7	-	-	22,0	-	21,0	-	-
12.08.82	6,6	-	7	-	-	15,6	-	17,5	-	-
Averages	4,9	6,5	7,3	5,6	7,5	19,7	-	20,8	21,0	-

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