

Verified by:

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Airfree Peaches Test

at

Shokri Hassan Trading Co, Dubai

4 - 28 October 2010

Aim: To assess viability of installing Airfree throughout a large fruit and vegetable storage facility, by measuring real increases in shelf life using Airfree, and investigating the possibility to increase chiller temperature and thus reduce cooling & utility bills

The Test

Duration: 25 days

Subject: Peaches, Class II Grade AA-AAA Origin: Turkey

Test Chillers: 4, 1 with Airfree/3 without

Airfree installation: Berry Room installed with 3 x Airfree WM50+ units in Stainless Steel (wall mounted) in April 2010, and 3 chillers without Airfree

Chiller Sizes:	Berry Room	118.485m ³	(5.492m x 4.727m x Height 4.564m)
	Chiller 1	297.1m ³	(13.815m x 4.712m x Height 4.564m)
	Chiller 2	162.89m ³	(9.812m x 6.505m x Height 2.552m)
	Chiller 3	159.05m ³	(9.807m x 6.335m x Height 2.552m)

Variables recorded: [1] Fruit Temperature °C (measured using Raytemp 4 Laser thermometer); [2] Chiller Temperature Setting °C (recorded from the SHTC chiller computers); [3] Chiller Ambient Temperature °C (recorded from the SHTC chiller computers); [4] Chiller Wall Temperature °C (measured using Raytemp 4 Laser thermometer)

Method: Trays of peaches from Shokri Hassan Trading's regular stock were used, selected from the same batch at random and placed in the 4 test chillers on 4 October 2010 - Berry Room (Airfree installed) and Chillers 1, 2 and 3 where Airfree was not installed. Photographs and the aforementioned variables were taken initially every second day, and then daily up until 28 October 2010.

Purpose: A significant difference in terms of reduced spoilage was noted by management following the purchase and installation of Airfree units in an area where the most perishable and expensive produce is stored, the Berry Room, in April 2010, and a further study was requested to assess the viability of further investment and extended installation of the Airfree system. The aim of this test was two-fold: (A) to formally assess the viability of installing Airfree throughout all SHTC chilled storage areas by measuring increase in shelf life of Airfree in a fully functional commercial chiller; (B) investigating Airfree's potential to allow for an increase in chiller temperature settings and thus reduce cooling and utility bills.

VARIABLE AVERAGES

[1] Fruit Temperature °C (Measured using Raytemp 4 Laser thermometer)

Chiller	Berry Room WITH Airfree	Chiller 1: WITHOUT Airfree	Chiller 2: WITHOUT Airfree	Chiller 3: WITHOUT Airfree
Average Temperature	0.91°C	-1.72°C	4.93°C	3.94°C

[2] Chiller Temperature Setting °C (Recorded from SHTC Chiller Computers)

Chiller	Berry Room WITH Airfree	Chiller 1: WITHOUT Airfree	Chiller 2: WITHOUT Airfree	Chiller 3: WITHOUT Airfree
Average Temperature	4°C	4°C	4.92°C	5°C

[3] Chiller Ambient Temperature °C (Recorded from SHTC Chiller Computers)

Chiller	Berry Room WITH Airfree	Chiller 1: WITHOUT Airfree	Chiller 2: WITHOUT Airfree	Chiller 3: WITHOUT Airfree
Average Temperature	8.11°C	5.46°C	5.83°C	7.74°C

[4] Chiller Wall Temperature °C (Measured using Raytemp 4 Laser thermometer)

Chiller	Berry Room WITH Airfree	Chiller 1: WITHOUT Airfree	Chiller 2: WITHOUT Airfree	Chiller 3: WITHOUT Airfree
Average Temperature	1.58°C	-1.05°C	5.53°C	4.2°C

SNAPSHOTS

Day 1

Berry Room WITH Airfree:



Chiller 1 WITHOUT Airfree:



Chiller 2 WITHOUT Airfree:



Chiller 3 WITHOUT Airfree:



Day 8

Berry Room WITH Airfree:



Chiller 1 WITHOUT Airfree:



Chiller 2 WITHOUT Airfree:



Chiller 3 WITHOUT Airfree:



Day 15

Berry Room WITH Airfree:



Chiller 1 WITHOUT Airfree:



Chiller 2 WITHOUT Airfree:



Chiller 3 WITHOUT Airfree:



Day 25

Berry Room WITH Airfree:



Chiller 1 WITHOUT Airfree:



Chiller 2 WITHOUT Airfree:



Chiller 3 WITHOUT Airfree:



First visible Mould in Chillers WITHOUT Airfree

Day 9 – Chiller 1 WITHOUT Airfree



Day 6 – Chiller 2 WITHOUT Airfree



Day 8 – Chiller 3 WITHOUT Airfree



Chiller WITH Airfree completely Mould-free on Day 25

Day 25 – Berry Room WITH Airfree



Conclusions

Shelf Life: The peaches in the Berry Room, the chiller with Airfree installed, remained in a saleable condition for the entire 25 day period, with no signs of mould or decomposition at all. Peaches in all 3 control chillers (pictures as above) were affected by mould and decomposed - Chiller 2 mould was visible by Day 6, in Chiller 3 mould was visible by Day 8, and in Chiller 1 mould was visible by Day 9. It can therefore be concluded that Airfree extended shelf life for between 16 to 19 days in this 25 day study.

Airfree therefore extended shelf life of the peaches by more than **4 times** in Chiller 2, more than **3 times** in Chiller 3, and **2.5 times** in Chiller 1, **averaging more than 3 times increase in shelf life.**

Savings through reduced cooling and increased chiller temperatures: It was noted that average temperatures as recorded in Chiller 1 *were colder* than the Berry Room, and thus the peaches should have lasted longer. Airfree achieved impressive shelf life extension in *warmer* conditions in the Berry Room than Chiller 1. Despite running at an average ambient chiller temperature of **2.65°C higher**, shelf life was over **2.5 times longer**. This figure is reconfirmed by the fruit temperature statistics - the peaches in the Berry Room were on average **2.63°C higher** than in Chiller 1.

It can therefore be concluded that using Airfree, a company storing fruit and vegetables can increase temperature settings in their chillers by at least 2.5°C, and STILL achieve shelf life extension of at least 2.5 times.

*Peaches from Chillers 1, 2 and 3 were discarded on Day 25 at the end of the study. Peaches from the Berry Room were retained for the purposes of further research into the full shelf life extension possible using Airfree. These peaches were inadvertently discarded on Day 32 albeit it was noted that they were still mould-free when pictures were taken earlier that day (see below). It can therefore be concluded that Airfree extended shelf life for between 23 to 26 days, indicating more than 3.5 to 5 times extended shelf life over produce stored without Airfree.

Day 32 – Berry Room WITH Airfree

