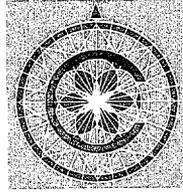


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CHEMONICS INTERNATIONAL INC.



**TDC/EED  
TRADE DEVELOPMENT CENTER PROGRAM  
EXPORT ENTERPRISE DEVELOPMENT  
PROJECT**

**NOTES ON GRAPE FARM VISITS  
1995 SEASON**

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**Ayman Khorra Farm**

**Date: June 5, 1995**

- Flame: very good berry size; 18 tons (3F), around 10 days before harvest
- Thompson: some problems with fragile bunches, 14 tons (3F)
- Ruby: Good fruit with regards to berry size (uniform) and shape of bunches; 30 tons (3F)

**Date: June 26, 1995 (Monday)**

**Item:**

**Harvest and Quality Control**

Harvest

- Consultant discussed with the managers the main aspects of harvesting practices
- The field managers could do a small check list everyday covering these aspects
- Current harvesting is targeted to export table bunches. The consultant found an error rate of 19.8% with this system -- a good percentage for the first day. The best case is to have 90 percent (or over) exportable fruit.

Quality Control

- The consultant demonstrated the requirements for table grapes and how to fill the quality control list
- Actual situation is that there is not a quality control team -- to know which aspects must be improved day by day, and to compare the receptions of the receivers with the work in the packhouse

The requirements of a quality control team are:

- 2-3 people assigned just to this work
- necessary equipment, such as table, refractometer, thermometer, caliber rings, and a digital balance

The consultant and others checked several boxes with the quality control list and the following problems were identified:

- Irregular appearance because of the mix in berry size
- Low sugar -- around 50%, less than 16° Brix
- Shattering -- between 2.5% and 6.5%
- Several bunches below the minimum weight
- Between 25% and 40% below the standard (bunches without enough cleaning and low 250 grams)
- Main problem is the dehydration because there is around 16 hours between harvest and pre-cooling

Conditions to ship by sea:

- Change the pallet. The actual pallet will be destroyed at port or cool center at bad moment.
- The grapes must be fumigated pre-packed
- Put SO<sub>2</sub> with 5/0 grams in each box
- Reduce the dehydration levels
- Maximum 8 hours between harvest and pre-cooling
- Good palletizing

**Date:** June 27, 1995 (Tuesday)

**Item:** Environmental Conditions in Packhouse

Consultant discussed with engineers about the best conditions to pack table grapes.

Actual situation: good space; good floor; good tables; good order.

The following items need improvement:

- Ceiling. The double net is not enough to avoid the sun.
- Relative Humidity. Put water over floor every hour or use another system.
- Scissors. All personnel must have good scissors to avoid damaging the fruit and to make the job easier.

- Temperature. Should be less than 20°C.
- Cleanliness. Keep the packing area clean all day long.
- Air flow. Install fans to allow a good air flow.

The consultant did a measurement of the environmental and pulp temperatures over the day. Both increased during the day from lows of approximately 30°C to 32°C at 10 a.m. (lower temperatures are pulp temperatures) to 34°C to 38°C in the late afternoon. This shows the strong relationship between environmental and pulp temperature (and the damage resulting from dehydration with these high temperatures).

**Date: June 28, 1995 (Wednesday)**

**Item: Selection, Sorting**

All fruit, over standard minimum, are acceptable fruit but the boxes must be uniform in both color and berry size.

At the packhouse, fruit is sorted for either export or local sale. Fruit is also sorted for color. The sorting process must be improved, as there is currently around a 20 percent error in the process (error should be at 0 percent).

The above selection process is not sufficient to ensure good grapes for export. It is absolutely necessary that selection is also based on berry size.

In the requirements provided to Ayman Khorra Farm, different types of grapes are listed. Three to four workers should be trained with caliber rings -- after time they will know which fruit must be packed in each box.

Selection and sorting in the packhouse is as important as the cleaning and packing.

Note: The table grape must be pre-cooled as soon as possible. It is a big mistake to keep the boxes waiting in the packhouse at ambient temperature.

**El-Miligui Farm**

**Date: June 19, 1995**

There are two kinds of fruit:

(1) Early Bunches.

- There is fungus. I found several bunches infected.
- Will be necessary to do an acidity test about next Wednesday.
- If the ratio between °Brix/Acid is 20/1 or more, the bunches with more than 15.5°Brix must be harvested as soon as possible.
- There are 5 tons to export and the berry size is over the minimum (16-17 mm).
- The bunches are at 13-14°Brix.

(2) Late Bunches.

- a lot the grapes are damaged by sunburn.
- Necessary to look again at this kind of bunches in about 10 more days to do an estimation of quantity to export.
- The bunches infected must be looked at as soon as possible and the vegetative growth must be cut to allow for air flow.

El-Beltagy Farm

**Date: June 19, 1995**

In the small area (2 fedan), the early bunches do not have enough berry size. Currently around 11-12 mm.

The big area has good berry size (16-17 mm), but the problem there is a lot of damage by chemical products. The majority of bunches have big spots in their berries. The sugar is around 12-13°Brix.

The spot problem may be caused by:

- (1) Too much water/fedan
- (2) Application at temperatures greater than 25°C
- (3) Did not use fine nozzle

The spotted bunches may be rejected in the European market.

Postharvest Meeting

(a) Main aspects at time of harvest (check list):

- Harvesting must be at lowest temperature hours (6 am to 11 am)
- The fruit should be pre-cooled as soon as possible after harvest
- Harvest should be at the time when the table grape is at maturity
- The boxes must be very clean and when fruit is picked must be under shade. The fruit should never be in the sun.
- There should be a field boss -- who should be checking the harvested fruit and manage the tasks/laborers
- Place the bunches in only one layer into the plastic boxes

(B) Main aspects in the packhouse (check list)

- Environmental Conditions

- Temperature
  - Shade
  - Light
  - Cleaning: Tables, Floor, Scissors
  - Space
- People Conditions
- cleaning
  - order
  - good equipment: scissors, tables, boxes
- Sections
- selection
  - cleaning
  - packing (weighing)
  - palletizing (labeling)

#### Requirements for Table Grapes

There are two groups of requirements: quality and condition. Quality does not change over time, while condition changes over time. For example, the berry size doesn't change at postharvest, but the shattering is changing during time of postharvest.

(a) Quality Aspects

(1) Uniformity

- berry size
- color

(2) Cleaning. The boxes must be without:

- seeds berry
- split berry
- uncolored berry
- dust or spotted berries
- russet berry
- insect damage
- watery berries

(3) Weight -- the boxes should be filled with 5.2 kilograms of fruit

(4) Standards for Each Variety

<u>Variety</u>	<u>Sugar Brix°</u>	<u>Kind</u>	<u>Berry Size (mm)</u>	<u>Bunch Weight (g)</u>
Flame				
Seedless	15.5*-16	Normal	17-17.9	>250
		Medium	18-19.9	
		Large	20 or more	
Thompson and Ruby	15.5*-16.5	Normal	16-17.4	>250
		Medium	17.5-18.9	
		Large	19 or more	

\* is allowed only with relation 20:1 between Brix and Acid

(B) Condition Aspects

- (1) Decay
- (2) Shattering
- (3) Condensation
- (4) Dehydration

#### Check List for Packed Table Grapes

I. Identification

Farm:                      Variety:  
Date:                      Box kind:  
Hour:                      Label:

II. Control

1    2    3    4

- a) Net weight
- Temperature
- Quantity of Bunches
- Weight of Bunches (average)
- Brix Degree

- B) Appearance:
  - Uniformity in berry size
  - Uniformity in color
  
- C) Berry Size
  - Bunch Size
  - Color
  - Shape
  - Cleaning
  - Dehydrated Bunches
  
- D) Crushed Berries
  - Split Berries
  - Weak Berries
  - Spotted Berries
  
- E) Shattering
  
- F) Fungus or Insects
  - Slip skin
  - Nest
  - Insects
  
- G) Package
  - Materials
  - Box Appearance
  - Palletizing
  - Labels
  
- H) Comments

How to complete this report:

- a) Put the measurement required
- B) Good, average, poor
- C) Quantity of bunches per box with problems
- D) Quantity of berries per box with problems
- E) Percentage (%) of net weight
- F) Quantity of bunches or berries with problems with fungus. Quantity and kind of insects.

G) Good, average, poor

With quality aspects there is a 10 percent tolerance for defects. Condition aspects are not allowed except for shattering of 5 percent.

IEC Center

**Date: June 4, 1995**

I. The main conditions for packhouse are:

1) Cleaning:

- (a) with regards to workers: gloves, aprons
- (b) environment: tables, boxes, floor

2) Environmental Conditions

- (a) low temperature (20°C)
- (b) shade
- (c) light

II. The main conditions for cold chain:

- 1) Don't break the cold chain
- 2) Pre-cooling of fruit as soon as possible after harvest
- 3) Pre-cooling time: 8-10 hours to go from 20°C to 4°C for packed grapes
- 4) Cold storage: 0°C in chamber, 90-95% relative humidity
- 5) The trucks for transport must have the same temperature as the packhouse (20°C)

**Later Visit**

This report's purpose is to highlight the aspects that must be improved in order to obtain good quality table grapes for export.

I. General Management

a) People

- The workers must be trained to do good work with table grapes. This fruit has different requirements than other vegetables.
- They should understand that any mistakes means losing all work for the year.
- To be efficient: unload quickly, care with boxes, good palletizing, good security, good appearance of commodities

## b) Others

- Good use of control file.
- Be very clear about the main objective: to cool as soon as possible and keep the fruit in good condition
- Have a boss that addresses the labors
- Take care of the environmental conditions, such as cleaning, doors (must be closed), etc.
- Must have good measuring instruments and use them in the right way
- Should have a shipment yard to control fruit ready to export
- Pallets must be labeled (especially for shipment by sea)

## II. Pre-Cooling

There is wrong performance because:

- Excess of pre-cooling time: should be 8-10 hours for 3,000 carton boxes or 2-3 hours for 200-300 carton boxes
- Bad design -- must allow for air flow
- Air speed not enough: the cold air must remove the field heat
- Air temperature should be between -2°C to 0°C

## III. Chambers

- Put plastic curtain
- Keep the environmental conditions at 0°C and 95% relative humidity. These conditions must be uniform.
- Don't put boxes in front of fans
- Wrong design; doesn't allow a uniform air flow and bad condition to remove the pallets
- The corridors should be no more than 8°C
- Pulp temperatures must be checked at time of shipment
- The chambers should be close to pre-cooling
- Electric fork lift must be used in the center only

**Zawba Farm Packhouse**

**Date: June 5, 1995**

Flame:

- Around 7 tons/fedan (5-6 tons export) -- 30 tons (6F)
- 5-6 days before harvest. Sugar is 15° Brix in colored bunches

Thompson:

- Bunches are very fragile: may have some problems with shattering
- Two weeks before harvest - 26 tons (6F)

Ruby: 25 tons (4F)

**Date: June 8, 1995**

First day of harvest.

There are three sections:

- (a) Selection, Sorting
  - (b) Cleaning
  - (c) Packing
- (a) About bunches to export and bunches to local market
- about berry size: medium to large
  - about color: hard color and light color
- (b) Must be cut:
- small berries
  - infected berries
  - split berries
  - uncolored berries
  - spotted berries
- (c) ■ Carton box

- Big plastic bag
- Corrugated carton (on bottom)
- Two pieces of paper

The main problems observed on this day were:

- Environmental conditions: around 35°C to 37°C under shade
- Not enough cleaning of bunches: small berries

**Chain Farm**

**Date: June 5, 1995**

- First Area -- Thompson; 9° Brix average; harvest around three more weeks; 10 tons (3 fedan)
- Second Area -- Thompson; harvest about two more weeks (earlier than first area); 40 tons (10 fedan)
- Ruby -- harvest around 4 more weeks

**Date: June 10, 1995**

Thompson Late Area:

- Some bunches with 12-13° Brix
- Most bunches with 10-11° Brix
- Average berry size around 14 mm
- Big difference between bunches in sugar: 8 to 14. Be careful at time of harvest.

Thompson Early Area

- Some bunches with 15° Brix
- Better fruit (quality) than late area
- Harvest will be around next Tuesday or Wednesday

**Mussa Farm**

**Date: June 5, 1995**

Thompson:

- There is water stress
- Earlier than Chain Farm
- 25 tons (8 fedan)
- Sunburned berries
- Poor thinning job

Packhouse

- Add cover: shade
- Clean the floor
- Enlarge

**Date: June 10, 1995**

- Some bunches with 16-17° Brix, but is better to begin the harvest in 2 to 3 more days to avoid finding immature bunches in packed carton boxes
- The quality is worse than that found at Chain Farm; bunches with a poor thinning job, unshaped bunches, small berries

**Miagui Farm**

**Date: June 7, 1995**

- Thompson seedless
- Around 6 tons/fedan total, 4 tons/fedan to export
- The main problems are sunburn and some bunches compacted.
- Will have a good caliber.
- Harvest date around end of June.

**Hanny Farm**

**Date: June 7, 1995**

Thompson Seedless.

- 9° Brix average
- 14-15 mm berries
- Around 14 tons/fedan total
- Around 8 tons/fedan export

**Beltagy Farm**

**Date: June 7, 1995**

Thompson Seedless.

- Around 8 tons/fedan total
- Around 5 tons/fedan export
- Good thinning job
- Will have a good caliber

Ruby

- Too much branches/vine
- Much later

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**Superior Farm**

**Date: June 7, 1995**

- 9-10° Brix
- High humidity
- 16-17 mm berries
- Not uniform about its berry size

**Adel Adel Farm**

**Date: June 7, 1995**

- Thompson Seedless
- 8-9° Brix
- Around 6.5 tons/fedan total
- Around 3.0 tons/fedan export
- The main problems are: poor thinning job and sunburned berries
- Estimated harvest date: first week of July

**Ophis Farm**

**Date: June 5, 1995**

- Thompson
- At least 4-5 weeks until harvest
- 30% of vegetable cover; less fruit

**Badvedim Farm**

**Date: June 5, 1995**

- Thompson
- 12° Brix average
- 12 days before harvest
- One bunch each three vines for the beginning

Th=25(15F)

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**Salah Farm**

**Date: June 5, 1995**

- Flame
- Regular fruit
- Later than Khorra Farm

Fl: 10 tons (4F)

Th: 20 tons (5F)