

 <b>PPECB</b>	<b>Intransit Handling Protocol - HP35 - Mexico</b> <b>Apples and Pears</b>	HP35
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Approver:	General Manager Coastal (Vijan Chetty)	
Department:	Operations - Cold Chain	

## PROCEDURE FOR FRESH APPLE AND PEAR EXPORTS FROM SOUTH AFRICA TO MEXICO

### 1. Reference

- 1.1 This procedure refers to the cold treatment of fruit flies and Eastern fruit moth in apples and pears, as prescribed by the Secretariat of Agriculture, Cattle and Rural Development of the United Mexican States (**SAGAR**). This procedure will be applied by the PPECB as authorized by the **SAGAR/DGSV**.

Also refer to PPECB Work Instructions AWI04 (Container) for loading procedures.


- 1.2 The Perishable Products Export Control Board (PPECB) is a statutory body in terms of the provisions of Act No. 9 of 1983 of the Republic of South Africa and is authorized to apply the following cold treatment procedures:
- 1.2.1 Accurate calibration of cold store temperature controls and recording systems, inspection of container refrigeration equipment and registration of containers.
- 1.2.2 Correct stacking and air circulation control during pre-cooling and cold store management as well as frequent temperature monitoring.
- 1.2.3 Correct handling and loading procedures to ensure minimum temperature gain during shipment and the voyage.
- 1.2.4 Temperature specification, measurement and control as agreed on and specified by authorities of both the importing and exporting countries.
- 1.2.5 Specially authorized and trained PPECB technical personnel will supervise the logistics and apply the technical requirements for accuracy and completeness.

### 1.3 PPECB Requirements

PPECB is also responsible under Act No. 9 of 1983, to ensure that the most optimum handling, storage and transport temperatures are applied to achieve the ultimate product quality maintenance. The PPECB product temperature requirement for apples is therefore colder than required by the importing country for insect eradication. PPECB temperature requirements shall therefore apply. Ideally the optimum product/pulp carrying temperature of most deciduous fruit cultivars exported from the RSA is minus 0.5°C. To achieve this, it is necessary to:

The internationally accepted commercial cold treatment requirement for fruit flies is a minimum uninterrupted fruit pulp temperature and exposure time combination as indicated below.

The PPECB minimum cold treatment temperature for fruit flies in apples and pears for this application will be 0.0°C or colder for at least 40 continuous days and must take place within a controlled atmosphere cold store.

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The treatment will be cancelled and started from day 1 again should the pulp temperature increase to above 0.0°C during the 40-day period and above 2.2°C during a 45 day period.

## 2. PRECOOLING OF THE FRUIT


- 2.1 Cold stores will be inspected annually and certified by PPECB. The cold store must also comply with the prescribed South African regulations and must have a valid PPECB certificate that is issued in terms of Act No. 9 of 1983 and promulgated regulations No. R917 of 4 May 1984.
- 2.2 Palletised fruit that passed both quality and phytosanitary inspections and intended for cold treatment, will be loaded into the cold store according to standard procedures for forced air pre-cooling (also known as pressure cooling or FAC). Please note that the PPECB does not recommend double row stacking on either or both sides of the FAC tunnel because double rows often result in hot spots and therefore require careful and much longer cooling. PPECB requires that temperature sensors be installed into the fruit while building the FAC stack and that the temperatures are continuously recorded to give a true reflection of the warmest and coldest product temperature of the total load. Air temperature sensors should also be installed to verify correct temperature and air circulation control. Temperature readings should be recorded at least once every hour at regular intervals during loading of the chambers and during pre-cooling. These temperature recordings will be filed for later scrutiny if necessary.
- 2.3 Fruit that passed phytosanitary inspection must be stored at least one meter away from any other fruit.
- 2.4 It is a requirement that the fruit is continuously pre-cooled in approved inland loading cold stores for at least 40 continuous days. Pulp temperatures must be 0.0°C or colder before the loading of a container can take place. Cold store delivery air temperature must never be lower than minus 1.5°C.

- Maximum pulp temperatures at time of loading must be 0.0°C.

- 2.5 PPECB Technicians will under no circumstances whatsoever, authorize commencement of loading, if the above minimum pre-cooling requirements are not met.

### 2.6 Treatment schedule

- 2.6.1 The day and hour of initiation of treatment is the moment at which all the sensors register the minimum required cold treatment temperature of 0.0°C.
- 2.6.2 One treatment day is defined as a period of 24 continuous hours, controlled from the time of treatment initiation, during which the temperatures comply with the treatment guidelines.
- 2.6.3 Maximum air temperatures within the cold store can be exceeded 4 times a day during the defrost cycles, but it may not exceed 12.7°C for a maximum period of 60 minutes.

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2.6.4 A DALRRD inspector will identify defrost cycle's frequency. Temperatures during defrost will not be averaged with treatment temperatures, i.e. the requirement as in point 2.6.3 will strictly be taken into account.

2.6.5 At the end of treatment DALRRD authorized inspector will certify the following information:

- Closing date of the room.
- The date of initiation and conclusion of the treatment and amount of days that temperatures have remained within protocol.
- The maximum temperature recorded during the treatment (excluding defrost)
- The maximum oxygen level recorded during the treatment.

### 3. Temperature Records

3.1 The record of the temperatures shall be continuous, automatic graphic or data logger.

3.2 All temperature data for the corresponding treatment period must be available during business hours for verification and copies must be provided to the Co-coordinator on request. Failure to have data available when requested will cause a delay in the approval of treatment or shipment.

### 4. Temperature recording

4.1 Temperatures must be recorded at least hourly, and also applies to graphs as in data loggers.

4.2 Graph: Records can be shown in circular or continuous charts format. Must indicate TF number, the name of the treatment facility, room number and date and time of cold treatment initiation. The graph must show the individual temperature data from each sensor. Temperature records over specification of work plan will not be accepted.

4.3 Data Logger: Temperatures of each sensor must be displayed. Temperature records not within specification of work plan will be rejected.

4.4 In the case of an electrical failure, printing problems or other causes beyond the control of the treatment facility, a maximum data loss for 48 hours continuous or cumulative will be permitted. The cause of data loss and temperatures must be documented during this period.

### 5. Temperature Sensors

5.1 Accuracy standard

Accuracy: 0.0°C in the range of  $\pm 3.0^\circ\text{C}$ .

Calibration stability: Temperatures must stabilize within 3 minutes when immersed in a mixture of crushed ice and water.

5.2 Identification of the sensors

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Each sensor in the cold room will be identified in a manner, which permits that its location be independently distinguished. (Sensors / probes must be marked to match the marking on the recording / printout)

## 6. Operation conditions

- 6.1 Installation: Portable devices are not allowed. Temperature recording devices must be permanently mounted and located outside of the cooling chambers.
- 6.2 A minimum of five (5) sensors must be used in the rooms. They are to be made up as three (3) air sensors and two (2) pulp sensors.
- 6.3 Location of sensors:
- Two sensors behind the refrigeration unit approximately 3 meters above the floor level. One for air temperature verification and one for fruit pulp temperature verification.
  - One sensor at the top in the middle of the room for air temperature verification.
  - Two sensors at the furthest wall from the refrigeration unit approximately 3 meters above the floor level. One for air temperature verification and one for fruit pulp verification.
- 6.4 Calibration: The sensors should be calibrated individually (at 0.0°C or 32°F), by the supplier or manufacturer representative with a written statement before the treatment facility certification.

## 7. Treatment facility certification procedures

- 7.1 DALRRD will ensure that the treatment facilities participating in this Program are aware of certification requirements included in the Program to Mexico, under the terms of this work plan.
- 7.2 DALRRD together with PPECB are responsible for carrying out the certification of the treatment facility.
- 7.3 All treatment facilities must calibrate their temperature recording equipment before requesting certification from DPHQ.
- 7.4 SAGAR/DGSV will verify the location and calibrations of sensors in the treatment facilities.
- 7.5 Cold treatment facilities previously certified that have not made any structural or equipment changes, the only requirement for being re-certified the next season is to send to DALRRD an affidavit stating their name(s), cold room identification and no changes were made to the equipment or the rooms.
- 7.6 Treatment facilities making any structural or equipment change have to comply with the requirements for temperature record equipment and with DALRRD certification procedures.
- 7.7 The DALRRD will issue a certificate for this treatment facilities that meet described requirements. Each Certificate has to have attached the supporting information.

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## 8. Approval Procedures

- 8.1 DALRRD will develop the list of certified treatment facilities and will provide this list to the Co-ordination of certification. The list will include the registered name(s) for the treatment facility, TF number and the date of certification.
- 8.2 The co-coordinator will verify that the orchards registered to export apples to Mexico have properly followed the phytosanitary program approved by DALRRD/DGSV in compliance with the record kept by DALRRD and the inspections made by DGSV personnel.
- 8.3 The Co-coordinator verifies the certified treatment facilities and will develop the master list of approved treatment facilities.
- 8.4 Co-coordinator will build the list of approved treatment facilities. This list will be sent to DALRRD, Industry and SAGAR/DGSV. SAGAR/DGSV will send this list to SAGAR/DIGIF.
- 8.5 SAGAR/DGSV, DALRRD and Industry will maintain an updated list of certified and approved treatment facilities as well as rooms eligible for treatment.

## 9. Notification procedures

- 9.1 The treatment facility shall notify the DALRRD/PPECB of each upcoming sensor calibration and treatment or shipment certification.
- 9.2 Notification of treatment certification must include:
- Name and address of the treatment facility.
  - Location and identification of cold room to be certified.
  - Anticipated date and time of treatment certification.
- 9.3 Notifications of shipment certification must include:
- Name and address of the treatment facility.
  - Cold room where the fruit was treated (lot numbers are optional).
  - Anticipated date, time and location where shipment certification will take place.

## 10. Treatment procedures

### 7.1 General

10.1.1 The treatment will be performed according to the procedures in this work plan.

10.1.2 DALRRD will certify/verify randomly that registered packing plants receive fresh lot of apples only from orchards registered to export to Mexico. SAGAR/DGSV will verify randomly this certification.

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10.1.3 Treatment for apples can be applied to fruit in bulk into field bins or packed in commercial cartons.

10.1.4 Pears will be allowed to be in cold rooms for treatment of apples for export to Mexico.

## 11. LOADING CONTAINERS

### 11.1 Authorization

The PPECB will authorize commencement of loading if:

11.1.1 Fruit to be shipped must be continuously pre-cooled in PPECB certified inland cold stores for a minimum period of 40 continuous days to a maximum pulp temperature of minus 0,0°C or colder.

11.1.2 Containers are inspected as per PPECB AWI06 instruction.

11.1.3 Temperature sensors and recording devices are operating satisfactorily within the specified tolerances.

11.1.4 Only one type of product may be loaded into a container i.e. no mixing of different products, unless approved in writing by SAGAR at least 72 hours prior to commencement of loading.

### 11.2 Supervision

Authorised PPECB personnel will perform the following functions during loading:

11.2.1 Frequently measure and record fruit temperatures with a calibrated thermometer to ensure that the following stipulated fruit temperatures are not exceeded.


- Maximum fruit temperature tolerances:

In the pre-cooling store	-	minus 0,5°C
During loading	-	plus 0,0°C

Due to the fact that the cold store environment may affect the accuracy of thermocouple and electronic thermometer connections, pulp temperatures in the cold store shall only be measured with PT100 or similar type of thermistor temperature sensors.

11.2.2 From time to time and according to the situation, open pallets to take pulp temperatures in the center.

11.2.3 Ensure that containers are loaded directly from cold stores without delay, in order to minimize the exposure of treated fruit to the outdoors. It is unacceptable to accumulate pallets outside the cold store prior to loading into the containers. Scanning of the bar codes on each pallet must be done prior to loading out of the cold store. Effective loading platforms and equipment must be provided. Container loading must be completed within 40 minutes for 40ft containers and 30 minutes for 30ft containers.

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11.2.4 Note time of commencement and completion of loading, this will be recorded on the PPECB documents accompanying the shipment.

11.2.5 Measure and record the fruit temperatures during loading. These temperatures shall be recorded in the PPECB shipping documents that are to be presented to SARGA.

11.2.6 Containers will be sealed by the treatment facility at the point of origin with a numbered seal and remain sealed until SAGAR/DIGIF breaks the seal at the point of entry. Seal number will be written in phytosanitary certificate by DALRRD authorized inspector.

## 12. On completion of loading

Authorised PPECB personnel will do the final checks. This will include the following:

12.1 Prepare a full set of shipping documents including:

- PPECB carrying temperature instruction to the Master
- Pre-cooling certificate
- Particulars of shipment

12.2 Distribution of documents

The PPECB carrying temperature letter will instruct the Master to maintain the prescribed temperature until discharge. The required commodity temperature will also be stipulated.

## 13. DURING THE VOYAGE

The Master shall be instructed to:

Maintain **E-mail contact with PPECB** supplying the relevant temperature data as requested in the carrying instructions. This is to ensure compliance with the temperature specification during the voyage. These temperature details will also be forwarded to the exporter or his agent.


## 14. AFTER THE VOYAGE

14.1 SAGAR officials to ensure compliance will check documentation that confirms various actions were successfully carried out before the vessel left South Africa.

14.2 Container seals will be checked to establish that they are still intact.

14.3 The temperature recoding equipment will be checked to establish that it has operated correctly, has not been tampered with and that the temperature for the entire duration of the cold treatment process was recorded as prescribed.

## 15. GENERAL

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The mere fact that the PPECB has ensured that all equipment used and loading procedures applied comply with SAGAR requirements cold treatment, does not imply that the SAGAR authorities will accept the effective cold treatment took place en- route. Recorded data will be scrutinized by the importing countries authorities, after which a decision will be made as to whether the cargo is accepted.

#### 16. Contact Person

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