



Notification of Department of Agriculture  
Re: Conditions for Import of Table Grape Fruit from  
the Republic of South Africa  
B.E. 2558 (2015)

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The Department of Agriculture has completed pest risk analysis for commercial importation of fresh table grape fruit from the Republic of South Africa.

By virtue of the provisions of Section 8 (2) and Section 10 of the Plant Quarantine Act B.E. 2507 (1964) amended by the Plant Quarantine Act (No. 3) B.E. 2551 (2008), the Director-General of Department of Agriculture through the recommendation of the Plant Quarantine Committee, hereby announces the conditions that have to be met in order to commercially import fresh table grape fruit from the Republic of South Africa as follows.

1. This notification shall be called “Notification of Department of Agriculture, Re: Conditions for Import of Table Grape Fruit from the Republic of South Africa B.E. 2558 (2015)”.

2. This notification shall enter into force a day after the date of its proclamation in the Government Gazette.

3. **Permitted Plant Species**

Fresh table grape (*Vitis vinifera*) fruit

4. **Quarantine Pests of Concern**

A list of quarantine pests of concern to the Kingdom of Thailand for table grapes from the Republic of South Africa is given in the **Attachment 1**.

5. **Responsible Organizations**

5.1 Kingdom of Thailand: Department of Agriculture (hereinafter referred to as DOA).

5.2 Republic of South Africa: Department of Agriculture, Forestry and Fisheries is designated as an official National Plant Protection Organization of the Republic of South Africa (hereinafter referred to as NPPO).

**6. Import Permit**

Import permit issued by DOA is required.

**7. Means of Conveyance**

Table grapes must be imported from a port in the Republic of South Africa to a designated port in the Kingdom of Thailand by sea cargo or air cargo.

**8. Production Areas**

Table grapes must be produced in the Republic of South Africa and sourced from areas designated by the NPPO as production areas for export to the Kingdom of Thailand and approved by the DOA prior to export.

**9. Requirements for Orchard**

9.1 Orchards in designated production areas involved in the export of table grapes to the Kingdom of Thailand must be commercial orchards and registered by the NPPO or under a NPPO-approved system. Copies of the registration records must be made available to DOA upon request. The NPPO is required to verify orchard registration prior to commencement of exports.

9.2 Growers of registered orchards must implement good agricultural practices (GAPs). This includes maintaining of orchard sanitation and the implementation of integrated pest management or other pest control measures to ensure that quarantine pests of concern to the Kingdom of Thailand are adequately managed.

9.3 The NPPO must provide information on the management program undertaken for table grapes throughout the growing season when required by DOA.

**10. Requirements for Packinghouse or Export Establishment**

10.1 Packinghouses or export establishments involved in the export of table grapes to the Kingdom of Thailand must be registered with and monitored by the NPPO. Copies of the registration records must be made available to DOA upon request. The NPPO is required to register packinghouses or export establishments prior to commencement of exports.

10.2 Packinghouses or export establishments are required to source table grapes only from registered commercial orchards in designated production areas to facilitate trace back of export fruit. Records of growers supplying table grapes for export to the Kingdom of Thailand must be maintained by packinghouses or export establishments and made available to DOA upon request.

10.3 Packinghouses or export establishments are required to have well- documented standard operating procedures (SOPs), which describes in detail all processes related to grading, handling and packing.

- 10.4 An audit must be conducted by the NPPO prior to registration of packinghouses or export establishments and then done at least annually. Packinghouses or export establishments must be responsible for maintaining all documentation.
- 10.5 Cold treatment for pre-shipment disinfestation of quarantine pests must be conducted within the registered packinghouses or registered export establishments.
- 10.6 Inspection of fruit for freedom from quarantine pests must be done within the registered packinghouses or registered export establishments.

## 11. Requirements for Quarantine Insect Pests

Table grapes require risk management measures for Mediterranean fruit fly (*Ceratitis capitata*), Natal fruit fly (*Ceratitis rosa*) and false codling moth (*Thaumatotibia leucotreta*). Table grapes must be subjected to specified cold disinfestation treatment.

## 12. Management Measures for Quarantine Insect Pests

Table grapes must be subjected to the following cold disinfestation treatment schedule to control *Ceratitis capitata*, *Ceratitis rosa* and *Thaumatotibia leucotreta*.

Innermost fruit pulp temperature	Exposure period (consecutive days)
- 0.55 ° C (31 ° F) or below	22 days or more

## 13. Requirements for Cold Disinfestation Treatment

- 13.1 The treatment shall not commence until all sensors are reading - 0.55 ° C (31 ° F) or below. If the temperature exceeds - 0.27 ° C (31.5 ° F), the treatment shall be extended for at least 8 hours for each day or part of a day the temperature is above - 0.27 ° C (31.5 ° F). If the exposure period is extended, the temperature during the extension period must be 1.11 ° C (34 ° F) or below. If the temperature exceeds 1.11 ° C (34 ° F) at any time, the treatment is nullified.
- 13.2 Cold disinfestation treatment can be performed pre-shipment or in-transit. The in-transit treatment may be carried out partly as a pre-shipment treatment start in the Republic of South Africa and completed in-transit. In the event of a treatment failure, treatment may be completed on arrival.
- 13.3 Pre-shipment cold disinfestation treatment and in-transit cold disinfestation treatment are assessed on fruit temperature sensors only.

#### 13.4 Pre-shipment cold disinfestation treatment

13.4.1 Treatment conducted prior to shipment must be supervised by the NPPO in a cold disinfestation treatment facility approved by the NPPO and DOA. Table grapes intended for export to the Kingdom of Thailand may be treated concurrently with table grapes destined for other markets.

13.4.2 If a consignment of table grapes is to receive pre-shipment cold disinfestation treatment, the NPPO must ensure compliance with conditions specified in the **Attachment 2**.

#### 13.5 In-transit cold disinfestation treatment

13.5.1 In-transit cold disinfestation treatment refers to cold disinfestation treatment conducted in-transit in shipping containers.

13.5.2 In-transit cold disinfestation treatment in shipping containers may be commenced on shore and completed in-transit or completed at destination.

13.5.3 It is requirement that table grapes intended for in-transit cold disinfestation treatment must be pre-cooled at least 72 hours until innermost fruit pulp temperature at or below the target treatment temperature of  $-0.55^{\circ}\text{C}$  ( $31^{\circ}\text{F}$ ) before the loading of a container can take place.

13.5.4 If a consignment of table grapes is to receive in-transit cold disinfestation treatment, the NPPO must ensure compliance with conditions specified in the **Attachment 3**. In addition, certificate of calibration for in-transit cold disinfestation treatment specified in the **Attachment 4** must accompany with every consignment.

### 14. Requirements for Packing and Labeling

14.1 Packing material may be made of corrugated fiber-board, polystyrene, plastic or wooden crates which can be manufactured either from recycled material or virgin material. Where cartons are used, they must be clean and new.

14.2 Table grapes must be packed in packaging which is free from soil, sand and contaminating plant materials e.g. leaves, twigs, plant debris or other potential carriers of quarantine pests.

14.3 Table grapes subjected to pre-shipment cold disinfestation treatment and exported by sea or air freight must be packed in a carton without hole. If it does, the hole(s) or opening must have screen of which the diameter not more than 1.6 millimeters to prevent the entry of quarantine insects.

- 14.4 Table grapes subjected to in-transit cold disinfestation treatment in self-refrigerated shipping containers are exempt from the requirements specified in 14.3.
- 14.5 The package must have necessary information to facilitate traceability. However, it is required that, at least, the following information in English must appear on each package.
- Country of origin (e.g. Produce of South Africa, Product of South Africa)
  - Name of exporting company
  - Name of fruit (common name)
  - Packinghouse code (PHC)
  - Production unit code (PUC),
- 14.6 If table grapes are exported to the Kingdom of Thailand in loose cartons, the following information “EXPORT TO THAILAND” must appear on each carton. However, if they are exported to the Kingdom of Thailand on pallets in shipping container, it is allowable to have the following information “EXPORT TO THAILAND” appearing on each side.
- 14.7 All consignments destined to the Kingdom of Thailand using solid wood packing material must comply with relevant International Standards for Phytosanitary Measures (ISPMs).

## 15. Export Inspection

Before table grapes are certified for export to the Kingdom of Thailand, the NPPO must be satisfied that the following activities required by DOA have been undertaken.

- 15.1 Table grapes have been inspected in accordance with appropriate official procedures and found to be free from any quarantine pest specified in the **Attachment 1**.
- 15.2 Table grapes must undergo a cold disinfestation treatment specified in Section 12 to control *Ceratitis capitata*, *Ceratitis rosa* and *Thaumatotibia leucotreta*.

## 16. Phytosanitary Certification

- 16.1 A phytosanitary certificate (PC) issued by the NPPO is required. The original copy must accompany every consignment to the Kingdom of Thailand and bear the following additional declaration.

*“The consignment of table grape fruit has been produced and prepared for export in accordance with the conditions for import of table grape fruit from South Africa to Thailand”*

## 16.2 Cold disinfestation treatment

16.2.1 If the consignment is subjected to pre-shipment cold disinfestation treatment, the cold treatment facility, treatment temperature and period (number of consecutive days) must be inserted in the appropriate sections of the phytosanitary certificate.

16.2.2 If the consignment is subjected to in-transit cold disinfestation treatment, the original copy of certificate of calibration for in-transit cold disinfestation treatment specified in the **Attachment 4** must accompany with the phytosanitary certificate.

16.3 The common name and scientific name of table grapes and container and seal numbers (for sea cargo) must be recorded on the phytosanitary certificate.

## 17. Import Inspection

17.1 When the consignments arrive at the point of entry in the Kingdom of Thailand, the import inspection must be conducted after confirming the respective documents accompanying the consignments concerned.

17.2 A representative sample of the consignments will be randomly selected, at the inspector's discretion, and examined to determine if pests are present. If live pests are found, samples will normally be sent for laboratory identification, and the consignments held pending the results

17.3 For consignments of fruit of less than 1000 units (grape bunch), the sample size is either 450 units (grape bunch) or 100% of consignment. For consignments of fruit of greater than or equal to 1000 units (grape bunch), then 600 units (grape bunch) are to be sampled.

17.4 In the case of quarantine pests of concern to the Kingdom of Thailand as stipulated in the **Attachment 1** being found during import inspection, the following measures must be taken.

17.4.1 If live *Ceratitis capitata*, *Ceratitis rosa* and *Thaumatotibia leucotreta* are found, the infested consignment must be either re-exported or destroyed at the importer's expense. The DOA immediately suspends importation and notify to the NPPO of the interception.

17.4.2 The NPPO shall immediately investigate the cause of such incidence and propose corrective actions. Suspension of import will be lifted when the cause of non-compliance has been clarified and corrective actions have been implemented to the satisfaction of DOA.

17.4.3 If live quarantine pests other than *Ceratitis capitata*, *Ceratitis rosa* and *Thaumatotibia leucotreta* are found, the consignment must be either re-exported or destroyed at the importer's expense.

- 17.5 If any live organism of potential quarantine concern to the Kingdom of Thailand not listed in the **Attachment 1** is found, the consignment must be re-exported or destroyed at the importer's expense. The DOA reserves the right to impose a temporary suspension of import from the identified pathway until a risk assessment of intercepted organisms is determined.
- 17.6 DOA reserves the right to have fruit re-exported or destroyed at the importer's expenses, if one or more of the following case arises:
- 17.6.1 Cold disinfestation treatment was unsuccessful.
- 17.6.2 Container doors are not completely closed.
- 17.6.3 Container seal is broken or replaced or does not match the number on the phytosanitary certificate.
- 17.6.4 Temperature sensor extends beyond the fruit or is not located in specified positions or sensor fruit was ruptured;
- 17.6.5 Packaging labeling is missing or incorrect or incomplete.

## **18. Audit of Export Procedures**

- 18.1 The export of table grapes from the Republic of South Africa to the Kingdom of Thailand shall only begin after the DOA has completed the audit of export certification procedures of the Republic of South Africa. The costs of such audits must be borne by the Republic of South Africa.
- 18.2 In the event of a suspension of import, DOA may audit export certification procedures in the Republic of South Africa prior to a decision being taken on resumption of import. Where DOA has determined that such audits are necessary, the costs of these audits must be borne by the Republic of South Africa.
- 18.3 DOA reserves the right to regularly dispatch officer (s) to the Republic of South Africa to observe whether all export certification procedures implemented by the NPPO are effective. This is to ensure that table grapes exported to the Kingdom of Thailand is still undergone appropriate managements for quarantine pests. The costs of these activities must be borne by the Republic of South Africa.

Issued on the 29<sup>th</sup> December B.E. 2558 (2015)

Somchai Charnnarongkul

Director-General  
Department of Agriculture

List of Quarantine Pests of Table Grapes from the Republic of South Africa  
 Attached to Notification of Department of Agriculture  
 Re: Conditions for Import of Table Grape Fruit from the Republic South Africa  
 B.E. 2558 (2015)

Scientific name	Common name
Insects	
Order Coleoptera	
Family Curculionidae	
<i>Bustomus setulosus</i>	brown weevil
<i>Eremnus atratus</i>	black weevil
<i>Eremnus cerealis</i>	Western Province grain worm
<i>Eremnus setulosus</i>	grey weevil
<i>Pantomorus cervinus</i>	Fuller's rose beetle
<i>Phlyctinus callosus</i>	vine calandra
Order Diptera	
Family Tephritidae	
<i>Ceratitis capitata</i>	Mediterranean fruit fly
<i>Ceratitis rosa</i>	Natal fruit fly
Order Hemiptera	
Family Coccidae	
<i>Ceroplastes rusci</i>	fig wax scale
Family Diaspidae	
<i>Aspidiotus nerii</i>	aucuba scale
<i>Hemiberlesia rapax</i>	greedy scale
Family Pseudococcidae	
<i>Pseudococcus ficus</i>	grape mealybug
<i>Pseudococcus viburni</i>	California mealybug
Order Hymanoptera	
Family Formicidae	
<i>Anoplolepis steingroeveri</i>	black pugnacious ant
<i>Anoplolepis custodiens</i>	common pugnacious ant
<i>Crematogaster peringueyi</i>	cocktail ant
<i>Linepithema humile</i>	Argentine ant
Order Lepidoptera	
Family Noctuidae	
<i>Spodoptera littoralis</i>	cotton leafworm
Family Tortricidae	
<i>Epichoristodes acerbella</i>	South African carnation tortrix
<i>Thaumatotibia leucotreta</i>	false codling moth
Order Thysanoptera	
<i>Scirtothrips aurantii</i>	South African citrus thrips
Snails and Slugs	
Family Helicidae	



Scientific name	Common name
<i>Helix aspera</i>	common snail
<i>Theba pisana</i>	white garden snail

Requirements for Pre-Shipment Cold Disinfestation Treatment  
Attached to Notification of Department of Agriculture  
Re: Conditions for Import of Table Grape Fruit from the Republic South Africa  
B.E. 2558 (2015)

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1. Requirements for Cold Treatment Facility

- 1.1 Pre-shipment disinfestation treatment must be only permitted in a cold treatment facility approved by the NPPO and DOA. The cost of the DOA officer(s) to visit and approve cold treatment facilities must be borne by the NPPO.
- 1.2 The NPPO is responsible for ensuring that cold treatment facilities used by exporters are of a suitable standard, have refrigeration equipment capable of achieving and holding the fruit at the required temperature and must be lockable to ensure the security and integrity of the fruit being treated.
- 1.3 The NPPO must keep a register of cold treatment facilities approved for pre-shipment treatment. This register will include documentation covering;
  - 1.3.1 location and construction plans of all facilities, including owner/operator contact detail,
  - 1.3.2 dimensions of the facilities and room capacity,
  - 1.3.3 type of insulation used in walls, ceiling and floors,
  - 1.3.4 maker, model, type and capacity of the refrigeration condenser and evaporator air circulation,
  - 1.3.5 the temperature range of the equipment, defrost cycle control and specifications and details of any integrated temperature recording equipment.
- 1.4 The NPPO will forward to DOA names and addresses of currently registered cold treatment facilities before the start of each export season.

2. Requirements for Temperature Recording System

The NPPO must ensure that temperature recording system, the combination of the cold treatment data recorders and fruit pulp temperature sensors, must meet the following criteria:

- 2.1 The system must be suitable for cold disinfestation treatment. The accuracy of the system must be within plus or minus 0.3 ° C of the true temperature in the range of minus 3 ° C to plus 3 ° C.
- 2.2 The system must be capable of automatic operation and able to accommodate a minimum of four fruit temperature sensors.
- 2.3 The system must be capable of continuous recording of date, time, identification of sensor number, and temperature during all calibrations and for the duration of treatment period.
- 2.4 The system must be capable of recording all temperature sensors at least once every hourly, with a resolution of 0.1 ° C and storing data until the information can be examined by an authority.
- 2.5 The system must be capable of producing printout which identifies each sensor, time and the temperature, as well as the identification number of the cold treatment facility.

### 3. Requirements for Temperature Sensors

- 3.1 Sensor's type must have an optimal accuracy for the temperature range of this cold treatment.
- 3.2 Sensors must have an outer sheath diameter of 6.4 millimeters or less. The sensing unit must be located within the first 25 millimeters or less of the sensor's tip. Sensors must be accurate to within plus or minus 0.3 ° C in the range of minus 3 ° C to plus 3 ° C.
- 3.3 Each sensor must be tagged with a number identical to sensor's number accompanying its readings in the printout produced by the temperature recording system.

### 4. Calibration of Temperature Sensors

- 4.1 Calibration of the temperature sensors must be conducted under the supervision of the NPPO.
- 4.2 Calibration must be conducted using a mixture of crushed ice and distilled water in a clean insulated container prior to the temperature sensors being placed in fruit.
- 4.3 Crushed ice must completely fill the container. Enough water should be added to stir the mixture. The percentage of ice is estimated at 80-85 percent while the water fills the air void (15-20 percent).
- 4.4 The mixture must be thoroughly stirred to ensure the water is completely cooled and good mixing has occurred. At least 10 minutes of adaptation period, is required to reach a steady state of 0 ° C.

- 4.5 During the calibration, all the temperature sensors and the calibrated thermometer must be immersed in the ice water slurry without touching the sides or bottom of the container. The mixture must be constantly stirred while testing is being carried out. Only after the readings are stabilized at the lowest constant temperature, the calibration readings can be conducted.
- 4.6 Two consecutive reading must be recorded for each sensor at the lowest temperature obtainable. There shall be at least a 60 second interval between the two readings for any one sensor; however, the interval should not exceed 5 minutes. The variance between the two readings must not exceed 0.1 ° C.
- 4.7 Any sensor which reading shows a deviation of more than plus and minus 0.3 ° C from the standard 0 ° C must be replaced and rejected for further use for cold treatment.

## 5. Placement of Temperature Sensors

- 5.1 Placement of temperature sensors and connection of temperature sensors to a data logger must be conducted under the supervision of the NPPO.
- 5.2 Palletized fruit must be loaded into cold room under the supervision of the NPPO and may be pre-cooled at the exporter's discretion.
- 5.3 Records for pre-shipment cold disinfestation treatment are required at least four temperature sensors to monitor fruit pulp temperature in a cool room.
- 5.4 The temperature sensor used to measure the fruit pulp temperature must be inserted carefully into the center of a test fruit. The test fruit shall be selected from the largest fruit size in the lot. With small fruit, the sensor shall penetrate two or more fruit. The sensor's tip must not be extended beyond the fruit, as well as fruit rupture and opened by sensor insertion, to prevent measuring air temperature instead of fruit pulp temperature. In these cases, the cold treatment is rejected.
- 5.5 Temperature sensors must be placed in a cool room in the following locations.
  - 5.5.1 A minimum of two sensors at the inlet (return air) and the outlet (supply air) point of air circulation must be used to measure room temperature.
  - 5.5.2 A minimum of four sensors must be used to measure innermost fruit pulp temperature in the following locations.
    - (1) one at the center of the stack, in the center of the cold room,
    - (2) one at the corner of the top stack, in the center of the cold room,
    - (3) one at the center of the stack near the outlet of cold air, and

- (4) one at the corner of the top stack near the outlet of cold air
  - 5.6 Data logger records may commence at any time, however the treatment time will be deemed to have begun only after all fruit temperature sensors have attained the nominated treatment temperature.
  - 5.7 Where only the minimum of sensors have been used, and in the event that any fruit probes fails to record a temperature for a period of more than four consecutive hours, the treatment must be declared void and must be started again.
6. Confirmation of Treatment
- 6.1 The treatment shall be considered to have been successfully completed if the record of treatment indicates that the treatment parameters have been met and re-calibration of the sensors has been passed. Sensors are to be re-calibrated using the procedures in Section 4. Records must be kept for DOA audit.
  - 6.2 If any sensor shows a higher calibration factor at the completion of the treatment than at the initial calibration setting, the recordings from the sensor(s) will be adjusted accordingly. If this adjustment reveals that the nominated treatment schedule is not met, the treatment must be deemed to have failed. There is the option of re-treating this fruit at the discretion of the NPPO and the exporter.
  - 6.3 Printouts of temperature records are to be accompanied by suitable data summaries that indicate that the required cold disinfestation treatment of the product has been achieved.
  - 6.4 The NPPO must endorse these records and summaries before confirm that the treatment has been successful. These are to be available for DOA audit when required.
  - 6.5 If the required cold disinfestation treatment of the product has not been achieved, the logger may be reconnected and the treatment continued provides that:
    - 6.5.1 The NPPO confirms the maintenance of the required conditions as per Section 6.3 or
    - 6.5.2 The elapsed time since treatment cessation and re-commencement is less than 24 hours.

In both cases, data will continue to be collected from the time the logger is reconnected.

7. Loading into Containers

7.1 Containers must be inspected by the NPPO before loading to ensure pest freedom and that any vents are covered to prevent the entry of pests unless the vents are closed.

7.2 Fruit should be loaded within an insect proof building or using an insect proof enclosure between the cool room entrance and the container.

8. Sealing of Containers

8.1 After completion of loading, the container door must be closed properly and sealed with a numbered metal seal under the NPPO supervision. The seal must be intact until arrival at the port of entry in the Kingdom of Thailand, where the DOA inspectors only are authorized to open it. Containers with a broken seal must be rejected.

8.2 The seal number must be recorded on the phytosanitary certificate.

9. Storage of Fruit If Not Immediately Loaded

Treated fruit not intended for immediate loading may be stored for subsequent shipment provided security conditions are maintained by the NPPO.

9.1 If fruit is stored in the treatment room, the room's doors must be sealed.

9.2 If fruit is to be transferred to another room for storage, it must be transferred in a secure manner approved by the NPPO and the room must contain no other fruit, and

9.3 Subsequent container loading must be performed under the supervision of the NPPO in accordance with Section 7.

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Requirements for In-Transit Cold Disinfestation Treatment  
Attached to Notification of Department of Agriculture  
Re: Conditions for Import of Table Grape Fruit from the Republic South Africa  
B.E. 2558 (2015)

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1. Requirements for Containers

- 1.1 Container's types and series must be suitable for in-transit cold disinfestation treatment.
- 1.2 Containers must be self-refrigerated shipping containers and must be equipped with a recording device. The NPPO is responsible for ensuring that containers used by exporters are of a suitable type, and have refrigerator equipment capable of achieving and holding the required temperatures.

2. Requirements for Temperature Recording System

The NPPO must ensure that temperature recording system, the combination of the cold treatment data recorders and fruit pulp temperature sensors, must meet the following criteria:

- 2.1 The system must be suitable for cold disinfestation treatment. The accuracy of the system must be within plus or minus 0.3 ° C of the true temperature in the range of minus 3 ° C to plus 3 ° C.
- 2.2 The system must be capable of automatic operation and able to accommodate a minimum of three fruit temperature sensors.
- 2.3 The system must be capable of continuous recording of date, time, sensor number, and temperature during all calibrations and for the duration of treatment period.
- 2.4 The system must be capable of recording all temperature sensors at least once every hourly, with a resolution of 0.1 ° C and storing data until the information can be examined by the DOA officer.
- 2.5 The system must be capable of producing printout which identifies each sensor, time and the temperature, as well as the identification number of the recorder and the container.

3. Requirements for Temperature Sensors

- 3.1 Sensor's type must have an optimal accuracy for the temperature range of this cold treatment.

- 3.2 Sensors must have an outer sheath diameter of 6.4 millimeters or less. The sensing unit must be located within the first 25 millimeters or less of the sensor's tip. Sensors must be accurate to within plus or minus 0.3 ° C in the range of minus 3 ° C to plus 3 ° C.
  - 3.3 Each sensor must be tagged with a number identical to sensor's number accompanying its readings in the printout produced by the temperature recording system.
4. Calibration of Temperature Sensors
    - 4.1 Calibration of the temperature sensors must be conducted under the supervision of the NPPO.
    - 4.2 Calibration must be conducted using a mixture of crushed ice and distilled water in a clean insulated container prior to the temperature sensors being placed in fruit.
    - 4.3 Crushed ice must completely fill the container. Enough water should be added to stir the mixture. The percentage of ice is estimated at 80-85 percent while the water fills the air voids (15-20 percent).
    - 4.4 The mixture must be thoroughly stirred to ensure the water is completely cooled and good mixing has occurred. At least 10 minutes of adaptation period, is required to reach a steady state of 0 ° C.
    - 4.5 During the calibration, all the temperature sensors and the calibrated thermometer must be immersed in the ice water slurry without touching the sides or bottom of the container. The mixture must be constantly stirred while testing is being carried out. Only after the readings are stabilized at the lowest constant temperature, the calibration readings can be conducted.
    - 4.6 Two consecutive readings must be recorded for each sensor at the lowest temperature obtainable. There shall be at least a 60 second interval between the two readings for any one sensor; however, the interval should not exceed 5 minutes. The variance between the two readings must not exceed 0.1 ° C.
    - 4.7 Any sensor which reading shows a deviation of more than plus and minus 0.3 ° C from the standard 0 ° C must be replaced and rejected for further use for cold treatment.
    - 4.8 A "Certificate of calibration for in-transit cold disinfestation treatment in self-refrigerated container" as shown in the **Attachment 4** must be prepared for each container by the NPPO officer. The original copy must be attached to the phytosanitary certificate which accompanies the consignment.



## 5. Placement of Temperature Sensors

- 5.1 Loading of packed fruit into containers and placement of temperature sensors must be conducted under the supervision of the NPPO.
- 5.2 Containers must be packed in an appropriate manner which ensures that there is even airflow under and around all pallets and loose stacked cartons.
- 5.3 Records for in-transit cold disinfestation treatment are required at least three temperature sensors to monitor innermost fruit pulp temperature in a container. These sensors must be distributed throughout the fruit in a representative cross section of the container that enables an adequate monitoring of the temperature.
- 5.4 The temperature sensor used to measure the fruit pulp temperature must be inserted carefully into the center of a test fruit. The test fruit shall be selected from the largest fruit size in the lot. With small fruit, the sensor shall penetrate two or more fruit. The sensor's tip must not be extended beyond the fruit, as well as fruit rupture and opened by sensor insertion, to prevent measuring air temperature instead of fruit pulp temperature. In these cases, the cold treatment is rejected.
- 5.5 Fruit temperature sensors must be placed in a 6 meter (20 foot) container and a 12 meter (40 foot) container in the following locations, as depicted in **Figure 1**.
  - 5.5.1 Two fruit pulp temperature sensors must be placed in boxes diagonally opposite at the side walls approximately 1 meter from the end of the load for a 6 meter container and approximately 1.5 meters from the end of the load for a 12 meter container.
  - 5.5.2 One fruit pulp temperature sensors must be placed in a box in the center of the container.
  - 5.5.3 All three sensors must be placed at mid-height of the stack.

## 6. Sealing of Containers

- 6.1 After completion of loading, the container door must be closed properly and sealed with a numbered metal seal under the NPPO supervision. The seal must be intact until arrival at the port of entry in the Kingdom of Thailand, where the DOA inspectors only are authorized to open it. Containers with a broken seal must be rejected.
- 6.2 The seal number must be recorded on the phytosanitary certificate.

## 7. Confirmation of Treatment

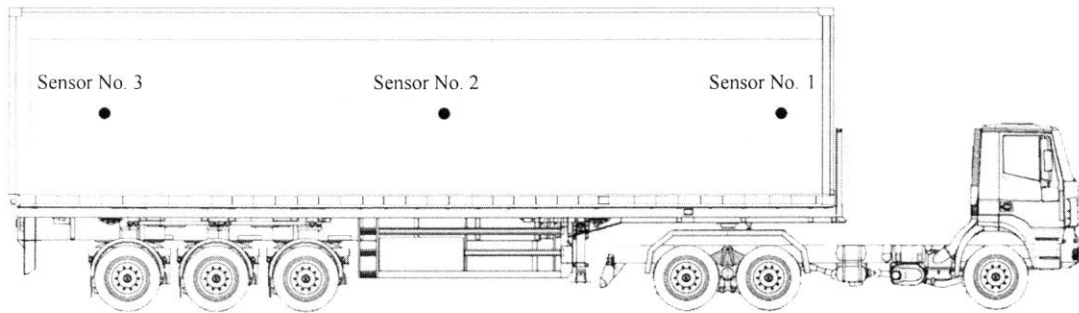
- 7.1 The in-transit arrangement is for the cold disinfestation treatment to be completed during the voyage between exporting country and the port of discharge in the Kingdom of Thailand. The Shipping Company shall download

the computer records of the cold disinfestation treatment and forward them to officer at port of entry.

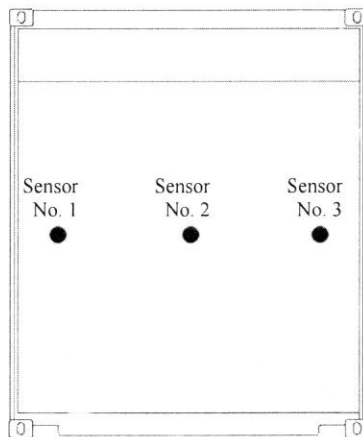
- 7.2 The DOA Bangkok Office must verify whether the treatment records meet disinfestation requirements and advise the DOA officer at the port of arrival that, subject to calibration of sensors, the treatment is complete.
- 7.3 On arrival DOA must check the calibration of the fruit temperature sensors using the method referred to in Section 4 and verify that the treatment records meet disinfestation requirements.
- 7.4 Re-calibration of the fruit sensors at the completion of the treatment which shows a higher than initial calibration setting, the recordings from the probe(s) will be adjusted accordingly.
- 7.5 If this adjustment reveals that the nominated treatment schedule was not met, the treatment will be deemed to have failed. The consignment must be re-exported or destroy at the importer's expenses.

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**SIDE VIEW**

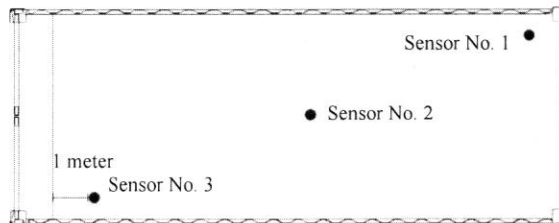


**DOOR VIEW**



**TOP VIEW**

6 meter (20 foot) container



**TOP VIEW**

12 meter (40 foot) container

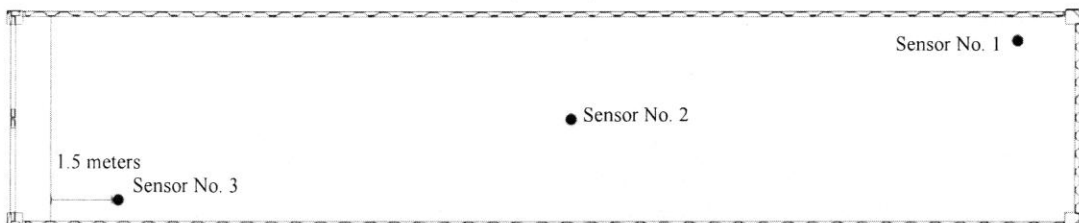


Figure 1. Placement of fruit temperature sensors in a container for in-transit cold disinfestation treatment.

Certificate of Calibration for In-Transit Cold Disinfestation Treatment  
in Self-Refrigerated Container for Thailand  
Attached to Notification of Department of Agriculture  
Re: Conditions for Import of Table Grape Fruit from the Republic South Africa  
B.E. 2558 (2015)

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Exporter name: .....

Phytosanitary certificate number: .....

Container number: .....

Container seal number: .....

Recorder serial number: .....

Container clock set to GMT: .....

Date calibrated (dd/mm/yy): .....

1. Sensor calibration (at 0 ° C):

Sensor Identification	1 <sup>st</sup> Reading	2 <sup>nd</sup> Reading	Correction factor
1 .....	.....	.....	.....
2 .....	.....	.....	.....
3 .....	.....	.....	.....

2. Sensor placement:

Sensor placement	Pulp temperature (° C)
1 .....	.....
2 .....	.....
3 .....	.....

3. Container sealed:

Local time: ..... Date (dd/mm/yy): .....

.....  
Inspector name

.....  
Inspector signature

.....  
Stamp

- The Government Gazette: Volume 133, Special Part 13 ngor, Page 6-12, Date 18 January B.E. 2559 (2016)
- UNOFFICIAL TRANSLATION
- This is an English translation. In case of any difference in meaning between the Thai text and the English translation, the Thai text shall be applied.