Proposed amendment to the import health standard for citrus fruit from Australia: revision of the conditions for cold disinfestation

Scope of amendment

In this review we are proposing an amendment to the requirements for cold disinfestation treatment of citrus fruit imported from Australia. Cold disinfestation is required as a pre-export treatment for fruit fly hosts of economically significant fruit flies. The proposed changes include: additional treatment temperature/time options to the current cold treatment regime of 1°C for 16 days and extension of the protocol to allow cold treatment of fruit fly hosts to be completed in-transit.

Background

Citrus fruit exported to New Zealand from Australia is required to be treated for fruit flies in accordance with the Appendix 2 (Area freedom) and/or 5 (cold treatment) of the Arrangement between the New Zealand Ministry of Agriculture and Forestry and the Australian Quarantine and Inspection Service concerning the access of host material of fruit fly species of economic significance into New Zealand from Australia.

New Zealand has used cold treatment as an economical and effective method for the disinfestation of eggs and larvae of fruit fly of imported fruit fly host material from Australia, Italy, Spain, Taiwan, and Thailand for many years. Cold disinfestation is a MAF approved treatment for a number of commodities against *Ceratitis capitata*, species of *Bactrocera* including *B. tyroni*. No live fruit flies have been intercepted from imported fruit treated with cold disinfestation.

Current measures to mitigate the risk from Queensland fruit fly (QFF) and Mediterranean fruit fly (MedFly) in fresh avocados, pears, table grapes, citrus fruit imported from Australia is a cold treatment of 1 ºC for 16 days. The Ministry of Agriculture and Forestry Biosecurity New Zealand (MAFBNZ) has received a submission from Biosecurity Australia (BA) requesting that the current cold treatment of fruit fly hosts (table grapes, citrus, avocados and pears at 1 ºC) be extended to allow in-transit treatment and additional treatment temperature/time regimes be considered for citrus (lemons, mandarins and oranges) fruit at temperatures of up to 3 degrees.

Extension of the current cold treatment protocol to allow in-transit treatment

At present, Australia conducts cold disinfestation for fruit flies pre-shipment on citrus, pears, table grapes and avocados for export to New Zealand, as permitted by a bilateral arrangement between the two countries. The cold disinfestation treatment requirements are outlined in the MAF Standard 152.02 Importation and clearance of fresh fruit and vegetable into New Zealand. There are further operational and registration requirements for packing houses, storage and cold treatment facilities that export product under this pathway as described in the Australian Quarantine Inspection Service (AQIS) Systems Operational Manual.

The extension of the cold treatment protocol to allow cold disinfestation to commence on-shore in Australia and be completed in-transit will still effectively address the biosecurity risk and is in keeping with MAFBNZ’s goals to push risk offshore. MAFBNZ currently have procedures in place for fruit fly hosts to complete cold treatment in-transit for Italy, Spain, Taiwan, and Thailand. MAFBNZ proposes that the current cold treatment of fruit fly hosts (table grapes, citrus, avocados...
Evidence that the proposed cold treatment time/temperatures are effective

BA’s proposal is supported by research conducted by (De Lima et al. 2007) for citrus fruit. This research has been reviewed and accepted by the Japanese and Thai National Plant Protection Organisations which now allow the shipment of Australian citrus at warmer treatment temperatures of up to 3 degrees.

For citrus fruit De Lima et al. (2007) showed that QFF is susceptible to cold treatment temperatures up to 3 degrees. Total insect mortality was achieved in 14 days for lemons and 16 days for oranges and mandarins at both 2 and 3 degrees. Efficacy and confidence levels were demonstrated for these citrus species ranging from ED99.9976 to ED99.9992 at the 95% confidence level. For MedFly larvae were susceptible on citrus fruit to cold treatment with total insect mortality achieved in 18 days for lemons and 20 days for oranges and mandarins at 3 degrees (2 degrees lower). Efficacy and confidence levels were demonstrated for these citrus species ranging from ED99.9985 to ED99.9996 at the 95% confidence level.

The extensive testing conducted by De Lima et al. (2007) on citrus fruit treated at both 2 and 3 degrees provides a high degree of confidence (99.9987% estimated mortality at 95% confidence) and showed that there is no decrease in mortality with an increase in temperature from 1°C to 2°C to 3°C.

Revised cold treatment measures

MAFBNZ consider that an increase in cold treatment temperatures of up to 3 degrees for citrus fruit will continue to effectively mitigate the risk from QFF and MedFly particularly given that citrus has been reported to be a poor host of QFF and MedFly (De Lima et al. 2007).

MAFBNZ proposes that commodities imported from Australia under the current approved cold treatment pathway are extended to now include:

(a) in-transit cold treatment of fruit fly hosts (table grapes, citrus, avocados and pears at 1 ºC) under certain conditions (see appendix 1)

AND

(b) additional temperature/time regimes for citrus fruit up to 3°C (see below treatment specifications)

New Treatment Specifications

For either pre-shipment or in transit treatment, the fruit is to have reached the target temperature before treatment commences and the core temperature of fruit shall be held continuously at one of the following new temperature/time combinations:

(a) For QFF [oranges, tangors, and tangerines only] 3°C or below for a minimum of 16 days;

(b) For QFF [lemons only] 3°C or below for a minimum of 14 days;

(c) For MedFly [oranges, tangors, and tangerines only] 1°C (+/- 0.5°C) or below for a minimum of 16 days; or 2°C (+/- 0.5°C) or below for a minimum of 18 days; or 3°C or below for a minimum of 20 days;
(d) **For MedFly** [lemons only] 1°C (+/- 0.5°C) or below for a minimum of 14 days; or 2°C (+/- 0.5°C) or below for a minimum of 16 days; or 3°C or below for a minimum of 18 days;

**Background documents**


Comments on these proposed changes should be forwarded to MAF by close of business on **11 August 2008**. MAF encourages respondents to forward comments electronically to the email address below. However, should you wish to forward submissions in writing, please send them to the following address:

- Ministry of Agriculture and Forestry Biosecurity New Zealand
  PO Box 2526
  Wellington
  NEW ZEALAND
- Fax: +64 4 894 0662
  Email: plantimports@maf.govt.nz
Appendix 1: Requirements of cold treatment from Australia to New Zealand

Operational requirements to conduct cold treatment of produce exported to New Zealand will be further developed between MAFBNZ and AQIS that will incorporate the below activities.

Pre-cooling of fruit if directly loaded into refrigerated containers

Fruit is pre-cooled to 5 degrees before loading into refrigerated containers to enable fruit to reach the treatment temperature sooner – this is to prevent hot spots in fruit inside of a tight pallet-stacking configuration reaching core treatment temperatures much later than the fruits located at the perimeter.

Temperature recorders

Temperature recorders are able to accommodate the required number of sensors, store data for the period of the treatment, record readings by the sensors at least hourly, and are traceable to an approved treatment operator (where the treatment is carried out pre-shipment).

Calibration of temperature sensors

Documented methodology to ensure calibration of sensors is conducted using an agreed method.

Following the disinfection treatment pre-shipment the sensors will be checked to ensure that they meet the calibration requirements. Calibration records must be prepared and certified for each treatment batch. Where the disinfection treatment is completed in-transit this check will be carried out by MAFBNZ.

Treatment Completed Pre-Shipment

If a consignment is to receive pre-shipment cold treatment must be conducted in cold room facilities approved by the AQIS. AQIS must ensure that cold room facilities used by exporters are of a suitable standard and with refrigeration equipment capable of achieving and holding the fruit at the required temperature.

Container type

Containers must be self refrigerated (integral) shipping containers and have refrigerator equipment capable of achieving and holding the required temperatures.

Placement of temperature sensors

Containers must be packed in a manner which ensures that there is even airflow under and around all pallets and any loose stacked cartons.

A minimum of two sensors must be used to measure room temperature, and a minimum of four sensors must be used to measure fruit flesh temperature. The two room temperature sensors must be placed at the inlet and outlet points of air circulation. The four flesh temperature probes should be placed close to the potential “warmest spots” as follows:
(i) one probe placed at the centre of the stack in the center of the cold room;
(ii) one probe placed at the corner of the top stack in the center of the cold room;
(iii) one probe placed at the centre of the stack near the outlet of cold air; and
(iv) one probe placed at the corner of the top stack near the outlet of cold air.

The actual treatment will be deemed to have begun only when all sensors have attained the required treatment temperature.

Confirmation of treatment

Procedures must be in place that verifies that the treatment parameters have been met. MAFBNZ will inspect consignments on arrival in New Zealand to ensure that the cold treatment conditions have been maintained.

Storage of fruit before loading into containers

Where treated fruit must be stored prior to loading the fruit must be stored under conditions that prevent the re-infestation or contamination of the fruit.

Loading into containers

Containers will be inspected before loading by the AQIS to ensure freedom from pests and any vents are covered to preclude the entry of pests. Post treatment security must be maintained and fruit are to be loaded within an insect proof building or by using an insect proof enclosure between the cold room entrance and the container.

Sealing of containers

A numbered tamper proof seal will be placed on the door of the loaded container door by an authorized AQIS officer.

Treatment completed in-transit

If a consignment is to receive in transit cold disinfection treatment AQIS will ensure that in-transit cold disinfection is conducted in self-refrigerated (integral) shipping container with refrigeration equipment capable of achieving and maintaining the required temperatures. Measures must in place to ensure that treatment is continuous between pre-shipment treatment and completion in-transit.