agriculture, land reform & rural development

Department:
Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA

FALSE CODLING MOTH SYSTEMS APPROACH (CITRUS FCMSA) FOR THE EXPORT OF FRESH CITRUS FRUIT THAT IS PRODUCED IN SOUTH AFRICA AND EXPORTED TO THE EU

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1. Introduction and Summary

The Citrus FCM Systems Approach (Citrus FCMSA) has been developed in accordance with relevant guidelines provided by the International Plant Protection Convention (https://www.ippc.int/en/core-activities/standards-setting/ispms/) and its International Standards for Phytosanitary Measures (ISPMs), in particular ISPM 14. The Citrus FCMSA combines multiple measures that cumulatively provide phytosanitary protection required to be able to certify qualifying export consignments as compliant with trading partner phytosanitary import requirements.

The Citrus FCMSA has been developed to ensure compliance with relevant phytosanitary import regulations, equivalent to that obtained through the application of a post-harvest disinfestation treatment.

In the case of citrus fruit exports to the EU, the compliance requirement of relevance to the Citrus FCMSA is contained in Annex VII to Implementing Regulation (EU) 2019/2072 and Commission Implementing Regulation (EU) 2022/959). Lemons (*Citrus limon*) and Key limes (*Citrus aurantifolia*) are excluded from these EU requirements due to their recognised FCM non-host status.

The Citrus FCMSA provides for risk management of FCM at several stages, namely production, harvesting, handling, packing, inspection, certification, pre-cooling and in-transit transport during export of citrus fruit through the application of variable levels of control or intervention, with the objective of achieving compliance with the relevant import requirements. The Citrus FCMSA is applied pre- and post-harvest on an orchard and a consignment basis. The Citrus FCMSA includes the following components:

- Registration of eligible orchards
- Orchard monitoring – traps and fruit infestation, with associated thresholds for the latter indicating if additional pre-harvest control measures are required and subsequent handling options within the Citrus FCMSA
- Orchard sanitation
- Use of only registered pre-harvest control measures
- In-orchard fruit culling at harvest
- Post-harvest fruit inspections – for FCM infestation on delivery at packhouse, determining which subsequent shipping options can be selected
- Packhouse grading out of potentially infested fruit
- Phytosanitary inspections of fruit packed for export – by Perishable Products Export Control Board (PPECB)
- A limited set of post-harvest shipping options for application to individual export consignments as determined by the level of compliance
- Department of Agriculture, Land Reform and Rural Development (DALRRD) phytosanitary certification of compliant consignments

The pre-packing measures and the packhouse measures, including sampling and inspection results, in combination determine available shipping condition options (A, B & C) for each consignment.

The EU FCM regulation includes the following mandatory shipping regime codes as part of the systems approach for oranges:

i) A set-point of 2.0°C or below for 20 days or longer, after precooling to a pulp temperature equivalent to the set-point temperature,
ii) A pulp temperature of 0.0°C or below for 16 days or longer.

2. Eligibility and registration

2.1 Citrus fruit from all production regions is potentially eligible.

2.2 In the case of citrus fruit exports to the EU, lemons (*Citrus limon*) and Key limes (*Citrus aurantifolia*) are excluded from the Citrus FCMSA requirement due to their recognised FCM non-host status. Bearss (Persian, Tahiti) limes (*Citrus latifolia*) are currently not exempt from the Citrus FCMSA requirement.

2.3 Export of citrus fruit with reliance on the Citrus FCMSA as assurance of compliance with FCM phytosanitary import regulations requires each participating orchard to be registered with DALRRD, using the PhytClean system.

2.4 A requirement for orchard registration is that each producer gives the following undertakings: 1) to comply with the Citrus FCMSA protocol and provide accurate data (this includes ensuring the accuracy of any data provided by a third party on behalf of the grower, especially data for fruit infestation monitoring); 2) to implement Good Agricultural Practice (GAP) procedures for FCM management; 3) to conduct pheromone trap monitoring as specified in the Citrus FCMSA; 4) to perform orchard sanitation as specified in the Citrus FCMSA; 5) to conduct preharvest fruit infestation monitoring as prescribed in the Citrus FCMSA.

2.5 Packhouses, exporters, loading facilities and freight forwarders handling fruit for export under the Citrus FCMSA must be registered with DALRRD, via the PhytClean system. Packhouse registration applications will need to be verified by DALRRD.

2.5.1 A requirement for packhouse registration is that each packhouse gives the following undertakings: 1) to comply with the Citrus FCMSA protocol and provide accurate data; 2) to provide compulsory training to personnel responsible for packhouse delivery inspections and grading; 3) to ensure that Packhouse Delivery Inspections (PDI) results and PPECB detections of FCM infestation are communicated to the producer.

2.5.2 A requirement for exporter registration is that each exporter gives the following undertakings: 1) to ensure that temperature monitoring equipment, as stipulated by the Citrus FCMSA, is available for installation during loading; 2) to ensure that the shipping temperatures are reported as stipulated by the Citrus FCMSA; 3) to ensure that consignments are under cooling as stipulated by the Citrus FCMSA; 4) to ensure that only approved packaging as specified in Annexure 5, 6 and 7 are used for the export of fruit under the Citrus FCMSA.

2.5.3 A requirement for loading facility registration is that each loading facility gives the following undertakings: 1) to comply with the Citrus FCMSA; 2) to report any detected Citrus FCMSA non-compliance to PPECB; 3) to digitally monitor pallet movement.

2.5.4 A requirement for cold store registration as per the PPECB Act 9 of 1983 is that each

cold store gives the following undertaking: 1) to handle fruit at temperatures as specified by the Citrus FCMSA.

2.6 Fruit from an orchard will not be inspected by PPECB for export under the Citrus FCMSA when PhytClean indicates the orchard status is “Not Permitted” or “On Hold” or “De-registered”.

3. Requirements to qualify for Options A, B or C

Only cold sensitive citrus types, listed on PhytClean (and in Annexure 3 below), qualify for Option B. Oranges only qualify for Option C, but unlike other Option C citrus, oranges must also comply with certain preharvest practices (3.1.4 and 3.1.5 Fruit infestation monitoring) as listed below.

3.1 Option A or B

- 3.1.1 Registration of orchard,
- 3.1.2 Pheromone trap monitoring and
- 3.1.3 Orchard sanitation (as part of GAP), plus
- 3.1.4 Fruit infestation monitoring (for at least 12 wk. before start of harvest) to determine need for additional control measures,
- 3.1.5 Fruit infestation monitoring (for 4 wk. before start of harvest) and
- 3.1.6 Packhouse delivery inspection to determine export option.
- 3.1.7 PPECB inspection (2% sample by pallet)
- 3.1.8 Ship in accordance with specific PPECB shipping regime codes.

3.2 Option C

- 3.2.1 Registration of orchard
- 3.2.2 Pheromone trap monitoring and
- 3.2.3 Orchard sanitation (as part of GAP)
- 3.2.4 Packhouse delivery inspection
- 3.2.5 PPECB inspection (2% sample by pallet)
- 3.2.6 Ship in accordance with specific PPECB shipping regime codes

4. Details of FCM Risk Management Actions

4.1 Monitoring of pheromone traps (Options A, B & C)

4.1.1 Pheromone monitoring traps shall be used for registered Citrus FCMSA orchards.

4.1.2 Only registered (in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, Act no. 36 of 1947 as amended) monitoring systems are permissible.

4.1.3 Trapping shall be initiated early enough to ensure that the traps are in position to record the first major moth flight peak, which normally occurs in late November or early December, depending on region and climate. If trapping does not commence by 15 December (latest), the orchard will not qualify for registration verification and the fruit will not be eligible for export under the Citrus FCMSA.

4.1.4 Pheromone monitoring traps should be placed at a density of no more than one trap per 4 ha. One trap can represent more than one orchard if the total area of the orchards is not more than 4 ha and the orchards are adjacent to one another. Individual orchards more than 4 ha require no more than one trap.

4.1.5 No level of FCM catches will result in disqualification of orchards, but the monitoring data must be used for management purposes, such as seasonal comparisons, treatment prioritisation of orchards and timing of treatment application.

4.1.6 Pheromone trap monitoring results do not need to be uploaded onto PhytClean, but the data must be recorded and records must be safeguarded for inspection / auditing if required.

4.2 Pre-harvest control measures

4.2.1 Orchard sanitation (Options A, B & C)

4.2.1.1 Orchard sanitation is an important component of GAP for FCM management.

4.2.1.2 Orchard sanitation entails the collection and removal of dropped fruit and hanging fruit, which show signs of damage or infestation.

4.2.1.3 A record of the end of fruit drop date must be maintained per orchard and orchard sanitation must be initiated no later than 2 weeks after the end of natural physiological November fruit drop which normally ends mid-November to mid-December.

4.2.1.4 Sanitation must be conducted at least weekly and continue until after harvesting has been completed, and within 14 days thereafter the orchard must be cleared of the current season's fruit (both fruit on the tree and fallen fruit).

4.2.1.5 Removed fruit must be destroyed outside the orchard.

4.2.1.6 Sanitation fruit must be destroyed on the same day that they are collected, and immediately after they have been counted and a sample drawn for preharvest infestation monitoring, as described in (5) below.

4.2.1.7 Commencing 15 January, a 4 weekly declaration must be made on PhytClean to confirm that the requisite sanitation practices have been maintained and will continue to be maintained for each Citrus FCMSA orchard. Declarations will be on a PUC level for all Citrus FCMSA orchards registered under the PUC.

4.2.1.8 Orchard sanitation must be recorded and records must be safeguarded for inspection / auditing.

4.2.2 Registered control measures (Options A, B & C)

Control measures must be used in accordance with product Registration (in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act no. 36 of 1947 as amended).

5. Pre-harvest (in orchard, 12 weeks prior to start of harvest) fruit infestation monitoring to determine the need for additional pre-harvest control measures (Options A, B & oranges)

5.1 Fruit infestation must be monitored in each registered Citrus FCMSA orchard to be eligible for Options A & B, and for all oranges.

5.2 Monitoring must be undertaken for a minimum of 12 weeks prior to start of harvest, unless the orchard is harvested sooner than 12 weeks after 15 January, as monitoring need not be initiated earlier than 15 January.

5.3 As actual start of harvesting may sometimes occur earlier than predicted, it is advisable to initiate monitoring 16 weeks before the projected harvest date, and only the period of 12 weeks up to actual start of harvest will apply in calculating eligibility for Options A & B.

5.4 Orchard monitoring entails destructive inspection of a sample of fruit from the sanitised fruit from each orchard every two weeks, as described in detail in Annexure 1.

5.5 Monitoring should preferably be conducted on the same day every second week, but since this is not always feasible, the interval between any two monitoring days may not be more than 18 days and for a 12-week monitoring period no less than 6 monitoring records are required. The results must be uploaded onto PhytClean.

5.6 A fruit is considered infested if any FCM larva is found in the fruit, or it is reliably evident that the fruit was infested but the larva has recently exited the fruit.

5.7 If recorded infestation is more than an average of 0.1 infested fruit per tree per week in the period 12 to 4 weeks prior to commencement of harvest, then a registered control measure, listed on PhytClean as a suitable corrective treatment, must be applied within 2 weeks after this intervention threshold has been surpassed. However, it is advisable to apply the control measure immediately on the threshold being surpassed, particularly as one gets closer to harvest.

5.8 If the control measure is applied in response to detected fruit infestation, then only products that are considered suitable as registered corrective treatments will satisfy this Citrus FCMSA requirement. These products are listed on PhytClean. PhytClean must be consulted before product selection, and the treatment data must be uploaded onto PhytClean.

5.9 This intervention requirement will only apply again 5 weeks after the registered control measure was applied, thus providing sufficient time for the efficacy of the control measure to be detected through a recorded reduction in FCM infestation.

5.10 Selection of samples and destructive inspection of samples (12 and 4 weeks prior to harvest) must be conducted by trained personnel. Training records and proof of competency evaluation must be safeguarded for inspection / auditing.

6. Fruit infestation monitoring (4 weeks prior to start of harvest) to determine option for handling during shipping (Options A, B & oranges)

6.1 If recorded infestation (from the process in 5.4 above) is more than an average of 0.1 infested fruit per tree per week in the four weeks preceding the start of harvesting, then fruit from that orchard shall only be potentially eligible for export under Option C (all oranges qualify for Option C only).

6.2 Delaying the start of harvesting might enable compliance with the threshold and a resumption of the opportunity to export under Options A and B.

6.3 Data must be recorded, the records must be safeguarded for inspection / auditing and the results must be uploaded onto PhytClean.

7. Post-harvest fruit grading and inspection

7.1 In-orchard fruit culling (Options A, B & C)

Fruit showing signs of potential FCM infestation should be removed during the picking process within the orchard as far as it is feasible to do so, prior to delivery of the fruit to the packhouse. Culled fruit must be excluded from packing for export under the Citrus FCMSA.

7.2 Packhouse delivery inspection (Options A, B & C)

7.2.1 The Packhouse manager must undertake to comply with the Citrus FCMSA and to report as required.

7.2.2 Packhouse delivery inspection must be conducted by trained personnel. Training records and proof of competency evaluation must be safeguarded for inspection/ auditing.

7.2.3 On delivery of citrus fruit from an orchard to the packhouse, for packing under the Citrus FCMSA, a sample of fruit per orchard must be removed and inspected for FCM infestation (one sample per orchard per season, unless harvesting continues beyond 4 weeks in which case 7.2.8 applies). The sample size for Option A and C fruit is 800. Depending on the desired shipping condition, the sample size for Option B fruit is 800, 1000, 1900 or 2800. The fruit sample must be selected randomly without selecting for fruit that looks more or less likely to be infested.

7.2.4 This inspection must be conducted according to the prescribed procedure (Annexure 2). All fruit with any suspicious marks that could possibly be indicative of FCM penetration and all fruit with injuries (however small) that could have facilitated easier penetration of FCM, must be further inspected destructively (i.e. fruit must be cut, according to the procedure in Annexure 2). This includes all Navel oranges with any sign of a split navel-end, however small the split, and other citrus types showing fruit splitting. Fruit with no observable external blemishes, that might be associated with FCM infestation, require no further inspection.

7.2.5 A fruit must be recorded as infested, if a live or dead FCM larva is found in the fruit.

7.2.6 **Option A**: To use Option A, there may not be more than 2 infested fruits detected in the sample of 800 fruit. If 3 to 5 infested fruits are detected in the sample, the fruit from the orchard defaults to export under Option C for the season. If more than 5 infested fruits are detected in the sample (that is it exceeds the requirement for Option C, see 7.2.7), fruit from the orchard is not suitable for export under the Citrus FCMSA for the season (the orchard status on PhytClean will become “Not Permitted”).

7.2.7 **Option B**: To use Option B, there may not be more than 1 infested fruit detected in the sample of 800, 1000, 1900 or 2800 fruit. If 2 or more infested fruit are detected in the sample, the fruit from the orchard defaults to export under Option A for the season, if the detected infestation does not exceed the requirements for Option A. If the detected infestation exceeds the requirement for Option A, the fruit from the orchard defaults to Option C for the season. If more than 5 infested fruits are detected in the sample (that is it exceeds the requirement for Option C, see 7.2.7), fruit from the orchard is not suitable for export under the Citrus FCMSA for the season (the orchard status on PhytClean will become “Not Permitted”).

7.2.8 **Option C**: <u>All oranges may only use Option C.</u> To use Option C, there may not be more than 5 infested fruits detected in the sample of 800 fruit. If 6 or more infested fruit are detected in the sample, the fruit from the orchard cannot be exported under the Citrus FCMSA (the orchard status on PhytClean will become “Not Permitted”).

7.2.9 Packhouse delivery inspection must be repeated for any orchard where harvesting continues for more than 4 weeks after the first packhouse delivery inspection. If this results in a reduction of the available Citrus FCMSA Options for fruit from that orchard, the grower and packhouse are required to ensure that all parties along the supply chain are informed and the orchard status will be flagged accordingly on PhytClean.

The status of an orchard cannot improve from C to A, or C to B, or A to B as a result of the 4 weeks repeat inspection.

7.2.10 Results from all inspections must be recorded, uploaded onto PhytClean and the records must be safeguarded for inspection / auditing.

7.3 Packhouse grading (Options A, B & C)

7.3.1 Citrus fruit must be thoroughly graded on the packing line to remove fruit with blemishes that may be associated with FCM infestation. All Navel oranges with any signs of navel-end splitting, however small the split, including other citrus types showing fruit splitting must be graded out.

7.3.2 Packhouse graders must be trained to identify fruit with signs of FCM infestation and the number of graders and conditions in the packhouse (e.g. lighting) must be suitable to optimise effectiveness of removing FCM infested fruit during grading. Training records and proof of competency evaluation must be safeguarded for inspection / auditing.

7.4 Perishable Products Export Control Board (PPECB) inspection (A, B & C)

7.4.1 In the packhouse, after packing, PPECB shall inspect a 2% sample of citrus fruit per pallet packed for export under the Citrus FCMSA.

7.4.2 PPECB shall reject any pallets of citrus fruit for export under the Citrus FCMSA if any fruit infested with live FCM is detected during such inspection and the pallet of fruit may not be repacked for or sent to EU.

7.4.3 PPECB rejection of a pallet of fruit from Citrus FCMSA orchard will not disqualify further fruit from that orchard being exported under the Citrus FCMSA, provided such fruit is compliant with the criteria applicable to Options A, B or C.

7.4.4 PPECB shall observe the PDI and grading procedures at each packhouse within the first 4 weeks of packing in each season, report the findings to the packhouse manager and keep a record of the findings.

8. Shipping conditions

8.1 The Citrus FCMSA prescribes shipping conditions available for each consignment of Citrus FCMSA qualifying export fruit, according to the phytosanitary status (Options A, B or C) of the orchards from which the fruit were harvested and inspected.

8.2 The shipping condition options available for Citrus FCMSA export consignments are specified in prescribed Citrus FCMSA shipping regime codes (Annexures 3, 5, 6 and 7)

8.3 The eligible shipping condition options for each consignment must be verified using PhytClean versus the loadout instruction from the cold store operator, at the point of loading of the container or SRV, as a precondition for potential phytosanitary certification. If incorrect shipping conditions are selected, PPECB will reject the consignment.

8.4 Correct carton option must be selected as per the prescribed Citrus FCMSA shipping regime codes (Annexures 3, 5, 6 and 7), non-compliance will result in a PPECB rejection.

8.5 All containers must be fitted with a void plug (Annexures 5 and 6). Non-compliance will

result in a PPECB rejection.

8.6 Approved cellular air temperature monitoring and logging device (portable logger) must be installed in all containers (Annexures 5 and 6). Non-compliance will result in a PPECB rejection.

9. Phytosanitary certification

For export consignments of citrus fruit from orchards registered under the Citrus FCMSA, subject to compliance with the criteria set in the Citrus FCMSA, a phytosanitary certificate may be issued for export as being compliant with the relevant import requirements, subject to shipping in accordance with Options A, B or C. If fruit qualifying for different shipping Options are combined, the shipping Option shall default to the shipping Option most reliant on the shipping component of the system (refer to Annexure 3; B+A=A, B+C=C, B+A+C=C, A+C=C).

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ANNEXURE 1

Procedure for preharvest infestation monitoring

- Preharvest infestation monitoring must be conducted once every two weeks.
- All sanitation fruit collected from an orchard should be pooled on each occasion.
- The total number of fruit collected per orchard must be counted/calculated and recorded. (Techniques to make the task easier can be developed e.g. counting the fruit in one bag/crate from an orchard and multiplying this by the number of crates/bags collected from the orchard; or weighing a small sample of known number of fruit to determine weight of a fruit, weighing all the fruit collected from the orchard, and dividing this by the weight of a fruit, to obtain the total number of fruit).
- The date of the previous sanitation procedure must be recorded, even if no sample was taken for inspection from this previous sanitation.
- A 100-fruit sample of this sanitation fruit must be randomly taken for analysis, regardless of orchard size. If fewer than 100 fruit were collected from the orchard, then all fruit collected must be sampled.
- The process of random sampling involves a) showing no bias for or against any fruit, based on their appearance, and b) selecting the fruit sample from fruit collected from different sections within the orchard.
- All fruit must be dissected and number of fruits infested (larva still present or exited) must be recorded.
- This must be done on the same day that sanitation is conducted and sanitation fruit must be removed and destroyed immediately after they have been counted and the sample for inspection has been drawn.
- The following information must be entered into PhytClean on each sampling occasion:
  - Date of previous sanitation event (even if a sample was not taken to monitor FCM infestation)
  - Total number of fruits collected per orchard.
  - Total number of fruits in sample that were infested with FCM (larva present or exited).

In addition to the mandatory monitoring described above, monitoring can be supplemented by the 5 data tree monitoring system described in CRI Production Guidelines, but the results (must not be uploaded onto PhytClean (i.e. results from the 5 data tree monitoring will be for own use).

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ANNEXURE 2

Procedure for fruit inspection on delivery to the packhouse:

a) with the aid of a magnification device (e.g. head loop), with a minimum of 2.5X magnification, thoroughly inspect each fruit for any marks which might indicate a point of FCM penetration or an injury from any other cause that could have facilitated easier FCM penetration, including a split navel-end;
b) all fruit found with any such suspicious marks must be destructively inspected as described below;
c) cut the rind away under the mark in thin slivers which will allow observation of even the shallowest penetration of a very small larva;
d) continue cutting into the flesh of the fruit either until infestation or the lack of it is confirmed;
e) this procedure must be followed for all such marks observed on the rind of the fruit;
f) thereafter, the fruit must additionally be cut into quarters and carefully inspected for any signs of infestation;
g) if any such signs are observed, then further cutting and inspection should be conducted in the relevant quarter of fruit.

ANNEXURE 3

Shipping condition options (shipping regime codes) available for export of citrus fruit under the Citrus FCMSA. Refer also to Annexures 5, 6 and 7.

Container shipments:

Option A. For citrus fruit with a phytosanitary certificate for export under Option A, the fruit shall be shipped in accordance with one of the following (conditions described under Option C may also be used for fruit qualifying for Option A):

EC2. Temperature set point of 2.0°C, after cooling to pulp temperature of 5.0°C or lower.

EC1. Temperature set point of 1.0°C, after cooling to pulp temperature of 4.0°C or lower.

EW0. Temperature set point of 0.0°C, and pulp temperature must be 25°C or lower prior to loading.

EW01. Temperature set point of minus 1.0°C, and pulp temperature must be 25°C or lower prior to loading.

Option B. For citrus fruit with a phytosanitary certificate for export under Option B (only listed cold sensitive citrus types, including Marsh Grapefruit, Rose Grapefruit, Jackson Grapefruit, Satsuma mandarin, Pummelo, Bearss (Persian, Tahiti) lime *Citrus latifolia* and organically produced citrus (excluding oranges)), the fruit shall be shipped in accordance with one of the following (conditions described under Options A and C may also be used for fruit qualifying for Option B):

EC3. Temperature set point of 3.0°C, after cooling to pulp temperature of 5.0°C or lower.

EC35. Temperature set point of 3.5°C, after cooling to pulp temperature of 5.5°C or lower.

EC4. Temperature set point of 4.0°C, after cooling to pulp temperature of 6.0°C or lower. Available for shipments from Durban, Port Elizabeth and Cape Town ports depending on packhouse delivery inspection results.

Option C. For citrus fruit with a phytosanitary certificate for export under Option C the fruit shall be shipped in accordance with one of the following (conditions described under Options A and B may not be used for fruit qualifying for Option C):

All citrus except oranges:

EC0. Temperature set point of 0.0°C, after cooling to pulp temperature of 1.0°C or lower.

ECW0. Temperature set point of 0.0°C, after cooling to pulp temperature of 10°C or lower.

EC01. Temperature set point of minus 1.0°C, after cooling to pulp temperature of 0.0°C or lower.

ECW01. Temperature set point of minus 1.0°C, after cooling to pulp temperature of 10°C or lower.

All citrus types including oranges:

EOY2. Temperature set point of 2.0°C for a minimum time in the container of 20 days, after cooling to pulp temperature of 2.0°C or lower.

EOY1. Temperature set point of 1.0°C for a minimum time in the container of 20 days, after cooling to pulp temperature of 1.0°C or lower.

EOY0. Temperature set point of 0.0°C for a minimum time in the container of 20 days, after cooling to pulp temperature of 0.0°C or lower.

EOY01. Temperature set point of minus 1.0°C for a minimum time in the container of 20 days, after cooling to pulp temperature of minus 1.0°C or lower.

SC1. Temperature set point of minus 1.5°C and pulp temperature of 0.0°C or lower, for a minimum time in the container of 16 days, after precooling to pulp temperature of minus 0.5°C or lower.

If fruit qualifying for different shipping Options are combined, the shipping Option shall default to the Option providing the most security (B+A=A, B+C=C, B+A+C=C, A+C=C).

The temperature set point shall be verified at point of loading and shall be maintained for the duration of the voyage, unless the voyage duration is such that it exceeds 30 days from gate-in, or hatch closure, in which case step up to 4.0°C (no higher) can be affected thereafter and maintained for the remainder of the voyage. For the SC1 code, this step up to 4°C (no higher) can be affected after 20 days.

Specialised Refrigerated Vessels (SRV)

All citrus except oranges:

EOVX2. Precool to 3.0°C or lower, ship at set point of 2.0°C for a minimum treatment duration of 25 days.

EOVX1. Precool to 2.0°C or lower, ship at set point of 1.0°C for a minimum treatment duration of 25 days.

EOVX0. Precool to 1.0°C or lower, ship at set point 0.0°C for a minimum treatment duration of 25 days.

EOVX01. Precool to 0.0°C or lower, ship at set point minus 1.0°C for a minimum treatment duration of 25 days.

All citrus including oranges:

EOVY2. Precool to 2.0°C or lower, ship at set point 2.0°C for a minimum treatment duration of 20 days.

EOVY1. Precool to 1.0°C or lower, ship at set point 1.0°C for a minimum treatment duration of 20 days.

EOVY0. Precool to 0.0°C or lower, ship at set point 0.0°C for a minimum treatment duration of 20 days.

SC1. Precool to minus 0.5°C or lower, ship at set point minus 1.5°C and pulp temperature of 0.0°C or lower for a minimum treatment duration of 16 days.

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ANNEXURE 4

SUMMARY: CITRUS FCM SYSTEMS APPROACH (Citrus FCMSA) FOR FRESH CITRUS EXPORTS FROM SOUTH AFRICA

The system encompasses orchard registration, a range of control requirements, monitoring procedures and compliance thresholds. The Citrus FCMSA provides an endpoint categorisation of phytosanitary status for individual orchards, pallets of packed fruit and consignments of fruit for export. Handling conditions during shipping are prescribed according to the phytosanitary status (Options A, B or C) of the fruit in the shipment.

Table 4.1 REQUIREMENTS (COMPULSORY) TO QUALIFY FOR OPTIONS A, B & C

ACTION	REQUIRED FOR OPTION?	
	C	A & B
Registration of orchard	Yes	Yes
Trap monitoring	Yes	Yes
Orchard sanitation	Yes	Yes
Fruit infestation monitoring to determine need for control measure (last 12 weeks before start of harvest)	No (Yes for oranges)	Yes & apply treatment if threshold surpassed
Fruit infestation monitoring to determine export option (last 4 weeks before start of harvest)	No (Yes for oranges)	Yes & must not exceed threshold
Packhouse delivery inspection	Yes & must not exceed threshold	Yes & must not exceed threshold
PPECB 2% inspection sample per pallet, no live FCM detected in pallet	Yes	Yes

Only listed cold sensitive citrus types qualify for Option B

Table 4.2 DESCRIPTION OF ACTIONS (COMPULSORY AND RECOMMENDED)

ACTION (required for Option A, B & C)	DETAILS
Registration (A, B, C)	Each orchard must register with DALRRD. Registration includes requisite undertaking to comply with Citrus FCMSA and provide accurate data as required by Citrus FCMSA.
Trap monitoring (A, B, C)	Pheromone trapping required from specified date.
Orchard sanitation (A, B, C)	Orchard sanitation required weekly from specified date.
Fruit infestation monitoring (A, B, oranges)	Destructive inspection of a sample of fruit from the sanitised fruit from each orchard each week. Compulsory to start 12 weeks prior to harvest (16 weeks recommended).
Control measures (A, B, C)	Use only registered control measures.
In-orchard culling (A, B, C)	Fruit showing signs of FCM infestation to be culled during harvesting.
Packhouse delivery inspection – grapefruit, Pummelo, Bearss (Persian, Tahiti) limes and soft citrus (A, B, C); oranges (C)	Sample of 800 fruit (Option A and C), or 800, 1000, 1900 or 2800 fruit (Option B) per orchard, to be inspected for FCM infestation. Visual inspection & all fruit with suspicious marks to be cut.
Packhouse grading (A, B, C)	Grade thoroughly on the packing line.
PPECB inspection (A, B, C)	2% sample.
Shipping regime code options (A, B, C)	The shipping regime code options that each consignment qualifies for shall be verified at the point of loading using PhytClean.
Phytosanitary certification (A, B, C)	A phytosanitary certificate for export as a pest-free consignment may be issued according to Citrus FCMSA compliance.

Table 4.3 THRESHOLDS APPLYING TO OPTIONS A, B & C

MEASUREMENT	THRESHOLD	CONSEQUENCE OF EXCEEDING THRESHOLD
Pheromone trap catches (A, B & C)	None	None
Fruit infestation (A, B & oranges)	During the 12wk pre-harvest period an average of >0.1 infested fruit/tree/week (live, dead or exited larva)	Apply a registered control measure, as listed on PhytClean.
	An average of >0.1 infested fruit/tree/week in last 4 weeks before start of harvest (live, dead or exited larva).	Orchard defaults to Option C.
Packhouse delivery inspection	Category A: More than 2 infested fruit in sample (live or dead larva)	Orchard defaults to Option C
	Category B: More than 1 infested fruit in sample (live or dead larva)	Orchard defaults to Option A (if compliant with A) or C
	Category C: More than 5 infested fruit in sample (live or dead larva)	Orchard defaults to "Not Permitted" and cannot be exported under Citrus FCMSA
PPECB 2% Sample	One or more infested fruit	Pallet cannot be exported under Citrus FCMSA (Options A, B & C).

ANNEXURE 5

INTEGRAL CONTAINER PROTOCOL FOR ALL CITRUS FRUIT EXCEPT ORANGES

The protocol prescribes requirements and procedures for shipping all citrus fruit, excluding oranges.

Table 5.1. Container shipping regime codes

Option	Shipping regime code	Load-out temperature (°C)	Set point (°C)	Ports to which applicable: Durban (D), Port Elizabeth (PE), Cape Town (CT)	Packhouse delivery sample size and qualification threshold	Packaging allowed
A	EC2	≤5.0	2	D, PE, CT	800 fruits. Infested fruit ≤ 2.	Only A15C-S2
	EC1	≤4.0	1	D, PE, CT		Open tops, bulk bins, crates & A15C-S2
	EW0	≤25	0	D, PE, CT		
	EW01	≤25	minus 1.0	D, PE, CT		
B	EC3	≤5.0	3	D, PE, CT	800 fruits. Infested fruit ≤ 1.	Open tops, bulk bins, crates & A15C-S2
	EC35	≤5.5	3.5	D, PE, CT	1000 fruit. Infested fruit ≤ 1.	
	EC4	≤6.0	4	D	1000 fruit. Infested fruit ≤ 1.	
				PE	1900 fruit. Infested fruit ≤ 1.	
				CT	2800 fruit. Infested fruit ≤ 1.	
C (all citrus except oranges)	EC0	≤1.0	0	D, PE, CT	800 fruits. Infested fruit ≤ 5.	Open tops, bulk bins, crates & A15C-S2
	ECW0	≤10	0	D, PE, CT		
	EC01	≤0.0	minus 1.0	D, PE, CT		
	ECW01	≤10	minus 1.0	D, PE, CT		

Packaging

The following cartons/packaging types are allowed:

- Telescopic cartons: only the A15C-S2 Supervent carton are allowed.
- Only the A15C-S2 carton may be used under the shipping regime code EC2.
- No fruit wrapping is allowed, except alternating rows on the top layer for display purposes.
- Open display and IFCO plastic crates are allowed. However, if internal packaging (trays) is used, the trays must be ventilated and exported under the following A-codes: EW0, EW01 or C-codes: EC0, ECW0, EC01 and ECW01.
- Bulk bins must be ventilated on the sides and bottom.

Loading Points and Loading Practices

a. All containers must be fitted with void plugs, failure to do so will result in PPECB not authorizing the container for export.
b. The T-floor cover is also accepted and recommended as an airflow improvement device.
c. A 21-pallet loading configuration is allowed when using chimney-type void plugs.

Cold stores

a. Cold stores handling citrus fruit exported under the Citrus FCMSA must maintain a set point (air temperature) of 2.0°C or lower, failure to do so will result in PPECB not authorizing the loading to continue.
b. Cold store facilities must have the functionality of digital measuring and recording the delivery air (DAT) and return air temperature (RAT) in rooms where FCMSA fruit are stored. *No handwritten temperature records are accepted.*
c. Digital traceability (date and hourly resolution) of pallet movement in the cold room must be recorded and made available on request.

Temperature monitoring

a. Containers shall be fitted with a cellular air temperature monitoring and logging device (portable logger) that complies with the PPECB Q184 “PPECB Approved List of Instruments”
b. PPECB to record the serial ID of the portable logger.
c. Placement of the portable logger during loading must be in the required position and confirmed by PPECB, failure to do so will result in PPECB not authorizing the container for export.

ANNEXURE 6

INTEGRAL CONTAINER PROTOCOL FOR ALL CITRUS FRUIT INCLUDING ORANGES

Background
The protocol prescribes requirements and procedures for shipping all citrus fruit, including oranges.

Table 6.1. Container shipping regime codes.

Option	Shipping regime code	Cold Room Load-out temperature (°C)	Set point (°C)	Treatment days	Packaging allowed
A, B & C	EOY2	≤ 2.0	2.0	20	Only A15C-S2
	EOY1	≤ 1.0	1.0	20	Open tops, bulk bins, crates & A15C-S2
	EOY0	≤ 0.0	0.0	20	Open tops, bulk bins, crates & A15C-S2
	EOY01	≤ minus 1.0	minus 1.0	20	Open tops, bulk bins, crates & A15C-S2
	SC1*	≤ minus 0.5	minus 1.5	16	Open tops, bulk bins, crates & A15C-S2

*Handling and temperature monitoring requirements apply according to PPECB protocol for the cold treatment regime code option (SC1).

Packaging
The following cartons/packaging types are allowed:

- Telescopic cartons: only the A15C-S2 Supervent carton are allowed.
- Only the A15C-S2 carton may be used under the shipping regime code EOY2.
- No fruit wrapping is allowed, except alternating rows on the top layer for display purposes.
- Open display and IFCO plastic crates are allowed. However, if internal packaging (trays) is used, the trays must be ventilated.
- Bulk bins must be ventilated on the sides and bottom.

Loading Points and Loading Practices

a. All containers must be fitted with void plugs. Failure to do so will result in PPECB not authorizing the container for export.
b. The T-floor cover is also accepted and recommended as an airflow improvement device.
c. A 21-pallet loading configuration is allowed when using chimney-type void plugs.

Cold stores

a. Cold stores handling citrus fruit exported under the Citrus FCMSA must maintain a set point (air temperature) of 2.0°C or lower, failure to do so will result in PPECB not authorizing the loading to continue.
b. Cold store must have the functionality of digital measuring and recording of delivery air (DAT) and return air (RAT) temperatures in rooms where Citrus FCMSA fruit are stored. *No handwritten temperature records are accepted.*
c. Digital traceability (date and hourly resolution) of pallet movement in the cold room/loading facility must be recorded and made available on request.

Temperature monitoring

a. Containers shall be fitted with a cellular air temperature monitoring and logging device (Portable logger) that complies with the PPECB Q184 “PPECB Approved List of Instruments”.
b. PPECB to record the serial ID of the portable logger.
c. Placement of the portable logger during loading must be in the required position and confirmed by PPECB, failure to do so will result in PPECB not authorising the container for export.

ANNEXURE 7

SPECIALISED REFRIGERATED VESSEL (SRV) PROTOCOL

The protocol prescribes procedures and requirements for shipping all citrus fruit.

Table 7.1. SRV shipping regime codes.

Option	Shipping regime code	Cold room precooling pulp and load out temperature and [maximum cold room set point] (°C)	Vessel release pulp temperature (°C)	Maximum Vessel Set Point (°C)	Maximum permissible pulp temperature during voyage (°C)	Minimum treatment duration (days)*	Packaging Allowed
A, B & C (all citrus except oranges)	EOVX2	≤ 3.0 [2.0]	≤ 3.0	2.0	3.0	25	Open tops, bulk bins, crates & A15C-S2
	EOVX1	≤ 2.0 [1.0]	≤ 2.0	1.0	2.0	25	Open tops, bulk bins, crates & A15C-S2
	EOVX0	≤ 1.0 [0.0]	≤ 1.0	0.0	1.0	25	Open tops, bulk bins, crates & A15C-S2
	EOVX01	≤ 0.0 [minus 1.0]	≤ 0.0	minus 1.0	0.0	25	Open tops, bulk bins, crates & A15C-S2
A, B and C (all citrus)	EOVY2	≤ 2.0 [1.0]	≤ 2.0	2.0	2.0	20	Open tops, bulk bins, crates & A15C-S2
	EOVY1	≤ 1.0 [0.0]	≤ 1.0	1.0	1.0	20	Open tops, bulk bins, crates & A15C-S2
	EOVY0	≤ 0.0 [minus 1.0]	≤ 0.0	0.0	0.0	20	Open tops, bulk bins, crates & A15C-S2
	SC1*	≤ minus 0.5 [minus 1.5]	≤ 0.0	minus 1.5	0.0	16	Open tops, bulk bins, crates & A15C-S2

*Handling and temperature monitoring requirements apply according to PPECB protocol for the cold treatment regime code option (SC1).

Packaging requirement
The following cartons/packaging types are allowed:

- Telescopic cartons: only the A15C-S2 Supervent carton are allowed.
- No fruit wrapping is allowed, except alternating rows on the top layer for display purposes.
- Open display and IFCO plastic crates are allowed. However, if internal packaging (trays) is used, the trays must be ventilated.
- Bulk bins must be ventilated on the sides and bottom.

Shipments using the EOVX and EOVY codes

Only standard height pallets allowed.

- Pallets of fruit delivered at the cold store must be precooled to the *target temperature* or below (Table 1), before loading can commence (Digital records to be supplied to PPECB). Failure to do so will result in PPECB not authorizing the commencement of loading.
- PPECB will issue instructions to the Master of the Vessel when fruit can be discharged in the designated port in the EU.
- On completion of loading and before the Estimated Time of Departure (ETD), the final mates receipt per common or independent cooling deck/cooling compartment must be provided to PPECB.
- Prior to departure, the Master must supply PPECB with a full temperature set of readings (DAT, RAT, and pulp probes) for each deck/cooling compartment.
- Master of the Vessel is responsible for maintaining the required pulp temperature within the PPECB instruction letter for the duration of the voyage.

ANNEXURE 8

1. Interception of live FCM in the EU

1.1 On receipt of an official notification of an FCM interception, DALRRD will notify the producer and packhouse of the intercepted orchard. However, the implicated orchard may continue to export to the EU for the remainder of the season under the Options for which the fruit was eligible after PPECB inspection.

1.2 An investigation will be conducted and will include the orchard, Packhouse, PPECB inspection and the cold chain.

1.3 For remedial actions, see point 2 (Compliance Audit System).

2. Compliance Audit System

2.1 Citrus FCMSA compliance audits will be conducted on PUCs, PHCs, loading facilities and Exporters according to procedures as prescribed by DALRRD and will be conducted by a party as approved by DALRRD. Audits will be conducted when: 1) the Orchard, PHC, loading facility or Exporter is selected for audit according to risk profiling and 2) the entity is implicated in an EU FCM interception.

2.2 When compliance audits detect non-compliance, the corrective actions will be informed by the nature of audit findings, will be determine by DALRRD and can include but are not limited to the following.

2.3 Packhouse

The packhouse may be placed under curatorship until it has been demonstrated that the packhouse has successfully implemented prescribed corrective actions. The packhouse manager may be required to sign an undertaking to implement prescribed corrective actions within an agreed timeframe.

In the year following the PHC being implicated in an EU interception or a major non-compliance finding during audit, the packhouse will be subjected to on-site audit as a condition for DALRRD potentially approving (verifying) the PHC's registration application.

2.4 Production unit.

The PUC may be required to sign an undertaking to implement prescribed corrective actions within an agreed timeframe.

In the year following the orchard being implicated in an EU interception or a major non-compliance finding during audit, if the PUC's orchards are eligible for registration application, the PUC will be subjected to on-site audit as a condition for DALRRD potentially approving (verifying) the PUC's orchard registration applications.

3. De-registration procedure

3.1. The Producer may de-register the EU approved orchard on Phytclean during the export season.

3.2 De-registered orchard cannot be re-registered for the remainder of the export season.