INSPECTION OF FRESH FRUIT AND VEGETABLES (POST HARVEST) FOR MELON THRIPS

REVISION REGISTER

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Biosecurity Queensland

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1. PURPOSE

The purpose of this work instruction is to provide guidelines for the inspection of fresh fruit and vegetables for melon thrips. This instruction does not encompass specific protocol inspections for other pests or disease that may be required for some States or Territories.

2. SCOPE

This work instruction covers the requirements for the inspection of fresh fruit and vegetables requiring certification for freedom from melon thrips and movement from Queensland to another State of Territory within Australia by an **Authorised Inspection Person**.

3. REFERENCES

ICA-WI-02	*Guidelines for Completion of Plant Health Assurance Certificates*
ICA-38	*Inspection of Fruit and Vegetables (Post Harvest), Live Plants, Cut Flowers and Foliage for Melon Thrips*

4. DEFINITIONS

Accredited Certifier	means the person who holds accreditation under chapter 15 of the *Biosecurity Act 2014* to give Biosecurity Certificates.
Authorised Inspection Person	means a person who is authorised to conduct inspections on behalf of the business by having their name and specimen signature on a register of authorised inspection persons maintained by the business.
Assurance Certificate	means a *Plant Health Assurance Certificate* [CAF-16].
Authorised Signatory	means a person whose name and specimen signature is included as an Authorised Signatory on the Accredited Certifier's application for accreditation.
business	means the legal entity responsible for the operation of the facility and the ICA arrangement detailed in the Accredited Certifier's Application for Accreditation.
certified/certification	means covered by a valid *Plant Health Assurance Certificate* [CAF-16].
consignment	means a quantity of packed produce described on one Plant Health Assurance Certificate by a single consignee. A consignment may contain a number of lots.
DAF	means the Department of Agriculture and Fisheries.

end-point inspection	means the process by which a representative sample is drawn and inspected from the finalised consignment prior to certification.
facility	means the location where plants are assembled, inspected, securely stored, certified and dispatched.
homogeneous	means produce that is all of the same or similar kind or nature.
ICA	means Interstate Certification Assurance.
in-line inspection	means the process by which a representative sample of packed product is drawn from a lot and inspected during the processing and packing of the produce.
inspection	means the act of inspecting produce to determine if the entry conditions or melon thrips freedom requirements of the importing State or Territory have been met.
lot	means a quantity of homogeneous product assembled for inspection at one place at one time. A lot could consist of product from one or more growers/blocks/properties.
melon thrips	means all stages of *Thrips palmi* (Karny) including egg, nymph and adult.
MT	means melon thrips.
package	means the complete outer covering or container used to transport and market the produce.
packed product	means produce that has been packed into its final package. For live plants, final packaging may mean a plant(s) in a growing unit or a bare rooted plant.
produce	means fruits and vegetables, but excludes seeds, underground parts and dried or processed plant materials.
Plant Health Assurance Certificate	means a biosecurity certificate approved by the Accrediting Authority for the ICA Scheme [CAF-16].
thrips	means all stages of *Thrips* spp. including egg, nymph and adult.
unit (fruit and vegetables)	means a single fruit or vegetable, bunch, head/floret, stem or bunch of leaves.

5. GENERAL

This work instruction refers to key elements of the Interstate Certification Assurance Procedure *Inspection of Fruits and Vegetables (Post Harvest), Live Plants, Cut Flowers and Foliage for Melon Thrips* [ICA-38] that require further explanation to a task or activity. Persons responsible must ensure they refer to the relevant sections of the Operational Procedure before applying any task in this Work Instruction.

6. ACTIONS

6.1 Sampling Fresh Fruit and Vegetables for Inspection

6.1.1 Inspection Type

The **Authorised Inspection Person** shall inspect fresh fruit and vegetables by one of two types:

1. End-point inspection; or
2. In-line inspection.

6.1.2 Inspection Rate

The **Authorised Inspection Person** shall inspect fresh fruit and vegetables by end-point or in-line inspection at one of the following rates:

- 600 units; or
- 2% of the number of packages.

6.1.3 Factors to be Considered Prior to Taking a Sample for Inspection

An **Authorised Inspection Person** may be presented with a mixed consignment or lot from which they will be required to draw a sample and inspect.

Mixed consignments and lots present unique problems regarding homogeneity and require special consideration with regard to sampling.

The **Authorised Inspection Person** shall consider the following factors when making a decision on how to sample from a mixed consignment or lot:

- treatments (where known) that have been applied to control certain pests and diseases;
- history of previous melon thrips detections (where known) associated with a particular production area, produce type or grower;
- the quantity of a particular fruit or vegetable within the lot or consignment; and
- the number of different growers/packers associated with the lot or consignment.

6.1.4 Minimum Sample Size

A minimum of three (3) packages will be drawn when undertaking an inspection using the 2% sampling rate.

Where the **Authorised Inspection Person** identifies that the number of units in a consignment or lot is less than the required 600 units (i.e. pre-determined unit number inspection e.g. 600 units), the **Authorised Inspection Person** shall examine all units in the consignment.

6.1.5 Sampling from Punnets and Bulk Bins (2% Sampling Rate)

Individual punnets are considered as packages for the purposes of sampling.

When undertaking an inspection using the 2% sampling rate and where produce is presented in bulk bins or other large containers, the **Authorised Inspection Person** shall ensure that all produce in the bulk bin or container is drawn for examination for the purposes of sampling.

6.2 Sample Selection for an In-Line Inspection

An In-line inspection shall involve the selection and inspection of packed produce drawn from a lot and inspected during the processing and packing of the produce.

The **Authorised Inspection Person** shall sample packages at the predetermined inspection rate (refer 6.1.2 Inspection Rate) from the packing line and move the packages to the inspection facility for examination (refer 6.4 Examination of Produce).

The following are two examples of how to sample produce during an In-line Inspection.

Example A – In-line 600 Unit Inspection

An Authorised Inspection Person is presented with 200 field bins of tomatoes from one grower (A. Smith) of which three consignments consisting of 450 cartons each are to be consigned to Western Australia.

The Certification Controller of the packing shed advises the Authorised Inspection Person that the packing period to pack out that grower's tomatoes will be 3 hours. The Authorised Inspection Person calculates the rate at which the samples are to be drawn from the processing line to obtain a 600 unit sample as follows:

The Authorised Inspection Person calculates:

- ***3 hour packing period for 200 field bins from one grower (one lot)***
- ***600 units are to be drawn over a 3 hour packing period = 100 units per ½ hour***
- ***unit count per carton of tomatoes = approximately 60 to 80 units***
- ***a minimum of 2 cartons (final packaging) will need to be drawn every ½ hour from the processing line.***

The Authorised Inspection Person examines 100% of each unit within each sample package until the required 100 units have been reached for each interval. The Authorised Inspection Person shall not examine more than 100 units at each interval.

Note: The sampling rate selected has provided sufficient time to fully inspect the units as they are drawn during each period.

(Refer Attachment 1 for the completed Melon Thrips Inspection Record for Example A)

Example B – In-line 2% Inspection

An Authorised Inspection Person is presented with 200 field bins of tomatoes from one grower (A. Smith) of which three consignments consisting of 450 cartons each are to be consigned to South Australia.

The Certification Controller of the packing shed advises the Authorised Inspection Person that the packing period to pack out that grower's tomatoes will be 3 hours. The Authorised Inspection Person calculates the rate at which the samples are to be drawn from the processing line to obtain a 2% sample as follows:

The Authorised Inspection Person calculates:

- ***3 hour packing period for 100 field bins from one grower (one lot)***
- ***200 cartons per hour packed***
- ***600 cartons packed over a 3 hour packing period***
- ***one (1) in fifty (50) or 4 cartons (final packaging) per hour need to be drawn from the processing line***
- ***12 cartons inspected over 3 hour packing period***

The Authorised Inspection Person examines 100% of each unit within each sample carton.

Note: The sampling rate selected has provided sufficient time to fully inspect the units as they are drawn during each period.

(Refer Attachment 2 for the completed Melon Thrips Inspection Record for Example B)

6.3 Sample Selection for an End-point Inspection

End-point inspections are only carried out on consignments that have been finalised.

The **Authorised Inspection Person** shall sample packages at the predetermined inspection rate (refer 6.1.2 Inspection Rate) from the consignment and move the packages to the inspection facility ready for examination (refer 6.4 Examination of Produce).

The following are two examples of how to sample produce for an End-point Inspection.

Example C – End-point 600 Unit Inspection

An Authorised Inspection Person is presented with a mixed consignment of produce to be consigned to South Australia. The consignment consists of 344 cartons and comprises:

- ***72 cartons of tomatoes from grower/packer A. Smith;***
- ***56 cartons of rockmelons from grower/packer B. Brown;***
- ***144 cartons of button squash and 72 cartons of zucchini from grower/packer C. Blogs.***

The Authorised Inspection Person calculates that:

- ***A. Smith's 72 cartons represent 21% of the consignment;***
- ***B Brown's 56 cartons represent 16% of the consignment;***
- ***C Blogs' 144 cartons of (button squash) represent 42% and 72 cartons of (zucchini) represent 21% of the consignment respectively.***

The Authorised Inspection Person determines that the proportion of produce to be examined from each grower will be based on the percentage of each growers produce in the consignment.

The Authorised Inspection Person calculates the number of units to examine from each grower as follows:

The number of A. Smith's tomatoes to examine is 600 × 21% = 126 units

The number of B. Brown's rockmelons to examine is 600 × 16% = 96 units

The number of C Blogs' button squash to examine is 600 × 42% = 252 units, and the number of zucchini to examine is 600 x 21% = 126 units

The Authorised Inspection Person draws cartons at random from each grower until they have examined the required number of units. The Authorised Inspection Person ensures that at least one sample carton is taken from each grower.

(Refer Attachment 3 for the completed Melon Thrips Inspection Record for Example C)

Example D – End Point 2% Inspection

An Authorised Inspection Person is presented with a mixed consignment of 10 pallets of red and green capsicums which are to be consigned to South Australia. The consignment comprises:

Six (6) pallets of red capsicums and four (4) pallets of green capsicums from grower/packer J. Smith.

The consignment totals 720 cartons with each pallet comprising 72 cartons.

The Authorised Inspection Person calculates that there are:

- ***432 cartons of red capsicums representing 60% of the consignment; and***
- ***288 cartons of green capsicums representing 40% of the consignment.***

The Authorised Inspection Person determines that the proportion of packages to be sampled will be based on the percentage of red and green capsicums in the consignment.

The Authorised Inspection Person calculates the number of red and green capsicum sample packages to take as follows:

- ***2% × 432 packages = 9 packages (always round up to next whole number)***

- ***2% × 288 packages = 6 packages (always round up to next whole number)***

The Authorised Inspection Person draws sample packages at random from each pallet until they have 15 packages (9 red and 6 green capsicum packages). The Authorised Inspection Person ensures that at least one sample package is taken from each pallet.

The Authorised Inspection Person examines 100% of units within each sample carton.

(Refer Attachment 4 for the completed Melon Thrips Inspection Record for Example D)

6.4 Examination of Produce

The **Authorised Inspection Person** shall examine produce from sampled packages after drawing the required number of packages depending on the inspection type and rate (refer 6.1.1 Inspection Type and 6.1.2 Inspection Rate).

Where a 2% rate is nominated by the Certification Controller, an **Authorised Inspection Person** shall examine 100% of produce contained in each sample package.

Where a 600 unit rate is nominated by the Certification Controller, an **Authorised Inspection Person** shall not examine more than 600 units.

All produce examinations shall be carried out by an **Authorised Inspection Person**.

The **Authorised Inspection Person** shall:

1. move all sample packages (including bulk bins) to the inspection facility;

2. record information on the *Melon Thrips Inspection Record* in accordance with Section 7.6.1 of Interstate Certification Assurance Operational Procedure *Inspection of Fruits and Vegetables (Post Harvest), Live Plants, Cut Flowers and Foliage for Melon Thrips* [ICA-38].

3. place sample cartons (where possible) on the inspection bench;

   Where it is not possible to place the sample package on the inspection bench, the **Authorised Inspection Person** shall remove the produce from the packaging (e.g. bulk bins) and place on the inspection bench.

4. visually examine the required number of units (refer 6.1.2 Inspection Rate) within each sample package for melon thrips;

Whilst examining the produce the **Authorised Inspection Person** will rotate the unit so that 100% of the surface area is inspected. Particular attention shall be paid to areas that may provide shelter to pest such as the flower and stem end of the produce. Attention should also be given to the calyx on produce where it is still attached i.e. capsicums, tomatoes and strawberries. In addition, potential sites of pest infestation such as cracks, splits, bruises, rots and other blemishes shall be closely examined.

The **Authorised Inspection Person** will use, as necessary, a hand lens of at least X10 magnification or similar device to assist in the examination of the produce and detection of melon thrips.

In the case of leafy produce the **Authorised Inspection Person**, whilst holding onto the stem end, invert and shake/tap the produce over a clean white inspection tray for a minimum of 10 seconds to dislodge any insects. The **Authorised Inspection Person** will then inspect the tray for signs of melon thrips. This process is to be repeated until the required number of units has been inspected.

In the case of produce such as beans and peas, the **Authorised Inspection Person** shall place a single layer of the produce into a clean white inspection tray. The **Authorised Inspection Person** will then shake the tray for a minimum of 10 seconds in a manner that will dislodge any insects. The **Authorised Inspection Person** will then remove the produce and inspect the tray for signs of melon thrips. This process is to be repeated until the required number of units has been inspected.

The **Authorised Inspection Person** should ensure that any tapping and shaking during the inspection does not damage the sample unit.

Where packages are fully unpacked during the examination of the produce, the **Authorised Inspection Person** shall examine the sample package, including the lid for the presence of suspect melon thrips.

An **Authorised Inspection Person** may remove the peel/skin or cut produce that is being examined to investigate for the presence of melon thrips. All produce that has been peeled or cut must be discarded.

5. place the sampled units back into the package, where applicable, until the sample package has been fully repacked;

6. return the sample packages to the consignment or lot following the inspection;

7. record information on the *Melon Thrips Inspection Record* in accordance with Section 7.6.4 of Interstate Certification Assurance Operational Procedure *Inspection of Fruits and Vegetables (Post Harvest), Live Plants, Cut Flowers and Foliage for Melon Thrips* [ICA-38].

6.5 Suspect Melon Thrips Detection

The **Authorised Inspection Person** shall immediately advise the Certification Controller of the detection of suspect melon thrips. The **Authorised Inspection Person** shall take a sample and reject and segregate all produce in the consignment or lot until the sample results are returned to the business in accordance with Section 7.3.1 of Interstate Certification Assurance Operational Procedure *Inspection of Fruits and Vegetables (Post Harvest), Live Plants, Cut Flowers and Foliage for Melon Thrips* [ICA-38].

The **Authorised Inspection Person** shall determine by reference illustrations and photographs (refer Attachment 6 Identification of Melon Thrips) whether the sample is suspect melon thrips.

Should the Authorised Inspection Person determine the sample to be suspect melon thrips, the sample shall be submitted to an qualified entomologist in accordance with Section 7.7.1 or 7.7.2 of Interstate Certification Assurance Operational Procedure *Inspection of Fruits and Vegetables (Post Harvest), Live Plants, Cut Flowers and Foliage for Melon Thrips* [ICA-38].

If the suspect thrips is subsequently confirmed not to be melon thrips by the **Authorised Inspection Person**, all rejected product that is held in the consignment or lot may be reconsidered for certification provided all requirements of Operational Procedure ICA-38 have been met.

6.6 Sampling Suspect Melon Thrips

6.6.1 Taking the Sample

All suspect melon thrips samples must be taken and submitted to an qualified entomologist by an **Authorised Inspection Person**. Where possible, an **Authorised Inspection Person** should take more than one sample.

The **Authorised Inspection Person** shall take each sample by:

1. carefully retrieving the suspect melon thrips with an appropriate instrument i.e. brush, forceps or scalpel;

2. placing the suspect melon thrips in a specimen bottle that contains an appropriate preservative material i.e. methylated spirits;

   Where a suspect melon thrips is contained on produce, the produce or part of the produce with the suspect melon thrips must be wrapped in damp paper towel and placed into a plastic bag without a preservative material i.e. methylated spirits.

3. completing a Sample Submission Form in accordance with Section 7.7.3 of Interstate Certification Assurance Operational Procedure *Inspection of Fruits and Vegetables (Post Harvest), Live Plants, Cut Flowers and Foliage for Melon Thrips* [ICA-38] (refer Attachment 5 for correctly completed example) for each sample taken; and

4. placing the specimen bottle or produce (if applicable) along with completed sample submission form into a sealable plastic bag.

The **Authorised Inspection Person** shall forward the sample to an qualified entomologist within 24 hours of the sample being taken.

Where a suspect melon thrips sample cannot be delivered in person, the **Authorised Inspection Person**, or the **Certification Controller** should contact the qualified entomologist to determine the correct sample submission procedure.

6.7 Issuance of a Plant Health Assurance Certificate

Following examination of the produce, and when the **Authorised Inspection Person** is satisfied that all the conditions and restrictions associated with the produce described on the Melon Thrips Inspection Record have been met, the Authorised Signatory of the business shall issue a Plant Health Assurance Certificate in accordance with Interstate Certification Assurance Operational Procedure *Inspection of Fruits and Vegetables (Post Harvest), Live Plants, Cut Flowers and Foliage for Melon Thrips* [ICA-38] and *Guidelines for Completion of Plant Health Assurance Certificates* [ICA-WI-02].

7. ATTACHMENTS

Attachment 1	*Melon Thrips Inspection Record*	**(COMPLETED EXAMPLE)**
Attachment 2	*Melon Thrips Inspection Record*	**(COMPLETED EXAMPLE)**
Attachment 3	*Melon Thrips Inspection Record*	**(COMPLETED EXAMPLE)**
Attachment 4	*Melon Thrips Inspection Record*	**(COMPLETED EXAMPLE)**
Attachment 5	*Sample Submission Form*	**(COMPLETED EXAMPLE)**
Attachment 6	*Identification of Melon Thrips*	

MELON THRIPS INSPECTION RECORD

Date of Inspection *23/09/17*	Package Identification
Place of Inspection *Smith Produce* *Sweet Lane Stanthorpe 4380*	IP Number (if applicable) *Q9999*
Name of Authorised Inspection Person *A.I. Person*	Name & Address of Grower and or Packer (if multiple, list in comments/findings column) *A. Smith* *Sweet Lane Stanthorpe 4380*
Inspection Type ☐ End-point ☑ In-line	Produce Type (if multiple, list in comments/findings column) *Tomatoes*
Inspection Rate ☑ 600 Unit ☐ 2%	Total Number of Packages in Consignment/Lot (list separately if multiple commodities) *1050 cartons*
Notes:	PHAC No(s) *9993,9994,9995*

Package No.	Time sample taken (in-line only	Number of Units	Total Number of Units	Comments/Findings
1	*8:30am*	*80*	*80*	
2	*8:30am*	*20*	*100*	
3	*9:00am*	*60*	*160*	
4	*9:00am*	*40*	*200*	*1 rot - discarded*
5	*9:30am*	*55*	*255*	
6	*9:30am*	*45*	*300*	
7	*10:00am*	*68*	*368*	*1 cut - nil found*
8	*10:00am*	*32*	*400*	
9	*10:30am*	*77*	*477*	
10	*10:30am*	*23*	*500*	
11	*11:00am*	*61*	*561*	
12	*11:00am*	*39*	*600*	
13				
14				
15				
16				
17				
18				

Pass	✓	Fail		Signature of Authorised Inspection Person: *A.I Person*

Actions resulting from a suspected detection of a quarantine pest

ATTACHMENT 1

MELON THRIPS INSPECTION RECORD

Date of Inspection *23/09/17*	Package Identification
Place of Inspection *Smith Produce* *Sweet Lane Stanthorpe 4380*	IP Number (if applicable) *Q9999*
Name of Authorised Inspection Person *A.I. Person*	Name & Address of Grower and or Packer (if multiple, list in comments/findings column) *A. Smith* *Sweet Lane Stanthorpe 4380*
Inspection Type ☐ End-point ☑ In-line	Produce Type (if multiple, list in comments/findings column) *Tomatoes*
Inspection Rate ☐ 600 Unit ☑ 2%	Total Number of Packages in Consignment/Lot (list separately if multiple commodities) *1050 cartons*
Notes:	PHAC No(s) *8993,8994,8995*

Package No.	Time sample taken (in-line only	Number of Units	Total Number of Units	Comments/Findings
1	*8:15am*	*88*	*88*	
2	*8:30am*	*81*	*169*	
3	*8:45am*	*80*	*249*	*2 cut - nil found*
4	*9:00am*	*85*	*334*	
5	*9:15am*	*72*	*406*	
6	*9:30am*	*66*	*472*	
7	*9:45am*	*85*	*557*	*1 cut - nil found*
8	*10:00am*	*67*	*624*	
9	*10:15am*	*81*	*705*	
10	*10:30am*	*84*	*789*	
11	*10:45am*	*56*	*845*	
12	*11:00am*	*83*	*928*	
13				
14				
15				
16				
17				
18				

Pass	✓	Fail		Signature of Authorised Inspection Person: *A.I Person*

Actions resulting from a suspected detection of a quarantine pest

MELON THRIPS INSPECTION RECORD

Date of Inspection *23/09/17*	Package Identification
Place of Inspection *Bale Fresh Produce C Block Brisbane Market 4106*	IP Number (if applicable) *A. Smith Q9898B. Brown Q 9991, C. Blogs Q9992*
Name of Authorised Inspection Person *A.I. Person*	Name & Address of Grower and or Packer (if multiple, list in comments/findings column)
Inspection Type ☑ End-point ☐ In-line	Produce Type (if multiple, list in comments/findings column)
Inspection Rate ☑ 600 Unit ☐ 2%	Total Number of Packages in Consignment/Lot (list separately if multiple commodities) *Tomato 72 cartons, Rockmelon 56 cartons, Squash 144 carton, Zucchini 72 cartons*
Notes:	PHAC No(s) *8991*

Package No.	Time sample taken (in-line only	Number of Units	Total Number of Units	Comments/Findings
1		*88*	*88*	*Tomato A Smith Sweet Lane Stanthorpe 4380*
2		*38*	*126*	*Tomato A Smith Sweet Lane Stanthorpe 4380*
3		*20*	*146*	*Rockmelon B Brown Chef Rd Bowen 4805*
4		*20*	*166*	*Rockmelon B Brown Chef Rd Bowen 4805*
5		*20*	*186*	*Rockmelon B Brown Chef Rd Bowen 4805*
6		*20*	*206*	*Rockmelon B Brown Chef Rd Bowen 4805*
7		*16*	*222*	*Rockmelon B Brown Chef Rd Bowen 4805*
8		*161*	*383*	*Button Squash C Blogs Mill Lane Bowen 4805*
9		*91*	*474*	*Button Squash C Blogs Mill Lane Bowen 4805*
10		*67*	*541*	*Zucchini C Blogs Mill Lane Bowen 4805*
11		*59*	*600*	*Zucchini C Blogs Mill Lane Bowen 4805*
12				
13				
14				
15				
16				
17				
18				

Pass	✓	Fail		Signature of Authorised Inspection Person: *A.I Person*

Actions resulting from a suspected detection of a quarantine pest

MELON THRIPS INSPECTION RECORD

Date of Inspection *23/09/17*	Package Identification
Place of Inspection *Bale Fresh Produce* *C Block Brisbane Market 4106*	IP Number (if applicable) *Q9999*
Name of Authorised Inspection Person *A.I. Person*	Name & Address of Grower and or Packer (if multiple, list in comments/findings column) *J.Smith* *Green Lane Bowen 4805*
Inspection Type ☑ End-point ☐ In-line	Produce Type (if multiple, list in comments/findings column) *Capsicum*
Inspection Rate ☐ 600 Unit ☑ 2%	Total Number of Packages in Consignment/Lot (list separately if multiple commodities) *720 cartons*
Notes:	PHAC No(s) *8884*

Package No.	Time sample taken (in-line only	Number of Units	Total Number of Units	Comments/Findings
1		*35*	*35*	
2		*42*	*77*	
3		*41*	*118*	*2 cut - nil found*
4		*40*	*158*	
5		*40*	*198*	
6		*44*	*242*	
7		*45*	*287*	*1 cut - nil found*
8		*47*	*334*	
9		*41*	*375*	
10		*41*	*416*	
11		*41*	*457*	
12		*37*	*494*	*2 cut - nil found*
13		*38*	*532*	
14		*44*	*576*	
15		*33*	*609*	
16				
17				
18				

Pass	✓	Fail		Signature of Authorised Inspection Person: *A.I Person*

Actions resulting from a suspected detection of a quarantine pest

SAMPLE SUBMISSION FORM

AUTHORISED INSPECTION PERSON DETAILS

Authorised Inspection Person Name	C. Smith	IP Number of Accredited Business	Q9898
Name and address of grower/packer or IP number of the produce that sample was taken	B Brown Chef Rd Bowen 4805	Type of produce & quantity from which sample was taken	Type of produce: Rockmelon Quantity of produce: 350 cartons
Date sample was taken	23/09/17	Date sample was submitted to Diagnostician	23/09/17
Contact Telephone No	07 3310 2810	Email/Fax No	07 3310 2810

SAMPLE DETAILS

Type of Sample: (e.g. insect, leaves, seeds)	insect
Diagnosis request: (e.g. identify insect, disease, seed)	Confirm whether melon thrips or not
Sample details: Describe where, when and how the sample was taken. Include the type produce or crop the sample was taken from, who took the sample and why diagnosis is required.	Sample taken by C Smith at P Block Rocklea Markets on Rockmelons. Diagnosis required for market access to South Australia

DIAGNOSIS DETAILS - For Diagnostician Use Only

Date Sample Received	23/09/17	Date Sample Diagnosed	23/09/17
Diagnosis Result	Confirmed as Melon Thrips (*Thrips palmi*)		
Method of Diagnosis	Microscope		
Comments			
Diagnostician Name	B. Bugg	Diagnostician Position	Senior Entomologist
Signature	B. Bugg	Date	23/09/17

IDENTIFICATION OF MELON THRIPS

Melon Thrips (*Thrips palmi* Karney)

Host Range

Melon thrips have a wide range of fruit, vegetable, ornamental and weed hosts but are best known as a pest in crops of Cucurbitaceae and Solanaceae. Crops most affected by melon thrips include beans, capsicum, chilli, cucumber, eggplant, melons, okra, pumpkin, tomato, silverbeet, squash, watermelon and zucchini. Weed hosts include pigweed, amaranthus, gomphrena and potato weed as well as a variety of weeds of the cucurbit and solanum families such as Devil's Fig (*Solanum torvum*).

Detection and Identification

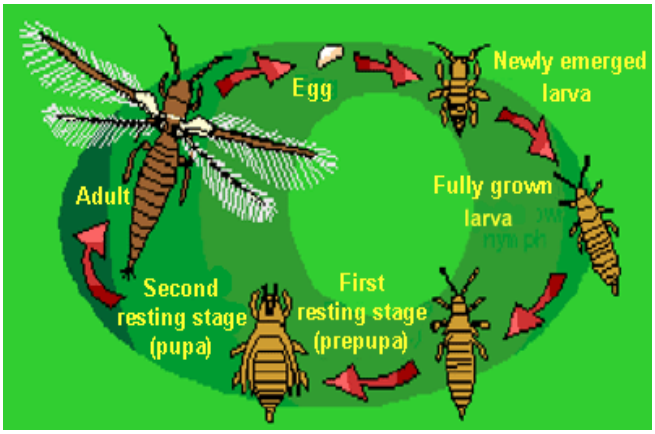
Melon thrips injure infested plants by killing surface cells with their piercing and sucking mouthparts. Feeding normally occurs on foliage but flowers and fruit may be preferred feeding sites on some plant species. Leaves become yellow, white or brown and then crinkle and die. Heavily infested crops often acquire a silver to bronze colour.

Damaged terminal growth may be discoloured, stunted and deformed. Fruit may abort or develop scar tissue as a result of melon thrips feeding under the calyx of expanding fruit.

Melon thrips are very small and resemble many other common thrips species and therefore require specialist identification. Samples of suspected melon thrips must be submitted to an qualified entomologist for identification.

Life Cycle

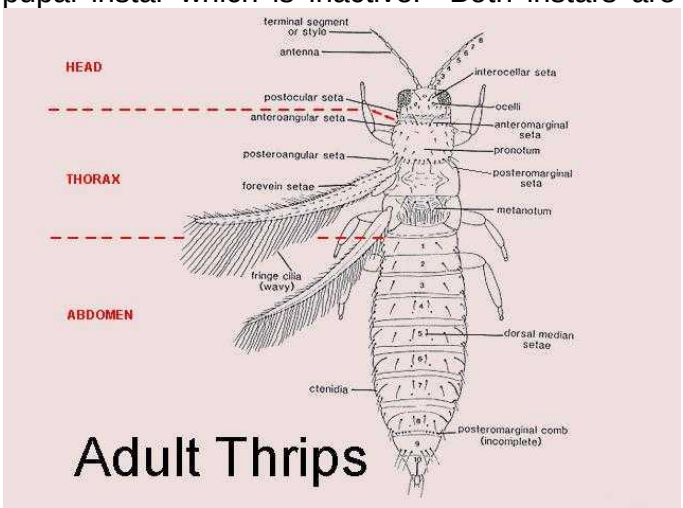
LIFE CYCLE OF THRIPS



Eggs are kidney-shaped, colourless to pale yellowish-white and measure only 0.25 mm in length. Eggs are normally deposited in leaf tissue in a slit cut by the female but can also be deposited in flowers and fruit. Females can produce up to 200 eggs but average approximately 50 per female.

Larvae resemble the adult in general body form though they lack wings and are smaller. There are two instars or stages during the larval development period. Larvae feed in groups, particularly along the leaf midrib and veins, usually on older leaves. On completion of the larval stage the insect normally descends to the soil or leaf litter where it constructs a small earthern chamber as a pupation site.

Pupa progress through two instars, the prepupal instar which is nearly inactive and the pupal instar which is inactive. Both instars are non-feeding. The prepupae and pupae resemble the adult and larval forms except they possess wing pads.



Adults are winged, pale green to orange in colour, cigar-shaped and measure from 0.8 to 1.3 mm in length. A black line, resulting from the juncture of the wings, runs along the back of the body. Adults tend to feed on young growth and are most commonly found on the undersides of the leaves but can also occur on flowers and fruits.

IDENTIFICATION OF MELON THRIPS

Adult Melon Thrips
(Photo: C Freebalm, DAFF Qld)

Melon Thrips Larvae
(Photo: Zenkoko Noson, Kyoiku Kyoiku Co. Ltd, Japan)

Melon Thrips Damage – Capsicum Fruit
(Photo: University of Florida, USA)

Melon Thrips on French Bean
(Photo: University of Florida, USA)

Melon Thrips Damage – Capsicum Plant
(Photo: University of Florida, USA)

ATTACHMENT 6