

Crop Monitoring (Crop Scouting) a Citrus Orchard for evidence of fruit fly infestation (WI-08)

Work Instruction 1.0

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1. Purpose

The purpose of this Work Instruction is to document the required steps for inspecting (Crop Monitoring) orchards by a trained **Crop Monitor**, the collection of suspect samples and their delivery to the Department for formal identification to meet the documented requirements of the CA-30 Operational Procedure.

2. Scope

This procedure covers the crop monitoring (“scouting”) of citrus orchards on properties which are currently accredited under the CA-30 Compliance Arrangement and covered by a current Property Plan.

It also covers the collection, labelling, dispatch and temporary storage of samples once collected.

Crop Monitoring (Scouting) is conducted on a per-block basis by a **Crop Monitor** trained by the accredited business to check for evidence of potential fruit fly infestation in citrus orchards accredited under CA-30.

3. Reference

Table 2 Reference	
Item	Source
Pre-harvest Bait Spraying & Monitoring & Post-Harvest Packing, Grading & Inspection of Citrus (CA-30) Operational Procedure	Interstate Certification Assurance (ICA) and Compliance Arrangement (CA) operational procedures and application forms - PIRSA

4. Definitions

Table 3 Definition of terms and phrases

Phrase	Definition
block	A single block or unit of trees consisting of the same variety of citrus and being managed as a unit.
Department	Department of Primary Industries and Regions
Colour break	The process whereby citrus peel undergoes “colour break” which is characterised by the conversion of chloroplasts to chromoplasts resulting in the peel starting to change colour indicating ripening has commenced.
Crop monitor (or crop scout)	Someone trained by the accredited business to recognise signs of fruit fly infestation in citrus fruit and recorded on the businesses training register
Property Plan	A document completed by a business accredited under Part A or Part B of the CA-30 Operational Procedure indicating the location and variety of citrus covered under the CA-30 Operational Procedure.

5. Equipment

The following equipment is required for crop monitoring.

- 10 x magnification hand lens or other similar device;
- Zip-loc bags to store suspect sample containers;
- Small plastic or otherwise sturdy, sealable container to place samples into;
- Knife sufficient to cleanly slice open suspect citrus fruit for inspection;
- Cutting board or other suitable surface for cutting fruit safely;
- Suitable instrument for safely taking the sample without damaging it (such as forceps, a small paintbrush or wooden toothpick);
- Paper towel;

- Foam esky with an ice pack or other method of keeping samples cool (not frozen) while crop monitoring; and
- A refrigerator to keep samples cool before collection.

6. Records

The following records are required for crop monitoring:

- Crop Monitoring record (See CA-30 Operational Procedure); and
- A copy of each Property Plan to easily identify each block for recording purposes.

7. Procedure

Crop monitoring must commence 12 weeks before harvest or at colour break (whichever happens earlier) and take place weekly (every 7 days).

- Inspect a minimum of ten randomly selected citrus trees on each accredited block with one additional tree for every hectare above 10 hectares. This would mean that for a 15 hectare block of citrus trees, a total of 15 trees would be sampled.
- Visually inspect a minimum of 60 pieces of fruit on each tree, targeting fruit with soft spots, blemishes or sting marks (can appear as a pin prick which may be circled by a lighter colour or a dark, softened spot) that could indicate the presence of fruit fly larvae. Also target early ripening and damaged fruit.
- Remove suspect fruit from the tree and carefully cut and examine suspect fruit for the presence of eggs, larvae or any other signs of fruit fly activity using the 10 x magnification hand lens if required. See the photographs below for some examples of evidence of fruit fly infestation.



Figure 1. sting mark on mandarin (left), soft spot indicative of fruit fly activity (centre) and fruit fly larvae (right).

- When cutting, place fruit on a hard or solid surface (never cut fruit while it is in the palm of your hand). Cuts should be less than 1 cm wide right across the width of the fruit to ensure the interior of the fruit is exposed and can be thoroughly examined.
- If the flesh inside the host material is discoloured (turning brown) and soft, this can be an indication that larvae are present. The larvae are white and when they first hatch from the eggs, they are around 1mm long. They can grow up to 8mm in length. Take care, as fruit fly larvae can “jump” up to metre by curling their bodies and “flicking” away.
- Check each cut surface thoroughly to ensure there are no larvae, eggs or any other evidence of fruit fly present.
- Record your findings on the **Crop Monitoring Record** (See CA-30 Operational Procedure) for each tree inspected and indicate ‘nil’ under the results column if nothing is found.

In the event fruit fly larvae, damage or eggs are suspected, follow the steps in Section 8, 9 and 10 of this Work Instruction.

8. Handling of suspect fruit fly samples

Samples (suspect infested host material and larvae) should be placed into sealable containers with absorbent paper placed in the bottom of the container to soak up any excess liquids. Ensure a separate sample container is used for each tree samples are collected from.

The **Crop Monitor** shall take each sample by

- Carefully removing the suspect fruit fly with an appropriate instrument i.e., a small brush or forceps to avoid damaging the eggs, larvae or sample;
- Placing the sample in a hard container (plastic or other sturdy material) along with the piece, or part of the fruit it was collected from, wrapped in a damp (not wet) paper towel;
- Label the sample as per section 9 below;
- Place the container containing the sample inside a Ziploc bag; and
- Place any sample inside an esky with an ice pack to keep samples cool.

9. Labelling the sample

The container should then be labelled with:

- Date the sample was collected;
- Crop Monitor / Scout name;
- Accredited businesses IP number;
- Block name or number;
- Location of the tree (for example, 67th tree in from the western end of row 3); and
- GPS coordinates of the location (if available).

Within 4 hours, place the sample in a refrigerator (**not freezer**) until the sample can be collected by, or delivered to PIRSA.

10. Reporting suspect sample to PIRSA

- The **Crop Monitor** must inform the **Certification Controller** of any suspect samples as soon as possible (no longer than 4 hours). Any citrus from the affected property plan already picked, in transit or at the packing shed will need to be quarantined and held until PIRSA can confirm if the larvae is or is not fruit fly.
 - Contact the Riverland Market Access team on 1800 255 556 (staffed 24/7) in the first instance to inform them of the suspect detection and to arrange collection of the sample.
 - Keep the sample on the top-shelf of the refrigerator **never** in the freezer until collection or dispatch.
1. The Department will advise the **Certification Controller** in writing as soon as the result of identification is known. Until that time, any fruit from the affected block must remain quarantined unless other arrangements have been made in writing with PIRSA.