

# ***COBRAM & DISTRICT FRUIT GROWERS ASSOCIATION***



## **COBRAM AND DISTRICT QUEENSLAND FRUIT FLY OUTBREAK ACTION PLAN**

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# COBRAM AND DISTRICT QUEENSLAND FRUIT FLY OUTBREAK ACTION PLAN

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## 1. Introduction – Reasons for this Outbreak Action Plan

### i. Aim

To ensure that pest fruit flies do not impact adversely on commercial and backyard production, export and consumption of a good supply of safe, high quality fruit and vegetables in the Cobram and District region of Victoria.

### ii. Reasons

A QUEENSLAND FRUIT FLY OUTBREAK ACTION PLAN for the Cobram & District target area needs to be in place when freedom from Queensland fruit fly is achieved and approved as such by relevant State, Commonwealth and export Governments.

Benefits from the achievement and maintenance of pest freedom include:

- More fresh commodities produced
- Higher quality of commodities produced
- Reduced pesticide residues in fruit
- Reduced pesticide use and contamination in the environment
- More commodities exported
- Reduced costs of production
- Improved returns to growers (domestic and commercial)
- Improved demand for Cobram and District produce
- Improved flow-on effects to communities within the Cobram and District region

### iii. Background

The Cobram & District Fruit Growers' Association (CSFGA), with support from the Victorian State Department of Economic Development, Jobs Transport and Resources (DEDJTR), Horticulture Innovation Australia Ltd (HIAL), the Moira Shire Council and the Berrigan Shire Council, has commenced strategies aimed at reducing the impact of Qff on its horticultural production and productivity, both commercial and domestic.

Cobram is a town with surrounding smaller towns, villages and farming areas situated on the Murray River along Victoria's border with New South Wales. Cobram is situated on the northern border of the Goulburn Murray Valley (GMV). The town of Barooga, situated close to Cobram, but in NSW, is part of this project.

Over the last few years the Queensland fruit fly (*Bactrocera tryoni*, Froggatt) (Qff) has invaded and established permanent populations in regions of Victoria and southern NSW where, previously, it was unable to. Whether global warming, insect acclimatisation, reduction in the number and range of approved pesticides or combinations of these are at fault it is of little consequence as the pest now impacts heavily on these regions. The presence, or likely presence, of Qff in these areas has caused significant adverse impacts on both horticultural productivity and horticultural exports.



Qff attacks most fruits and fruiting vegetables and exists only in Eastern Australia (and a few Pacific island nations). For these reasons, this pest is classified as a critical quarantine pest by authorities in Qff-free parts of Australia and overseas markets. Qff impacts on horticultural production (volume of high quality produce) and productivity (returns from marketing produce). The value of commercial horticultural production, alone, in the GMV is at least \$500 million p.a. (Bureau of Statistics, 2012). Domestic production, jobs, tourism and other goods and services associated with horticulture also add significant value to the region.

The Cobram & District Fruit Fly Outbreak Action Plan, described in this document, is based on the fact that Qff has become established in most parts of this region.

There are several parts to this work:

- a) Eradicate (create a Pest Free Area – PFA), or, at least, reduce Qff populations to a level that is sustainably lower than the economic threshold this creating an Area of Low Pest Prevalence (ALPP).
- b) Set up accredited benchmark safeguards that will ensure that Qff re-entry into this region is prohibited.
- c) Set up approved strategies for identifying and managing new outbreaks and recovering PFA or ALPP status (i.e. the QUEENSLAND FRUIT FLY OUTBREAK ACTION PLAN).

Currently, the first part has commenced with a series of workshops and information sessions aimed towards community education and involvement. These are being implemented by the Regional Fruit Fly Co-ordinator and others in the Moira Shire Council. A fruit fly trapping grid, following the approved Queensland Fruit Fly Code of Practice (COP), has been set up, and is being managed by, IK Caldwell with support from this project. This is a grid of male-targeted Qff traps deployed at 400m intervals in urban areas and at 1000m intervals in commercial horticultural production areas in and around Cobram and Barooga.

As monitoring data show reduced trapping numbers over time, work in the CDTA will transition into fruit fly containment activities and then into exclusion activities following internationally accepted procedures. Following accepted procedures will facilitate approval by interstate and international markets.

There are two distinct procedural aspects that need to be addressed separately to some extent: fruit fly management under:

- a) Urban and
- b) Commercial orchard situations.

These will be addressed in the descriptions of control options that are available for each situation, the Council By-Laws that need to be set up, communications strategies and the flow chart of responsibilities.



#### iv. The Cobram & District Fruit Fly Committee (CDFFC)

The Cobram & District Fruit Fly Committee (CDFFC) was established in ??? by agreement between the Victorian Department of Economic Development, Jobs, Transport and Resources (DEDJTR) and the Cobram & District Fruit Growers Association. The following terms of reference were established for the CDFFC:

- To provide input to DEDJTR.
- To revise the existing fruit fly outbreak contingency plans for the Cobram & District target area (CDTA).
- Develop a local education program to assist in the prevention of the movement of fruit into the CDTA and the public response to an outbreak.
- Develop accredited training programs for local eradication team supervisors.
- Review the adequacy of the existing fruit fly trapping grid in the CDTA.
- Establish appropriate cost sharing arrangements between industry and government.

The Committee comprises representatives of the major horticultural industries. It is seen as representing the interests of producers, packers and regulatory authorities in relation to the threat of fruit fly to the CDTA.

**NOTE: THE ABOVE SECTION NEEDS TO BE CHANGED IN ACCORDANCE WITH ACTUAL, AGREED, CDFFC TERMS OF REFERENCE**

## 2. Statements of fact, related objectives and desired outcomes

### i. Eradication/ suppression of existing pest fruit flies

At any time of the year, one or more of the following life stages of Queensland fruit fly will be present in the Cobram and District target area: eggs, larvae, pupae and adults.

*The objective of the Outbreak Action Plan is to design, implement and evaluate steps to reduce the population of Queensland fruit fly eggs, larvae, pupae and adults within the CDTA to zero (i.e. eradication) or to below an economically damaging threshold.*

### ii. Prevention of entry of pest fruit flies

Queensland fruit fly will enter the CDTA from outside the target area as eggs, larvae, pupae and adults. Eggs and larvae will enter via human traffic (locals returning to the area and visitors to the area such as travellers, food transporters). Pupae will enter via infested soil, such as nursery plants in pots/ bags, or in fruit packing material via food transporters. Adults will enter as hitchhikers in vehicles and via natural processes such as wind and cross-border migration.

*The objective of the Outbreak Action Plan is to identify, design and establish processes to prevent the entry of Queensland fruit fly into the CDTA and, in the case of incursion, set up, establish and evaluate steps to return the CDTA to the desired state (zero or low economic threshold).*



iii. Desired outcomes

Desired outcomes for the CDTA are sustained intrastate, interstate and international acceptances of Queensland fruit fly eradication (i.e. formation of a Pest Free Area) or reduction to less than economic threshold (i.e. formation of an Area of Low Pest Prevalence) from the Cobram and District target area.

**3. Glossary and Definitions**

i. Description of target area (i.e. Cobram and District)

Subject to a more prescriptive description, the CDTA is all land and water within a 6km radius of Cobram Post Office. To be correct procedurally detailed descriptions of boundaries to the CDTA are required. These can be geographical co-ordinates, names of roads, water courses, etc that constitute as boundaries or a mixture of descriptions. **These details need to be added after consultation with the CDFGA Board.**

ii. Suppression, eradication, Fruit Fly Area of Low Pest Prevalence (FF-ALPP), Fruit Fly Pest Free Area (FF-PFA), Fruit Fly Pest Free Place of Production/ Pest Free Production Site (FF-PFPP/ FF-PFPS), winter window, others

**Table 1. Glossary of Definitions and Abbreviations**

Adapted from the *Code of Practice for Management of Queensland Fruit Fly* (Anon, 1996); *ISPM No. 5 – Glossary of Phytosanitary Terms* (International Plant Protection Convention, 2005); *Effective engagement: building relationships with community and other stakeholders; Book 1: an introduction to engagement* (Department of Sustainability and Environment, Victoria, 2005).

Area	An officially defined country, part of a country or all or parts of several countries.
Area-wide Management (AWM)	Controlling or otherwise managing a pest where more than one property and/ or groups/ businesses within a local community are targeted rather than on an individual orchard-by-orchard basis.
Australian Pesticide and Veterinary Medicines Authority (APVMA)	<a href="https://apvma.gov.au">https://apvma.gov.au</a> The Australian Government agency responsible for the sale and use of agricultural and veterinary products that are demonstrably safe to chemical handlers and applicators and surrounding people and stock, consumers and the environment.
Bait	A mixture of a fruit fly attractant (usually a food-based product e.g. protein autolysate) plus a toxicant (may be a synthetic pesticide such as malathion or an eco-friendly pesticide such as spinosad) plus water. This mixture is then applied by sprays from a ground vehicle or aurally to the crop. Baits may also contain gelling agents, other feeding

	adjuvants, etc.
Certified/certification	Covered by a valid Plant Health, Plant Health Assurance Certificate or AQIS Transfer Certificate/documentation providing validation.
Cobram & District Fruit Fly Committee (CDFFC)	(this definition needs confirmation/ clarification)
Cobram & District target area (CDTA)	All lands and water within a 6km radius of Cobram Post Office (this definition needs confirmation/ clarification)
Code of Practice (COP)	Code of Practice for Management of Queensland Fruit Fly
Control	Suppression, containment or eradication of a pest population (FAO 2007)
Corrective actions plan	The corrective actions plan will include the actions to be followed if a specified pest level is exceeded in an FF-ALPP, Pest Free Place of Production or Pest Free Production Site. It must include: <ul style="list-style-type: none"> <li>• delineating surveys;</li> <li>• suspension and reinstatement of status;</li> <li>• control strategies; and</li> <li>• corrective actions.</li> </ul>
Cover spray	When “cover spray” is referred to in this document: solution of chemical pesticide applied to all above-ground parts of a crop
Department of Economic Development, Jobs, Transport and Resources (DEDJTR)	<a href="https://economicdevelopment.vic.gov.au">https://economicdevelopment.vic.gov.au</a>
Eradication	Application of phytosanitary measures to eliminate a pest from an area.
Establishment	Perpetuation, for the foreseeable future, of a pest within and area after entry.
Exclusion netting	Mesh material that can cover individual fruit, fruiting branches, the entire plant or groups of plants so that air and light can penetrate to the fruit but fruit flies are unable to access the fruit surface for oviposition.
Exotic	Not native to a particular country, ecosystem or eco-area (applied to organisms intentionally or accidentally introduced as a result of human activities).
FAO	Food and Agriculture Organization
Fruit Fly Area of Low Pest Prevalence (FF-ALPP)	An area, whether all the country, part of a country, or all or parts of several countries, as identified by the competent authorities, in which a specific fruit fly pest occurs at low levels and which is subject to effective surveillance, control or eradication measures (ISPM No. 22, 2005, ISPM No. 29,

	2007 and ISPM No. 30, 2008).
Fruit Fly Pest Free Area (FF-PFA)	An area in which the target fruit fly species does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained (ISPM No. 4, 1995 and ISPM No. 26, 2011 and ISPM No. 29, 2007).
Fruit Fly Pest Free Place of Production (FF-PFPP)	Place of production in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained for a defined period (ISPM No. 10, 1999).
Fruit Fly Pest Free Production Site (FF-PFPS)	A defined portion of a place of production in which a specific pest does not occur as demonstrated by scientific evidence and in which, where appropriate, this condition is being officially maintained for a defined period and that is managed as a separate unit in the same way as a Pest Free Place of Production (ISPM No. 10, 1999).
Host, host plant, host product	Plants or plant parts whose fruit are able to host Queensland fruit fly eggs and larvae (and, sometimes, pupae) so that mature, adults result.
Incursion	An isolated population of a pest recently detected in an area, not known to be established, but expected to survive in the immediate future.
Infested Area	An area in which Qff is endemic or has become permanently established and/or where it can be readily found.
Interstate Certification Assurance scheme (ICA)	<a href="http://www.interstatequarantine.org.au/producers/interstate-certification-assurance/">http://www.interstatequarantine.org.au/producers/interstate-certification-assurance/</a>
ISPM	International Standard for Phytosanitary Measures
Larva(e)	The immature, wingless, feeding stage of an insect that undergoes complete metamorphosis. Immature fruit flies are also called maggots.
Male Annihilation Technique (MAT)	The practice of deploying MAT blocks, pads, cordellitos and other substrates for a mixture of a male-attracting parapheromone (e.g. cue lure for Qff) plus toxicant (e.g. malathion or fipronil). These MAT devices reduce the population of males in the region thereby reducing the ability of females to lay fertile eggs resulting in a diminution of an effective Qff population.
Monitoring	An official ongoing process to verify phytosanitary situations.
Monitoring survey	An ongoing survey to verify the characteristics of a pest population.
Official	Established, authorised or performed by a National Plant Protection Organization

Outbreak	A recently detected pest population, including an incursion, or a sudden significant increase of an established pest population in an area (FAO 2012).
Outbreak area	The circular area extending around the discovery point with a 1.5 km radius, and which includes the outbreak zone
Outbreak centre	Single discovery point or the epicentre of several discovery points, which are no more than 1 km apart.
Outbreak zone	An inner circular area of 200 m radius from each outbreak centre.
Pest	Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products
Phytosanitary measure	Any legislation, regulation or official procedure having the purpose to prevent the introduction and/or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests.
Reinstatement	An area under suspension due to Qff outbreak which was previously designated as a pest free area or area of low pest prevalence, or similar, can have its area freedom status reinstated once a series of steps indicating Qff suppression has been achieved. Reinstatement occurs after approval by State and Commonwealth Government authorities. Evidential data include zero wild (i.e. not sterile, in the case when SIT is used) flies found in the suspension area for 1 Qff generation period plus 28 days or 12 weeks, whichever is the longer (COP).
Queensland Fruit Fly (Qff)	Queensland fruit fly ( <i>Bactrocera tryoni</i> , Froggatt)
Stakeholder	Individual and/or group with an interest in an organisation's activity and/or outcomes. They may be internal or external to the organisation and may be direct or indirect beneficiaries of the activity or outcome (e.g. processors, packers, wholesalers, exporters, transport companies)
Standard Operating Procedures (SOP)	Procedures developed by states and territories that describe in detail the principles of operation, design features and standards required for equipment, and responsibilities and actions of personnel for the management of Qff within relevant the state or territory.
Sterile Insect Technique (SIT)	Method of pest control using area-wide inundative release of sterile insects to reduce reproduction in a field population of the same species (FAO 2012). In terms of fruit fly it is used to eradicate or suppress a wild fruit fly population. With the release of large numbers of sterile fruit flies, it aims to inundate the wild fruit fly population, minimising the possibility of wild fruit flies mating to

	produce viable eggs.
Suppression	The application of phytosanitary measures in an infested area to reduce pest populations.
Suspension area	In an outbreak where there are a number of discovery points that are less than 1 km apart detected within a two week period, the epicentre of the discovery points (or the outbreak centre) should be used to define the outbreak boundary. The fruit fly pest free status is revoked for susceptible hosts within a 15km radius from that epicentre or outbreak centre. If the spread of discovery points is more than 1 km apart, the suspension area is increased to 30km. This area could be varied after considering all circumstances of the outbreak in consultation with other state and territory authorities and DA.
Systems approach	The integration of different pest risk management measures, at least two of which act independently, and which cumulatively achieve the appropriate level of protection against regulated pests (FAO 2007).
Trap	A fruit fly lure trap, approved by the accrediting authority, that attracts and retains adult flies (male and/or female) for the purpose of monitoring fruit fly populations or for fruit fly control.
Treatment	Official procedure for the killing, inactivation or removal of pests or for rendering pests infertile (FAO 2007).
Winter window	A time of the year when fruit fly infestation is non-existent and the environment of the importing area is not conducive to fruit fly establishment.

- iii. What constitutes a fruit fly outbreak? How is an outbreak delimited? How is an outbreak shown to be eradicated?

### **Outbreak**

For a FF-PFA

An outbreak is notified when one fertile female, one larva or if a total of five male and unfertilised female Queensland fruit fly are detected within a 1km radius of each other, within a two week period (HPC Industrial Report #3, 1991). Refer to current COP for updates as they come to hand.

For a FF-ALPP

Where the specified level of low pest prevalence is exceeded the entire FF-ALPP may be subject to suspension. However, where the affected area within the FF-ALPP can be clearly identified and delimited then a partial suspension may be applied to the delimited area.

### **Delimiting an outbreak in a designated FF-PFA or FF-ALPP**



Under the COP an outbreak is delimited into circular zones with distances from the discovery point (where a single trap or host plant registering outbreak conditions) or epicentre (where the total number of flies trapped/ found in multiple traps and/or host plants that are no more than 1km apart registers outbreak conditions) depending on various regulated eradication/ suppression activities. These zones include:

- Outbreak zone: an inner area of 200m radius from each discovery point
- Outbreak area: the outbreak zone plus the area out to a radius of 1.5km from each discovery point
- Suspension area/s or zone/s: Zones in which area freedom is suspended. The size of the zone depends on regulations set by the market/s affected

Delimiting an outbreak in a designated Area of Low Pest Prevalence (ALPP)  
Official designation for ALPPs is not fully set up as yet. ISPM No. 22, 29 and 30 are international standards that should to be considered for ALPPs.

#### ***Reinstating FF-PFA***

Following COP requirements reinstatement of PFA status is dependent on the absence of fruit flies or larvae within the outbreak area or, for some markets, the outbreak zone. Reinstatement of PFA status for the affected area occurs one generation and 28 days or 12 weeks (whichever is the longer) after the last wild fly is captured in the traps, or the last larva is found. Generation times are calculated using an accumulated day-degree model. Reinstatement dates for international trade vary according to importing country requirements. Seek advice from local Departments of Primary Industries for advice on specific markets.

#### ***Reinstating FF- ALPP***

Official requirements for ALPPs are not fully set up as yet. ISPM No. 22, 29 and 30 are international standards that should to be considered for ALPPs. An example is as follows:

Adapted from *Background paper on the proposed restructure of the Riverina FF-PFA to include FF-ALPP*, Riverina Citrus (2011) - Reinstatement of the FF-ALPP can be achieved when:

1. The level of Qff in the suspension area no longer exceeds the specified level of low pest prevalence, and this condition has been maintained for a period of 4 weeks (28 days) prior to reinstatement and
2. Any critical non-conformance that resulted in the suspension of the FF-ALPP, or part thereof, has been corrected and verified to the satisfaction of the NPPO.

#### **4. THE RISK - Survey of fruit fly host crops in Cobram and District**

- i. **Species, varieties, degree of fruit fly risk and timing of fruit fly susceptibility**

A survey of the urban area of the CDTA was carried out in 2017 to map the occurrence of known and potential fruit fly host material. Data recorded from this survey included the



types and, where possible, the varieties of each fruit fly host found and at what time of the year they are most likely to be infested with Qff.

There are many types of known and potential fruit fly host material planted/ growing throughout the Cobram and District target area. They are growing in gardens, reserves, untended rental properties, abandoned orchards, along water courses and roadsides and others. They all pose a risk to fruit fly management efforts. The level of risk posed by each of these hosts was also recorded in the survey.

A similar survey of areas such as farms, reserves, orchards and other areas outside urban, built-up areas but within the CDTA needs to be done.

#### ii. Biology and ecology of Queensland fruit fly

The adult fly is not often seen but if there are some around and you stay still for a while near a fruiting tree you should see them fly in and land on a leaf or fruit.

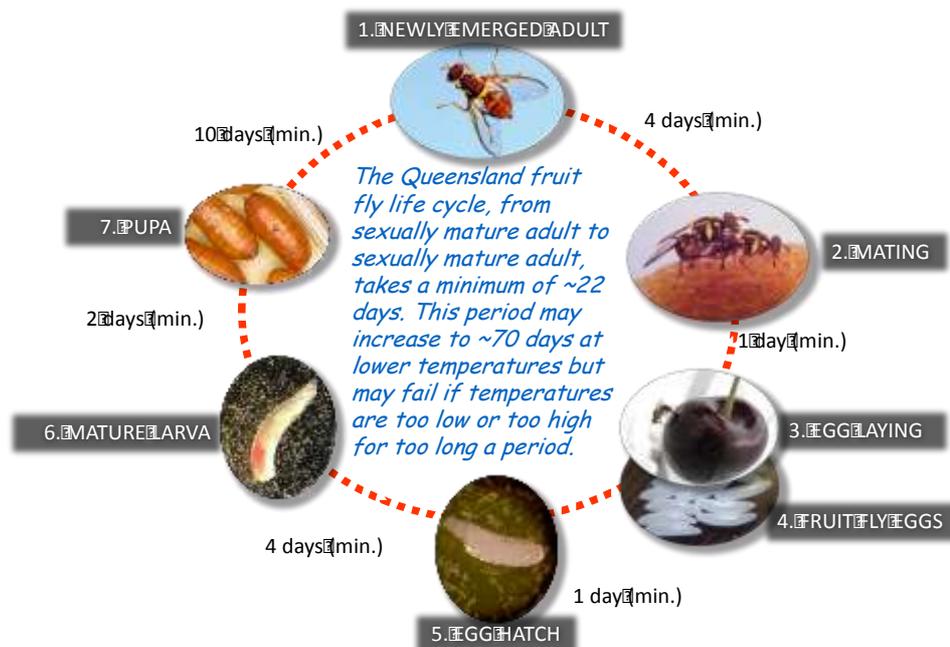
Generally adult Qff range in size from 7mm long and 14mm wide with wings outstretched to 8mm by 16mm.

The adult Qff is reddish brown to dark brown and more wasp-shaped than shaped like a house fly having a narrow waste between the thorax and the abdomen. The thorax is decorated with two shoulder patches, two long stripes and various patches on each side. Patches and stripes can range from bright yellow, through cream to, less commonly, white.

In the orchard, the adults fly away from their overnight resting place when it is warm, and/or sunny enough to find water and food. Females start to look for a suitable fruit to lay her eggs into and males start to look for a suitable place from which to “call” or attract potential female mates to. During the middle of the day, depending on temperature and relative humidity, both males and females rest under large broad leaves. Later in the day the females travel to the males and mating may occur in the late afternoon, just before dark.

Males attract females by positioning themselves in a suitable tree. Such trees may have fruit on them or may be just large and dark, and therefore, cool, humid and safe. Often several males will pick the same tree and join in together to attract females. They do this by emitting a sex pheromone that they release from their bodies and beat with their wings to disperse it on the breeze. The sound of their wings is called “stridulation” and females will use the stridulation to home in on the males after initially detecting the scent of the sex pheromone. Once the female enters the site of the group of males – called the “lek” - the males then proceed to perform courtship dances. Quite often the male is on the topside of a well-lit leaf and the female under it. She can “see” the shadow of the male’s movements through the leaf. She then chooses her mate based on the courtship dance.

Adult Qff need water which they obtain from dew, nectar and rain; sugar from nectar and other plant exudates and protein from yeasts and fungi which grow on plant surfaces, bird droppings, etc. Female flies need protein to help their eggs to mature. Male flies need protein to become sexually mature.



### Adults

Usually, male and female Qff mate at about 4 to 10 days after breaking out from their pupae. After mating the female Qff can lay fertile eggs within a day. She can lay more than 2,000 eggs in her lifetime after just one mating. If the female is to survive a cool winter she may have to resorb her fertilised eggs for energy as she will not move very far in the cold. To lay more eggs, then, she will have to mate again when the weather warms up again in spring.

The female will mate between one and three times during her lifetime. Males will mate many times.

### Eggs

Depending on the temperature in and around the fruit Qff eggs will hatch in 24 to 48 hours from egg laying. If the wound around the eggs dries out the eggs may desiccate and not hatch at all. This often happens in avocados and purple passionfruit. Eggs are laid close to the fruit surface, usually less than 4mm deep because that's about how far the female can extend her ovipositor (the "stinger"). If the fruit's skin is very thick, such as you may get in coastal oranges, and the eggs are laid only in the skin and not in or near the flesh the eggs can desiccate and die. If there are many flies trying to infest just a few fruit one fly will lay her eggs into the hole another fly has made. The first fly's eggs may then be pushed deeper into the fruit than 4mm.



Eggs are injected into the fruit accompanied by cultures of several fungi and bacteria that attack fruit tissues and cell walls, digesting them down to simpler, more easily ingested proteins and amino acids. Newly hatched larvae feed on these.

### *Larvae*

The newly hatched larvae are close to the fruit surface but as they ingest more fruit tissue they head down towards the fruit centre. If the fruit is very juicy the larvae may not penetrate very far because they need to have access to air to enable them to breathe. If you open an infested, but very juicy, fruit you can see all the larvae together with their heads buried into the juicy flesh and their tails poking up out of the ooze. Their posterior spiracles, which they use to breathe, are located there.

Fruit fly larvae go through three stages inside the fruit. Depending on temperature and what sort of fruit they are infesting, the first stage larvae, or first instar, lasts about 2 or 3 days. During this time the larvae feed and grow from about 1.2mm to about 2.2mm. When they reach this length they stop feeding and moult. They shed their skin like a snake and a new one hardens. They are now at the second instar larval stage. Second instars grow from 2.3mm to about 4mm over about two days and they tend to be as close to the centre of the fruit as possible. Then they stop feeding again and moult into the third instar. The third instars grow from 4mm to 8mm over another two to three days. The third instars now move to the fruit surface and by the time they reach it it is time to hop out and pupate in the soil or leaf litter below their host plant.

Larvae live inside fruit for 6 to 20 days or more depending on temperature and what sort of fruit they are growing in. Cherries, for instance allow fruit flies to grow quickly but some apple varieties make them grow quite slowly.

### *Pupae*

Pupae remain in the soil for 8 to 15 days before the adult fly breaks out, again depending on the temperature. Some observers have found pupae remaining viable for a month or two in the ground or even in mummified fruit in winter.

### iii. Location

Maps of the urban area of the Cobram and District target area showing the location of known and potential Qff host plants are growing can be sourced from the CDFFC.

### iv. Current monitoring trap grid

#### a. Description

Fruit fly traps of the Australian modified Lynfield type, charged with the male-attractant, cue lure, and the insect toxicant, malathion, have been constructed, deployed, maintained and examined in and around the CDTA in conformance with COP requirements as much as possible. Basically, these traps are placed at about 1.2m from the ground in evergreen and/or fruiting hosts on a 400m grid in urban areas and 1000m grid in rural areas. They



were assessed for trapped Qff every two weeks from June 2017 to 1 October 2017 and, after that every week, according to COP requirements. Data on numbers of fruit flies trapped are recorded by the trapper and transferred to a central database for tabulation, dissemination and assessment.

According to COP requirements, traps are monitored on a weekly basis during the period November to May and fortnightly during the period June to October. Male-targeting Qff traps are recharged 2 times per year, during the months of September and January. Trap bases are replaced every 12 months during September or earlier if necessary.

The COP describes the specifications of approved traps.

**b. What is it used for, who looks after it and how is information disseminated?**

The trapping grid is used as a sentinel system to monitor for new incursions of Qff into this area and to monitor the presence and size and changes in sizes of the Qff populations existing within the Cobram and District target area.

Data from the trapping grid are used, also, to detect “hot spots” where fruit fly populations are expanding at a greater than normal rate. “hot spots” should be identified as rapidly as possible and managed via approved fruit fly control methods so that Qff populations do not expand further.

IK Caldwell personnel are responsible for trap deployment, maintenance, collection of flies, identification of flies and recording, saving and dissemination of relevant data. Data are disseminated via a chain of e-mails to a range of local stakeholders, the Victorian State Government and scientists.

Locations of traps on the IK Caldwell Qff trapping grid can be sourced from the CDFFC.

**c. What are the results of trapping?**

Results show that Qff is found within the Cobram and District target area. Qff is not spread in equal numbers across the target area but some sites, which appear to be potential “hot spots”, need to be monitored closely.

## **5. THE STRATEGY - Available fruit fly mitigation programs**

The ideal outcomes of effective Qff management are:

- a) To remove or otherwise treat adequately all Qff host plants so that the Qff life cycle is disrupted irreparably and
- b) To ensure no Qff exotic to the CDTA enter the CDTA and establish new Qff populations.



Following is a list of some available options that either singly or, preferably, in combination can be employed for effective Qff management.

- i. Strategies for fruit fly host management/ removal from households, feral, untended, government-owned land and commercial fruit growing areas within Cobram and District – Hygiene

Untended fruit fly host plants act as reservoirs for new fruit fly populations which become problematic in succeeding fruiting seasons. These include feral, self-sown and volunteer host plants along roadsides, creek and channel banks, picnic areas, waste dumps and others; untended host plants found in vacant blocks, council land, rental properties, abandoned orchards, national parks, vacant properties for sale, caravan parks and other public and private areas; host plants that are otherwise unwanted.

Management of fruit fly risk in these areas should be the responsibility of the owners (**check legal requirements**). Management takes the form of:

- Whole host plant removal – herbicide treatment, cutting down, grubbing out, slashing
- Stripping of fruit from host plants – removal of fruit ideally prior to its being attractive to egg-laying Qff or, otherwise, stripped and placed in containers (e.g. plastic bags) from which Qff cannot escape which are then treated (insecticide, incineration, freezing, solarisation)
- Chemical removal of flowers and fruit - Chemicals are available to reduce or eliminate fruit set on ornamental trees and shrubs. Spraying cannot guarantee 100% effectiveness. Follow specific label directions for application rates and safety information. (**check for APVMA registered products**)
  - Ethephon
  - Naphthalene acid (NAA)
  - Carbaryl (trade name Sevin) — this insecticide is harmful to bees
  - Naphthalene-acetamide (NAD)
  - 6-benzyladenine (6-BA)
- Pesticide application – Pesticides can be applied as cover sprays, soil drenches and as components of baits, lures, bait stations, traps, etc. Precautions must be followed. Some chemical pesticides are approved by the APVMA for use on certain crops under specified situations. Use of these may be restricted to commercial production meaning that urban or home garden uses are not approved. Any chemical use against Qff in any situation must be approved by the APVMA. Residues of some chemicals approved for use in Australia may not be accepted in some of our export markets.

It is the responsibility of the grower, home gardener, or, otherwise, user, of pesticides to ensure that the product they are considering to use is approved by the APVMA and/ or the export market. (**check for APVMA registered products**)



- Trapping - Traps can be deployed in addition to those used for monitoring purposes. However, use of extra traps may impact adversely on the monitoring grid.

Both male-targeting and female-targeting traps are available on the commercial market. Often, they are used in conjunction with other fruit fly mitigation technologies such as fruit fly baits. (check for APVMA registered products)

- Baiting – Fruit fly baits are, typically, mixtures of water, fruit fly feed (e.g. high protein yeast by-products) and an insect toxicant (e.g. malathion, chlorpyrifos, DDVP) which is sprayed onto target plants (fruit fly host or refuge plants) on a weekly basis or more often after rainfall or under high fruit fly population pressure. Fruit fly baits target both male and female Qff. Baiting has been shown to be a very effective Qff control strategy but needs to be done strictly according to label instructions. Commercially available baits based on spinosads (e.g. Dow Agroscience Success®) offer organically approved Qff management options. (check for APVMA registered products)

For a number of reasons, including privacy, financial hardship, apathy, nostalgia and sensitivity to chemicals, ensuring owner responsibility for Qff control is not always achievable.

## ii. Community engagement

(Adapted from *Cobram & District Fruit Growers Association – 5 Year Action Plan 2016-2021*)

### a. Awareness programs and activities

- Community Workshops - 4 meetings in Cobram
- Workshops for Commercial horticulture in the region about best practice fruit fly management and the latest in research
- Fliers in rates notices
- Communications, Facebook, newspapers, TV, radio - Community awareness campaign at key times of the year including newspaper, radio and local TV advertising, media releases and through social media
- Contact Schools to develop an Education program in local schools focused on trapping and fruit fly awareness
- Brochure for Real Estate agents and landlords on managing fruit trees in rental properties
- Cobram and District Fruit Growers website
- Updates to local Industry websites to ensure latest fruit fly information available
- Council to apply to VicRoads for approval for road signs; Hang road signs – 60 signs

### b. Qff management based on hygiene

- Online Tree Register for risk host trees on public and private land
- Negotiate with public and private landholders to ensure they are aware of their obligations in relation to unmanaged host trees including abandoned orchards and



report issues with host trees to relevant authorities. Focused on voluntary participation in tree removals.

- Undertake actions to resolve issues and gain compliance related to abandoned orchards that are identified as a fruit fly risk
- Undertake actions to resolve issues and gain compliance related to neglected hosts in home gardens
- Build awareness of control required by growers on channel banks and easements not owned by Goulburn Murray Water
- Engage contractors to remove identified trees
- Other brochures/ leaflets that may be needed:
  - Initial leaflet
  - Baiting advice note
  - Visiting note
  - Spraying advice note
  - Fruit stripping note
  - Tree removal note
  - Fruit fly ID Farmnote

### iii. Male Annihilation Technique (MAT), extra trapping – male and female targeted lures, bait stations, traps

(Adapted from *Scoping study on the damages inflicted by fruit flies on West Africa's fruit production and action plan for a coordinated regional response* - Italtrend, June 2008). This approach to fruit fly control involves combining a suitable parapheromone lure Qff with a suitable pesticide in order to lure and kill the flies. The mixture is either absorbed onto wicks placed in traps, from which the attracted insects do not escape, or soaked into plywood, wood or fibre board blocks or pads. The size of these blocks is usually approximately 50mm x 50mm x 10 to 12.5mm. In the Pacific islands coconut husk blocks of similar dimensions have been used as an alternative and lengths of 6-ply cotton string 30 to 45cms in length soaked with parapheromone have also been used in the Torres Straits Islands.

The parapheromone that is specific to Qff is cue lure (4-(p-acetoxyphenyl)-2butanone or 4-(3-oxybutyl)-phenyl acetate).

A modified approach using spots of cue lure mixed into an inert gel can be applied to vegetation (SPLAT-MAT®) as an alternative to bait blocks.

BactroMAT®, with cue lure and fipronil (toxicant) impregnated compressed cardboard fibre is a commercially available version of the MAT pad. Bugs for Bugs® uses cue lure and malathion soaked dental wicks in their traps. Biotrap® uses fibrous gel pads which are impregnated with cue lure by itself (to be used in conjunction with DDVP Blocks) or in combination with malathion. There are other products in addition to these few.

Cue lure can be mixed with a toxicant such as malathion or DDVP or placed in a trap separately from the toxicant. If a sticky panel (covered, for example, with Tanglefoot®) is



used the toxicant can be dispensed with. Some traps (e.g. Fly Bye Fly Fruit Fly Lure® capture flies with water rather than sticky compounds or toxicants.

Many trap types can be used, ranging from the State Government authorised Australian modified Lynfield trap to commercially available traps from Biotrap, Bugs for Bugs, Searle's and others. Under the COP, at present, the Lynfield version is recommended for State approved monitoring programs.

iv. **Baiting programs – what types are available and what are the likely costs? How are they carried out and who does it?**

The most often used approach to the area-wide control of fruit flies using baits, involving the deployment over large areas of protein hydrolysate/autolysate bait sprays containing malathion, is an approach sometimes called bait application technique (BAT). At orchard scale bait sprays are applied using spraying equipment to the sides of trees or bushes, avoiding the fruit and trying to penetrate the foliage. The application may be intermittent or involve one side of a row of trees only. In eradication programs or maintenance of fly-free zones in the USA, bait sprays with malathion may be sprayed from the air.

A more recently developed alternative to malathion in baits is the GF-120® bait (Success®) developed by Dow Agrosiences, which uses spinosad as the toxicant.

Bait sprays can be applied in spots by hand with a knapsack sprayer equipped with a high-volume nozzle. Generally, however, baits are applied from a quad bike equipped with motorised spray vat, wand and nozzle which is hand-held or mounted to the vat and sprays to a set volume per hectare. Depending on the crop, bait sprays may be placed out as discrete 100mL spots, or in bands of bait along the row. In eradication programs or maintenance of fly-free zones in the USA, bait sprays with malathion may be sprayed from the air.

When pest populations are high (as judged by monitoring traps) smaller bait spots can be applied at more frequent intervals, keeping the overall quantity of active ingredient the same per hectare.

A gel formulation for dispensing baits and lures on the foliage of fruit trees known has been developed by ISCA. This is referred to as Specialised Pheromone and Lure Application Technology (SPLAT). The formulation is prepared from powder with the required lure and toxicant for different pests. The inert biodegradable gel matrix retains the chemicals and resists rain.

v. **Movement of fruit fly host material into and out of Cobram and District – restrictions, certifications, etc**

- Backyard fruit
- Commercial fruit



- Nursery plants
- Roadblocks
- Disinfestation

#### vi. Biological control

Biological control strategies may be used as part of an area-wide management program. However, they are unlikely to be used on their own as they affect only a small part of the Qff population.

- Parasitoid wasps
  - Enhancement of naturally occurring parasitoids
  - Augmentative release of laboratory reared parasitoids
- Augmentoria

These are cage-type structures into which fallen and unwanted fruit are placed with the idea that the cages entrap non-parasitised flies but allow the exit of parasites into the orchard. Should be used as a component of area-wide management.
- Natural predation

Maintenance of conditions that allow proliferation of natural enemies such as other insects (e.g. robber flies), birds (chickens, guinea fowl and many others), reptiles and spiders will reduce the impact of fruit flies and other pests. Should be used as a component of area-wide management.

Fallen fruit may be cleaned up quite effectively by running poultry, sheep or cattle through the orchard after harvest.

#### vii. Sterile Insect Technique (SIT)

The Bateman Report (HPC, 1991) was instrumental in the re-commencement of studies on improving the efficacy of, and putting into practice, the sterile insect technique (SIT) against Qff.

Insects are laboratory bred in large numbers then sterilised by gamma irradiation or low energy X irradiation and released into areas infested with wild populations. Initial releases are timed to slightly precede the commencement of seasonal outbreaks of wild insects. Periodic (generally weekly) releases ensure young and viable sterile insects are on hand at all times to intercept newly emerged wild adult fruit flies.

The sterile insect release method relies on the release of enough sterile insects to flood the existing wild population thus out-competing fertile insects in mating. If the ratio of sterile to fertile insects is high enough matings between fertile insects cease leading to the eventual eradication of the insect from the targeted area. If quarantine restrictions are efficiently enforced in that area then the insect disappears, otherwise a regular program of releases of sterile insects is necessary.

Basic research on the sterilisation, competitiveness and dispersal of gamma sterilised



Queensland fruit fly commenced in Australia in 1975. A successful eradication campaign against Queensland fruit fly concluded in Western Australia in 1990. SIT has been used routinely against outbreaks of Queensland fruit fly and Mediterranean fruit fly in South Australia since 1986 to the present.

#### viii. Exclusion

Technologies such as netting can be used to cover orchards, trees, branches or individual fruit effectively separating fruit from fruit flies. There are many types available commercially. Use of exclusion netting should be monitored closely as they are known to cause lessening of light availability to the plant and its fruit and increases in other pests and diseases.

- Whole or part orchard netting
- Tree netting
- Branch covers
- Fruit covers

#### ix. Cover sprays, aerial spraying

In cases where fruit fly numbers or damage to fruit caused by fruit flies or where export protocols require it, cover spray pesticides are available. However, some sprays available for use in commercial orchards are banned from use in urban areas and in home gardens. The APVMA, produce store, DEDJTR representatives and your local Fruit Fly Coordinator will assist in providing advice on APVA approved pesticides.

#### x. How/ when to decide on which fruit fly mitigation to use

Generally this can be achieved by following the COP. There needs to be a meeting and communication strategy set up to facilitate these discussions and their resolutions in a timely manner.

#### xi. Proving efficacy, reinstatement

As per the COP and discussed elsewhere in this document.

#### xii. Phytosanitary treatments allowed/ required for interstate/ international trade

Refer to the COP and the ICA.

#### xiii. Data sheets required

Adapted from the Ord River Irrigation Area Mediterranean Fruit Fly Contingency Plan (Keals et al., 2009).

- A single form where information of baiting, property inspection, fruit stripping and cover spraying can be entered by field operatives.
- Material safety data sheets for:
  - Malathion
  - Chlorpyrifos
  - Cue lure



- Protein autolysate
  - Lure blocks
  - Other pesticides/ pesticide uses
  - A list of hosts for Qff separated into favoured host, known host and possible host.
  - A list of exempted produce and acceptable disinfestation techniques.
  - A Farmnote with photos and biology of key pest species.
  - A single advice note that can be adapted for varying situations such as fruit inspection or cover spraying.
  - An Infonote on the program, the actions that will be taken, responsibilities of householders and farmers, what produce can or cannot be moved, and what quarantine zones are in place.
- xiv. **Consumables, their suppliers, safety data sheets, approvals for chemical use**
- Traps and associated lures, toxicants
  - Baits
  - Cover sprays
  - Safety data sheets for chemicals
  - Other pest controls e.g. netting, fruit bags

## 6. **THE RESPONSIBILITIES – Who is responsible for each activity?**

The following groups and activities need to be identified and addressed as part of setting up the Outbreak Action Plan. All stakeholders, beneficiaries, managers and personnel involved in carrying out these activities should be identified and have clear lines of communication identified and established. These include strategies for identifying, contacting and dealing with affected or at-risk groups and also potential support groups/ personnel. Some are:

- Growers, packinghouses
- Householders/ home gardeners/ land owners
- Fruit sellers and other vendors, farmers' markets, fruit transporters
- Nurseries
- Abandoned orchards, rental properties, road sides, banks of water courses and dams, vacant blocks
- Official and unofficial rubbish dumps
- Caravan parks and other places popular with tourists
- Council, State government, Commonwealth government
- Media and communications, Information dissemination – urban and commercial
- Others - citizen scouts, training, community gardeners, schools, community groups, interested/ concerned groups or individuals
- Know the law, community rights, considerations re health, safety and the environment
- Setting up associated Council By-Laws, need for enforcement
- Road signage, honesty bins for voluntary fruit disposal



## **7. THE PLAN - COBRAM AND DISTRICT FRUIT FLY OUTBREAK ACTION PLAN**

### **i. OUTBREAK DETECTION**

If a Queensland Fruit Fly (Qff) Pest Free Area (FF-PFA), Area of Low Pest Prevalence (FF-ALPP), Pest Free Place of Production (FF-PFPP) or Pest Free Production Site (FF-PFPS) are achieved within the Cobram & District target area (CDTA) it is suggested that the Code of Practice for the Management of Queensland Fruit Fly (COP) be followed.

This will require State Government approval and be subject to audits, compliance and reporting requirements and other details that the State Government can provide.

Basically, male-targeting Qff traps, of the type/s approved by the Commonwealth Government (see the COP for details) are deployed according to COP stipulations. These traps are constructed, charged with male lure and pest toxicant, deployed, maintained, re-charged, replaced and assessed for flies trapped according to the COP.

Traps must be able to be identified uniquely. GPS-based systems are common. This allows trap locations to be mapped, as required by relevant authorities. Other data that need to be added include trap number and address, in what type of tree it is hung, dates of deployment, re-charging, replacement and monitoring as well as the number of flies found at each monitoring (including zero captures).

These traps are deployed on different grid sizes depending on their location: every 400m within urban areas and every 1000m in rural areas within the CDTA.

Reporting systems must be set up so that they are sent to relevant authorities (e.g. State and Commonwealth Government, local government, trap operators and, if necessary, growers and exporters. Reports, including data on empty traps, are to be sent on a regular (i.e. weekly or fortnightly) basis.

A Qff outbreak occurs when a certain number of male flies, female flies, eggs, larvae or pupae are found within the CDTA within a certain timeframe (see COP for details). An example of triggers for an outbreak declaration is:

- 2 male flies in the same, or adjacent traps within two weeks OR
- 1 gravid female fly OR
- 1 egg, larva or pupa

Movement of Qff host plant material (susceptible fruit and vegetables as well as potted plants with fruit and soil) must be restricted unless approved certification is supplied which shows the product has been treated in an approved manner or has originated (and not passed through an area where Qff is established, endemic or under Qff outbreak conditions, unless approved fruit protection e.g. meshed carton vents, pallet shrink wrap).



## ii. OUTBREAK RESPONSE

If any of the triggers for outbreak declaration, mentioned above, are reached the COP requires a certain set of response be implemented. Firstly, notification of the outbreak trigger must be forwarded to relevant authorities in addition to notification that the Outbreak Action Response has been initiated.

The location and size of the outbreak must be delineated assisted by the deployment of supplementary traps (e.g. 16 extra traps are placed in a grid around the discovery point or outbreak epicentre). These traps are monitored twice a week and the outbreak area may, as a result of trappings, be increased in size. Reporting on trap captures (positive and negative) to relevant authorities is required twice-weekly. These reports will form part of the application for pest freedom reinstatement at a later date.

The outbreak zone, outbreak area and suspension area must be described and mapped. Certain activities such as information leaflet drops to residents/ owners of properties within these areas, visits to owners adjacent to the discovery point (or epicentre) letting them know their rights and what is happening, need to occur. Leaflets should also describe how to harvest, pick up and dispose of unwanted fruit.

Fruit stripping or tree removal may be recommended based on the size (number of flies, area of the outbreak).

Baiting with a mixture of protein autolysate/ hydrolysate plus a toxicant (usually this is malathion or organically-approved spinosad-based products). Baiting would have to be carried out every week or more often if it rains.

The movement of produce out of the outbreak area, or suspension area, unless it has been treated with an approved postharvest treatment in an approved facility with correct certification, will be prohibited while the area is under outbreak conditions. The COP details approved phytosanitary treatments. The Interstate Certification Assurance scheme (ICA) details other conditions required for interstate trade.

Restrictions on the entry of fruit fly host material already in place (for area freedom status) must be reinforced during the period under outbreak conditions.

### a. Responses in urban vs rural areas

If a Qff outbreak occurs in an urban area of the CDTA it is likely that the resulting suspension area (as stipulated by the COP) will take in commercial production areas. At present, it is difficult to envisage separation of urban and rural areas with regard to Qff incidence especially while suspension areas required under the COP and, hence, by our interstate and overseas trading partners, remain at 15km or 30km (depending on specific markets).

Due to legal differences, variations in availability of suitable pesticides, concentration of different fruit fly host species, microclimate, and other issues strategies for fruit fly



management will vary between urban areas and commercial production and rural areas. These differences need to be identified and managed.

#### b. URBAN OUTBREAK

- CDTA representative talks to owner/s of property or properties at the discovery point or outbreak epicentre letting them know the importance of the find to the rest of the community and how they can help clear it up (tree-removal, garden hygiene, availability of approved chemicals, fruit fly exclusion techniques, baiting, early harvest, etc). Information on how to dispose of fruit correctly will also be disseminated. Owner's rights should also be made known to them as well as the legal actions the Council or State Government have available. **These legal actions need to be ascertained.**
- CGTA response personnel set up supplementary trapping on a grid, as stipulated by the COP, and organise personnel to manage these traps and report on trap captures twice a week. They will also delineate the outbreak area, outbreak zone and suspension area as per the COP.
- CDTA community liaison personnel will set up two-way community information systems with affected people and businesses within the outbreak area, outbreak zone and suspension area.
- Overall CDTA management will notify relevant stakeholders and State and Commonwealth Government authorities that a Qff outbreak has been declared, that the Outbreak Action Plan has been implemented and that more frequent reporting of trap results will occur. CDTA management will also organise restriction of the movement fruit fly host material into and out of the suspension area.

### **ACTION PROCESS FOR URBAN QFF .....and questions that need to be addressed.....**

1. What is the scope of the management of urban outbreaks required by the Cobram & District Fruit Growers Association? If fruit fly freedom or low pest prevalence is, at some time in the future, granted to the Cobram & District target area (CDTA) then it is likely that the Qff Code of Practice (COP) will need to be followed. This needs to be discussed as the COP can be very severe on commercial orchards and their exports if they are situated within 15km of an outbreak centre – even if the outbreak occurs within a nearby town.
2. Print information leaflets/ handouts about what householders and urban business owners can do to help reduce Qff from further impacting neighbouring gardens and orchards.
3. Print list of things householders can do to control FF. Traps, baits, orchard hygiene, exclusion netting, fruit stripping, early harvest, tree removal, garlic spray repellent.



4. Arrange with trap, lure, toxicant supplier/s to have supplementary trap kits on hand. What does the trap kit contain? How many traps? How to deploy trap kit? Usually, 16 supplementary traps are deployed around the outbreak centre or epicentre (if more than one trap in positive, or eggs, larvae, pupae or adult females are found) at 400m intervals. This may be modified according to the needs and scope of the Cobram & District Fruit Growers Association.
5. Arrange with suppliers to have on hand fruit fly baits, exclusion netting, pesticides approved for household garden use and other Qff control material.
6. Monitoring traps. Are the IK Caldwell (IKC)/ Moira Shire Council traps being retained for the foreseeable future? Will IKC staff continue to monitor these traps while traps are deployed?

Trappers will need certification of some approved type for identification of Qff adults in traps to ensure records are approved by Australian and overseas' regulatory authorities.

Traps need to be checked every week from September through May and fortnightly from June through August. Resulting data, including all zero trap captures, need to be recorded and saved for future Fruit Fly - Pest Free Area or Fruit Fly Area of Low Pest Prevalence applications for the region.

7. Search for stung fruit, eggs, larvae, pupae and adult females.

This should be carried out as it can give early warning of outbreaks and delimit outbreak areas. Maps of potential Qff host plants, data on when these plants are likely to fruit as well as historic Qff hot-spot locations could be used to streamline time and personnel. Who is likely to be carrying out this duty? How often?

8. If suspect Qff is found:
  - a. Who finds it? IKC trapper, volunteer, member of the community.
  - b. Who is notified of the suspect insect? The trap manager and the QFF Governance Group manager should be notified of the suspect Qff as soon as possible – within 24h. The trap manager will be contacted by IKC trappers (but the trapper will be able to identify whether or not the insect is a Qff) and the QFF Governance Group manager, or nominated alternative, should be the contact point for community individuals re Qff. This contact should, therefore, be set up and the community made aware of it via the usual media strategies.
  - c. How long should it take to notify of the suspect insect? Within 24h.



- d. Who identifies it as a target Qff or shows it is not of concern? The suspect insect will be identified as pest or non-pest by the accredited IKC trapper, if the insect is found in an IKC trap, or by the QFF Governance Group manager or approved alternative, if found by a member of the community.  
  
If eggs, larvae or pupae are found these specimens need to be sent to appropriately experienced experts. Who are they? Are there suitable identifiers in DEDJTR?
  - e. Who do they notify? If insect is found in an IKC trap Then the trapper will notify the trap manager who will record the data and send the information, i.e. whether the insect is a pest or a non-pest, to the QFF Governance Group manager who will send the notification, if it is found to be a Qff, to the DEDJTR authority.
  - f. How is this information sent? Usually, the suspect insect will be identified by the trapper at the location of the trap. The trapper records all necessary information about the find and, if identified as a QFF, or as a suspect-unknown, the specimen is saved in an appropriate manner and transported back to town to be preserved.
  - g. If the suspect insect is found to be a Qff or a suspect-unknown it should be sent to identifiers in DEDJTR. There are appropriate methods of preservation and posting of specimens, whether they are eggs, larvae, pupae or adults. A Standard Operating Procedure (SOP) for this needs to be followed.
9. Timing of response. It is suggested that DEDJTR should be able to identify suspect-unknown specimens, eggs, larvae and pupae within a turn-around time of 48h. Is this achievable? Who pays for these identifications? How does DEDJTR notify the QFF Governance Group of identification results? Phone, e-mail, written report following a standard format.
  10. Definition of an outbreak. If following the Qff COP an outbreak should be notified if there are 2 males (in one trap or in adjacent traps within a two-week period) or 1 female or 1 pupa or larva or egg found.
  11. If Qff is positively identified an outbreak needs to be declared and action, following a set procedure or SOP is required. Someone authorised by the QFF Governance Group manager should go to affected household/s to talk to people there. Talk without accusations or threats. Need to know legalities. What are State Government authorities and QFF Governance Group personnel allowed to do with respect to ordering/ suggesting actions for householders to carry out?



Leaflets and datasheets mentioned in points 1 and 2 above should be delivered and explained to the householder by the competent authority from the Qff Governance Group.

Is there a need to let the whole community know that an outbreak has been declared?

12. Will DEDJTR representatives need to go to affected area to authorise/ audit/ inspect QFF Governance Group actions? What crop movement restrictions will need to be implemented? Will the requirements for restriction zones be set up according to the Qff Code of Practice? Or will the Qff Governance Group manage around the outbreak centre only?
13. Organise supplementary trap kits for placement at suspected outbreak. How soon after the declaration of an outbreak should supplementary traps be deployed? As soon as possible but at least within 1 week. How long should supplementary traps be used after the declaration? The COP requires that these traps be assessed twice a week for at least one generation plus 28 days but this may be modified by Cobram & District Fruit Growers Association.
14. The Qff Governance Group needs to work out what else, if anything, needs to be done in response to an urban Qff outbreak. Will fruit-stripping be carried out by authorised personnel from the Qff Governance Group or IKC or will it be suggested that the householder carry this out? Will fruit fly baiting be carried out? Who will do this? Or will it be suggested that all householders within a certain distance from the outbreak centre carry put bait sprays?

#### c. RURAL OUTBREAK

- Basically, the same actions for Qff outbreaks in urban areas are employed for outbreaks in rural areas. However, options for Qff control in addition to those mentioned above for urban areas are available for rural areas. These include postharvest treatments (see the COP and ICA) and approved cover spray pesticides (refer to the APVMA)
- Communication strategies are similar but with more options to discuss.

#### iii. OUTBREAK RESOLUTION

If fruit fly traps, both on the COP grid and the supplementary traps, show no new captures in a certain time after restrictions imposed on the outbreak area or suspension area due to the outbreak declaration are lifted. Reinstatement of pest freedom is authorised by relevant authorities (generally the State and Commonwealth Governments as well as authorities representing importing countries). Reinstatement is based on adequacy of trapping and reporting systems that are in place as well as zero trap captures over the stipulated duration.



#### iv. WINTER WINDOW

If there are crops grown in the CDTA that are harvested in the winter, or other periods supported by sufficient trap data to show zero fruit fly populations are present at that time, consideration should be given to setting up a winter window option to supply fruit fly host produce to accepting markets.

#### v. OTHER DETAILS REQUIRED

##### a. List of personnel/ positions

A list of key personnel and/ or positions, with contact details (mobile phone, e-mail, etc) is required to facilitate efficient work flow. Key positions include:

- CDTA trappers (people who set up, deploy, monitor, record and save data from, traps)
- CDTA trap management (person/ people to whom trappers are responsible)
- CDTA report management (person/ people responsible for communicating results of trapping assessments to stakeholders, including State and Commonwealth Government authorities)
- CDTA response management (responsible for engaging and managing staff to assist in actioning outbreak responses –)
- Outbreak response staff (to door-knock, leaflet-drop, advise owners of their rights and required actions, baiting, fruit stripping, tree removal, etc as required)
- Stakeholders (to whom reports are sent)
- CDTA community liaison personnel (to keep community informed and involved)
- Suppliers of traps, baits and other pieces of equipment, consumables, etc
- Overall CDTA Manager (incident manager, contact point/ conduit for information dissemination, contact between regulatory authorities and stakeholders, etc)
- CDTA fruit fly identifiers (personnel accredited to identify pest fruit flies found in traps)
- CDTA data officer (person responsible for mapping and data interpretation, works with the communications officer and reports to the overall CDTA manager Information resource personnel, web-sites, etc for advice on Qff and its management)

b. Legal requirements for access to affected properties, rights of the individual

c. COP and ICA advice

d. Time chart of operations

e. Flow chart of responsibilities – including interaction between CDFGA, CDFFC, community leaders, Council and DEDJTR



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- f. Activities check lists, compliance requirements, agreements, trade restrictions due to outbreaks
- g. Communication plans – to community, industry, State and Commonwealth government
- h. Sample documentation, record control, record management, access to documentation/ data
- i. Standard Operating Procedures (SOPs) for trap set up, deployment, servicing, changing and assessment
- j. SOPs for insect identification, specimen preservation, specimen packaging and postage
- k. SOPs on dealing with householders
- l. Queensland fruit fly host plant list: A list of fruiting plants which are able to host Qff from oviposition through egg hatch, larval maturation and pupation to adult eclosion is available from DEDJTR.
- m. List of contacts, who do you need to call?