



Pacific Horticultural and Agricultural Market Access Program (PHAMA)

Report to the Tonga Market Access Working Group (TMAWG)

Feasibility Study of Dimethoate Dip Treatment to Facilitate the Export of Fruit Fly
Host Commodities to Fiji

23 MAY 2011

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Date: **23 May 2011**
Reference: 42444103
Status: Draft

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Appendix A Activity Schedule Tonga Market Access Priorities following TMAWG Meeting 1

Abbreviations

Abbreviation	Description
APVMA	Australian Pesticides and Veterinary Medicines Authority
AQIS	Australian Quarantine and Inspection Service
BAF	Biosecurity Authority Fiji
BQA	Bilateral Quarantine Arrangement
HTFA	High temperature forced air
MAFFF	Ministry of Agriculture, Forestry, Food and Fisheries
PHAMA	Pacific Horticultural and Agricultural Market Access Program
STA	Short-term advisor
TMAWG	Tonga Market Access Working Group
URS	URS Australia Pty Ltd

Executive Summary

Preliminary market access priorities were identified by the Tongan Market Access Working Group (TMAWG) in March 2011 and included in the Pacific Horticultural and Agricultural Market Access Program (PHAMA) 3-Month Strategic Plan for April to June 2011. This report covers one of the three priorities included for Tonga – a feasibility study of dimethoate dip treatment to facilitate the export of fruit fly host commodities to Fiji.

Based on this feasibility study, it is recommended that access for tomatoes to Fiji (and potentially Samoa and Niue) under a dimethoate pathway only be pursued if a viable market is found to potentially exist and the on-going use of dimethoate as a post-harvest treatment is considered likely. A range of specific recommendations are made to the TMAWG for desk and lab based activities.

Background

The purpose of this report is to outline the feasibility of developing a sustainable fruit fly risk mitigation pathway for fruit fly host commodities using dimethoate dipping, for Tonga into Fiji. Further background is given in the Activity Schedule (see Appendix 1).

The report is structured into:

- Recommendations for the Tongan Market Access Working Group (TMAWG)
- An overview of the use of dimethoate as a biosecurity treatment in the region
- Discussion on the fruit flies in Tonga that are likely to be of quarantine concern
- Follow-up desk, lab and field based activities.

Initial discussions on the feasibility of access for fruit fly host commodities and the dimethoate dip treatment were held with Biosecurity Authority Fiji in Suva during May 2011. Consultations were held with commercial and government representatives in Tonga from 28 April to 2 May 2011.

Based on discussions with Biosecurity Authority Fiji, Tonga would be required to submit a market access request for tomatoes and a pest risk analysis would be required. Fruit flies are expected to be the key biosecurity issue but other conditions may need to be met.

Recommendations

Based on this feasibility study, it is recommended to the TMAWG that:

- Access for tomatoes to Fiji (and potentially Samoa and Niue) under a dimethoate pathway only be pursued if a viable market is found to potentially exist and the on-going use of dimethoate as a post-harvest treatment is considered likely.
- If a viable market exists, market access submission(s) be prepared and negotiated.
- Efficacy data be collated and commercial scale procedures be developed and tested.
- Pathways other than relying on post-harvest treatment with dimethoate be considered.

Further details on these recommendations are provided in the *Follow-up Activities* section.

Dimethoate as a Biosecurity Treatment in the Region

Dimethoate is an insecticide commonly used to control fruit flies in fruit and vegetable crops. In Australia it is currently used as an in-field and post-harvest treatment and is an important part of protocols for the domestic movement of commodities export. Products with dimethoate as the active ingredient include: Rogor, Perfekthion, Systex and Saboteur.

3.1 Australian Pesticides and Veterinary Medicines Authority Review of Dimethoate Usage

Products containing dimethoate have been the subject of several reviews in Australia since 1983 due to toxicological concerns. The latest review by the Australian Pesticides and Veterinary Medicines Authority (APVMA) began in 2004 and an outcome is expected shortly. Most importantly, it is expected that the use of dimethoate as a post-harvest treatment for vegetables with edible peel will be banned. Options may remain for use on commodities without edible skin such as longer withholding periods.

3.2 Dimethoate Pathway for Exports from Australia to New Zealand

Australia currently has access into New Zealand based on post-harvest treatment with dimethoate for tomatoes, capsicums, zucchinis, rockmelons, honeydew melons, cucumbers, and scallopini. Access for some of these commodities also requires mandatory in-field programs (tomato, capsicum, honeydew melon, cucumber, scallopini; not zucchini or rockmelons). Similar to the winter window pathway and others under the Australia-New Zealand Bilateral Quarantine Arrangement (BQA), this is an example of a “systems approach”. Note: The requirements for the mandatory field control programs are the same as those required in combination with the winter window pathway.

3.2.1 Generic Requirements

Exports from Australia under dimethoate treatment arrangements also need to comply with a wide range of generic requirements under the Australia-New Zealand BQA. This includes registrations, audits, documentation and record keeping, security and segregation of consignments, and phytosanitary inspections and certification. Requirements apply across the export pathway – including growers, crop monitors, pack houses, treatment centres, exporters and government.

3.2.2 Dimethoate Treatment Requirements

The dimethoate treatment requirements are specified under Appendix 4 (dimethoate) of the Australia-New Zealand BQA. The currently approved post-harvest treatment is a dip at 400ppm \pm 6% (\pm 24ppm) with the fruit submerged for at least 1 minute. For tomatoes, there is also an approved spray protocol for 400ppm \pm 6% (\pm 24ppm) with the spray for at least 10 seconds and fruit remaining wet for at least 1 minute.

Treatment facilities must maintain documented systems including:

- Chemical must be used by expiry date and stored below 40°C;
- All products will be free of soil;
- The treatment must be the last process prior to packing (no other washing, cleaning by brushes or fungicide treatments permitted);

- Nominated person/s to prepare and record each consignment or batch lot;
- Preparing treatments immediately prior to use and having systems in place for recording solution strengths. Including details of the mixing of the solution and any topping up during processing (including times and volumes of product treated at the time of topping up).

Treatment operators are required to document their method/s of dipping including:

- Size of the dip tank
- Method of dipping (e.g. pallets loaded so many boxes high, bins with the top layer secured by screened mesh etc)
- Maximum volume of water required for any/each treatment
- Amount of chemical needed to achieve the required ppm level active ingredient
- Minimum allowable solution level
- Maintenance of active ingredient level (i.e. "top up" levels)

Treatment operators also need a system to identify treated and untreated products including having labels on pallets/bins/crates etc that are clear and visible.

Solutions are not be allowed to be carried over to the next day/run unless the treatment centre has established systems that demonstrate that the solution can be carried over without losing efficacy.

Australian Quarantine and Inspection Service (AQIS) inspectors do not have to attend each dimethoate disinfection treatment but will undertake analysis of chemical dipping strengths. This is done monthly during the first season and depending on substantial compliance may be extended to twice during the season. Sampling by industry is required monthly for the first 3 months of each season and one additional sample if the treatment period is greater than 4 months. Treatment centres will be suspended if samples fall below 376ppm and only reinstated when AQIS has received notification of a conforming sample.

AQIS conducts one initial audit during the first 10 days of each season and then monthly during the operating system. Depending on compliance this can be extended in subsequent years to twice during the treatment season.

3.2.3 In-field Requirements

When in-field requirements when using the dimethoate treatment option for tomato, capsicum, honeydew melon, cucumber, scallopini include:

- Grower registration to maintain field controls which minimise the risk of fruit fly infestation during production (plus controls for yellow peach moth for capsicum)
- Application of recommended field controls a minimum of 4 weeks prior to commencement of harvest
- Crop monitoring for pests and diseases (either the grower or registered crop monitor)
- Implementation of field hygiene requirements that demonstrate appropriate management and recording for regulated pests
- Documentation and record keeping (e.g. field monitoring and spray diary records; grower declaration form for each consignment)
- Site audits by AQIS (early in the season; plus every one or two months for tomatoes).

3.3 Dimethoate Pathway for Export of Tomatoes from Australia to Fiji

Tomatoes exported from Australia to Fiji require an import permit, phytosanitary certificate and one of three options for fruit fly pests. The three options are: being produced and packed in an area not less than 80 km (50 miles) from an area where any harmful species of fruit fly is known to occur; cold treated at 0°C±1°C for 14 days; or dimethoate dip plus in-field controls. The requirements for the dimethoate option are:

1. The tomatoes were grown on a property approved as having maintained a regular spray programme in the field with an insecticide registered for use against Queensland Fruit Fly; (*Bactrocera tryoni*) and which achieved a high level of control,
2. The tomatoes were dipped in dimethoate at the rate of 425 ppm in water for a minimum period of one minute,
3. The dip was made up immediately prior to treatment,
4. The dimethoate dip was the final operation before packing (i.e. any washing/cleaning of fruit took place before the treatment),
5. Only tomatoes were present in the pack-house during the time fruit was graded, treated and packed for export,
6. All tomatoes entering the pack-house during time fruit was graded, treated and packed for export were subject to the dimethoate dip treatment irrespective of whether they were all exported,
7. No host material of harmful species of fruit fly (other than tomatoes or cucurbit crops regularly sprayed with an insecticide registered for use against fruit flies) was growing within 200 meters of the premises where the tomatoes were treated and packed for export,
8. The preparation of the dimethoate dip, the dip treatment and subsequent packaging was supervised by a person approved by the Australian Quarantine and Inspection Service.

3.4 Use of Dimethoate and Post-harvest Treatments in Tonga

Dimethoate (e.g. Perfekthion) is used in Tonga as an in-field control for fruit flies. Based on discussions with industry and government, there are currently no post-harvest pesticide treatments applied on fruit and vegetables. The only post-harvest applications are washing with water +/- chlorine for squash and some taro. Hence in addition to no current experience in using or regulating post-harvest insecticide dips (or sprays) there is currently no suitable equipment available in Tonga to apply them.

Based on discussions with Ministry of Agriculture, Forestry, Food and Fisheries (MAFFF) staff, no research has been done on the efficacy of dimethoate against the fruit flies of economic concern in Tonga. The required dimethoate treatment for these fruit flies may be the same as what is required for Queensland fruit fly in Australia but confirmatory trials may be required. For example, Biosecurity Authority Fiji may require efficacy data as part of accepting a proposed treatment.

In addition, a regulatory system would need to be developed and agreed by Biosecurity Authority Fiji (BAF) as the basis for Tonga being able to provide assurance that the required activities had been completed. For example, based on components of the systems currently used for exports from Australia as described above.

3.5 Use of Dimethoate in Fiji, Samoa and Niue

While the focus of this feasibility study is the use the dimethoate pathway for access into Fiji, during the consultations in Tonga it was indicated that access to Samoa and possibly Niue was also of interest.

Dimethoate is registered for use in Fiji but is not used. As described above, Fiji currently approves tomatoes from Australia that have been treated with dimethoate.

Information on the registration and usage of dimethoate in Samoa is still to be confirmed.

Fruit Flies and Host Commodities

4.1 Fruit Flies in Tonga Compared to Fiji, Samoa and Niue

Of the six species of fruit fly present in Tonga, three are considered to be of economic importance and require specific controls for the export of different host commodities to New Zealand. These are the three species expected to be of most concern to other markets and of them, one (*Bactrocera facialis*) is absent from Fiji, Samoa and Niue. Another species (*Bactrocera passiflorae*) is also absent from Samoa but may be of less concern especially as controls targeted at *B. facialis* would also be expected to control this species.

	Tonga	Fiji	Samoa	Niue
<i>Bactrocera xanthodes</i>	X	X	X	X
<i>Bactrocera facialis</i>	X			
<i>Bactrocera kirki</i>	X	X (Rotuma only)	X	X
<i>Bactrocera distincta</i>	X	X	X	
<i>Bactrocera passiflorae</i> (non-economic)	X (Niuas only)	X	(of possible concern)	X
<i>Bactrocera obscura</i> (non-economic)	X (Niuas only)	X (Rotuma only)	X	X

Hence, export protocols for host commodities into Fiji, Samoa and Niue may focus on control of *Bactrocera facialis*. However, information on the relative efficacy of dimethoate against all three species of fruit flies would be useful to confirm what concentration/time would be controlled by them all.

4.2 Existing Access from Tonga to Fiji, Samoa and Niue

The workplan for exports of a range of fruit, vegetables and other plant products from Tonga to Fiji covers: potatoes, yams, watermelons, English cabbage, cauliflower, lettuce, beans, carrots, onions, kava, mats, tapa cloth, coffee beans, copra and coconut timber. The only fruit fly host covered by the workplan is watermelons. During consultations for this report, the emphasis was on gaining access for tomatoes and no other specific commodities were mentioned as of interest.

The workplans for export from Tonga to Samoa and Niue cover the same products as the workplan with Fiji.

Follow-up Activities

5.1.1 Dimethoate Pathway

A range of desk and lab based activities are recommended. Progress through the recommendations should only occur on a successful outcome at each step.

- Investigate commercial opportunities for Tongan tomatoes into Fiji (and secondarily into Samoa and Niue); including consideration of market gaps, pricing, potential production, transport and other logistical issues.
- Consult with Fiji (and potentially Samoa and Niue) to confirm:
 - Requirements for a market access submission and how/when it would be assessed
 - Likely response to a proposal based on post-harvest treatment with dimethoate
 - Likely requirements for efficacy data.
- Document a relevant systems approach covering commercial and government responsibilities.
- Prepare a market access submission for consideration by Fiji (and potentially Samoa and Niue).
- Conduct trials to determine the efficacy of dimethoate against the fruit flies of economic concern that are present in Tonga; including the relative efficacy against the three species.
- Determine required facilities and equipment to apply a post-harvest dimethoate dip; including option of a centralised facility (e.g. MAFFF centre at the wharf or high temperature forced air [HTFA] facility at the airport).
- Develop a commercial scale procedure to reliably apply the treatment.
- Develop and trial the required procedures for the export pathway.

5.1.2 Non-dimethoate Pathway

Given the likely outcome of the APVMA review of dimethoate and the need to first gain access for tomatoes to Fiji, possible options other than post-harvest treatment with dimethoate should be investigated. A starting point for this would be the alternatives being considered and researched in Australia for domestic and export trade. Although the outcomes of the APVMA review do not formally apply to trade between Tonga and Fiji, it is recommended that the conclusions on the scientific and toxicological information be adopted.

5.1.3 Cost Estimates for Efficacy Trials

Should efficacy and other laboratory and field trials be needed in the future, the availability and costs for service providers would be investigated. For example, joint projects between MAFFF and Plant & Food Research (New Zealand).

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Appendix A

Appendix A Activity Schedule Tonga Market Access Priorities following TMAWG Meeting 1

Justification

Tonga and Fiji currently have a workplan in place for the export of a range of fruit, vegetables and other plant products from Tonga into Fiji. The workplan covers: potatoes, yams, watermelons, English cabbage, cauliflower, lettuce, beans, carrots, onions, kava, mats, tapa cloth, coffee beans, copra and coconut timber. Tonga has requested that the use of the dimethoate dip as a fruit fly treatment be investigated for access of tomatoes and other fruit fly host commodities into Fiji.

Immediate objectives

Determine the likelihood of securing a sustainable fruit fly risk mitigation pathway for fruit fly host commodities using dimethoate dipping, for Tonga into Fiji; and

Provide a report to the PMO and TMAWG outlining the findings.

Background

Tonga has indicated that the current relationship with Fiji may be favourable to request access for a range of commodities, including tomatoes. However, measures may be required to manage fruit flies of quarantine concern to Fiji.

Australia currently exports a range of fruit fly host commodities into New Zealand using dimethoate chemical dip as a risk mitigation measure for fruit flies. However, the use of dimethoate to control fruit fly infestation of fruit and vegetables is currently under review by the Australian Pesticides and Veterinary Medicines Authority (APVMA). The review is nearing completion and preliminary findings suggest that their usage on edible peel fruit and vegetables is likely to be withdrawn or the least limited within Australia and New Zealand.

Tonga has requested that the likelihood of securing a sustainable fruit fly risk mitigation pathway for fruit fly host commodities into Fiji, using dimethoate dipping, be investigated.

Action plan

Under this activity, short-term advisors (STAs) will be mobilised to:

- Determine the viability of the use of dimethoate dip as a fruit fly disinfestation chemical in light of current reviews of the chemical usage patterns;
- Determine if there are fruit flies within Tonga that are of quarantine concern to Fiji;
- Seek an indication from Fiji on the likelihood of acceptance or otherwise of the use of dimethoate dip to treat fruit fly host commodities from Tonga;
- Seek an indication from Fiji whether or not a risk assessment would be required on tomatoes, as this is a new market access request from Tonga;
- Develop cost estimates to conduct trials to determine the efficacy of dimethoate on fruit fly host commodities infested with fruit flies of economic concern to Fiji; and
- Provide a report to the PMO and TMAWG outlining the findings.

Appendix A

Component relationship

This activity fits under Component 3: Research and Development. It will conduct a feasibility study on the development of a dimethoate dip risk mitigation measure for fruit fly host commodities infested with species of economic concern to Fiji.

Possible follow-on activities

Pending the outcome of investigations: Trials may be conducted to generate data for to support dimethoate dip as a risk mitigation strategy; or the development of the dimethoate dip pathway will be discounted.



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