Pesticide regulation coordinator

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AKC Consulting Pty Ltd

Project Number: AH04007

AH04007

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HAL

Know-how for Horticulture™

HAL Project Number: AH04007

Pesticide regulation co-ordinator

Final Report

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Purpose of the Project:

To provide a coordinated response to farm chemical related regulatory issues at the domestic and international levels such as chemical reviews to ensure continued availability and use of product(s) by the horticultural industries.

AKC Consulting Pty Ltd acknowledges the funding support provided by the Horticultural Australia Limited for this project.

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Media Summary

Dealing with regulation is an ongoing issue for Australian horticulture. From a farm chemicals perspective industries are grappling with such matters as gaining and maintaining access to suitable pest management options, e.g., chemical reviews and increasing data requirements, manufacturer lack of interest, resistance, increasing interest in integrated pest management compatible chemicals, and ensuring compliance in export markets due to differing standards potentially impacting on trade. In order to more efficiently deal with the variety of demands posed by these challenges industry has had to be more proactive in identify emerging issues and seeking to develop appropriate responses.

To help industries deal with the many farm chemical related issues HAL, in partnership with industry have funded Kevin Bodnaruk of AKC Consulting Pty Ltd, to act as a co-ordinator to ensure that such issues are brought to the attention of horticultural industries, that they are given adequate information and provided with an opportunity to consider and respond accordingly.

Key outcomes have been improved information flow to and from horticultural industry stakeholders, increased engagement by industry, good quality submissions to regulators on behalf of industry groups and a greater level of horticulture representation at regulatory fora such as Codex and APVMA committees.

For more information on the chemical review process or the project contact the peak industry body for your industry or Kevin Bodnaruk on 02 94993833.

Technical Summary

The regulatory framework, domestic and international, within which Australian horticulture functions, is complex and subject to continual change. It has been important, therefore, for horticulture to participate, at both levels, to ensure industries have the opportunity to consider and develop responses to issues arising from domestic and international regulators.

In Australia the Australian Pesticides and Veterinary Medicines Authority (APVMA) can reassess currently registered chemicals with regard to residues, occupational health and safety and the environment. Possible outcomes of reviews include confirmation that the chemical is safe and appropriate for registered use, or suspension, cancellation or withdrawal of the chemical from the market. This chemical review process is ongoing with a number of new reviews initiated since 2004 while reviews of diazinon, carbaryl, chlorpyrifos, dimethoate, fenthion and azinphos-methyl are continuing. This process, in effect parallels similar programs in other jurisdictions such as the EU, USA, Canada and Japan. The work of the project has been targeted at ensuring industries are informed of any potential impacts arising from these chemical reviews and where required provided with an opportunity to consider any implications and develop a suitable response, e.g., in the event of a data gap possibly funding data generation.

At the international level the body responsible for setting standards with regard to chemical residues in food is the Codex Committee on Pesticide Residues (CCPR). The standards established by this body can be particularly important as they act as international benchmarks for commodities that move in trade. These standards can be particularly important for horticultural industries with an export focus as many countries utilise the Codex in the absence of domestic standards. Engaging in the Codex process has enabled a number of Codex standards to be established based on Australian uses helping to ensure compliance.

Industry responses to pesticide related issues have been managed and coordinated through the AH04007: Pesticide Regulation Co-ordinator project. Residue trials in a range of fruit and vegetable crops have been undertaken to provide data to support continued grower access for a number of pesticides, such as carbaryl, dimethoate and fenthion. The project has also ensured that Australian horticultural industries have been in a position to consider and develop responses to Codex related issues as necessary such as provide data to facilitate the establishment of Codex standards for endosulfan, dimethoate, buprofezin and azoxystrobin.

1 INTRODUCTION

1.1 Background

The regulatory framework within which Australian horticulture function's, both domestic and international, is complex and subject to continual change. It has been important, therefore, for horticulture to engage, at both levels, to ensure industries have the opportunity to consider and develop responses to issues arising from domestic and international regulators that potentially impact on chemical access as well as trade.

1.2 Chemical reviews - Domestic

The APVMA is required under legislation to conduct regular reviews of registered agricultural and veterinary chemicals to ensure they meet contemporary regulatory standards for safety and efficacy. As regulatory standards change the Australian Pesticides and Veterinary Medicines Authority (APVMA) reassesses the existing registered chemicals with regard to residues, occupational health and safety and the environment. Registrants, industry and the public are notified of the commencement of reviews and are given opportunities to submit information in support of continued, or discontinued, registration of the chemical. Possible outcomes of reviews include confirmation that the chemical is safe and appropriate for registered use, or suspension, cancellation or withdrawal of the chemical from the market.

At the domestic level pesticide reviews by the APVMA are ongoing with a number of reviews initiated over the life of the project, e.g., acephate, carbendazim and preliminary scoping studies of sulphur dioxide and propiconazole, while reviews for diazinon, carbaryl, chlorpyrifos, dimethoate, fenthion and azinphos-methyl are continuing.

Industry responses to domestic pesticide related issues have been managed and coordinated initially through the AH04007. Since the initiation of AH04007: Pesticide Regulation Co-ordinator project residue trials in a range of fruit and vegetable crops have been completed providing data to support continued grower access for a number of pesticides, including carbaryl (AV06020), dimethoate and fenthion (MT06022).

1.3 Chemical reviews - International

At the international level Codex, the United Nations food standards setting body, has a number of committees actively developing standards covering such issues as pesticide MRLs, fruit and vegetable quality standards, food hygiene and contaminants. All of which have the potential to adversely impact on Australian exports. Current horticultural involvement through AH04007 has been with the Committees on Pesticide Residues and Contaminants. To date this participation has enabled Australian horticulture to input in the development of the Australian position with regard to issues arising at these Codex Committees. It has also ensured that Australian horticultural industries have been in a position to consider and develop responses to issues as necessary.

In addition, data from HAL and industry funded residue trials completed for azoxystrobin, buprofezin, dimethoate and carbendazim have been used to facilitate either the establishment of or maintenance of international MRLs (Codex), i.e., to provide coverage for commodities moving in international trade.

1.4 Regulatory

The project has been involved in informing and facilitating industry responses to a number of farm chemical related reviews. These have included the review of the Food Safety Australia New Zealand (FSANZ) assessment process, the Globally Harmonised System for labelling (GHS) discussion paper, Productivity Commission review of the regulations of plastics and chemicals, the APVMA review of its cost recovery arrangements, reviews of pesticide legislation by various states such as WA, Vic and NSW, the development of the Product Safety and Integrity Committee (PSIC) discussion paper on control of use, as well as providing input into the development of the APVMA corporate plan.

In addition, through engagement with government the project has ensured that there has been horticultural representation at various farm chemical relevant government initiated working groups, e.g., APVMA Working groups on labelling and nursery definitions, workshops, e.g., PSIC stakeholder workshop, and committees, e.g., APVMA Industry Technical Committee and the National Industry Reference Group on security sensitive chemicals

1.5 Trade

Trade related issues are becoming increasingly prominent in the area of farm chemicals. Firstly, with regard to the direct trade differing standards can result in countries rejecting food imports where residues do not comply with either local or Codex standards. The current project has monitored proposed changes occurring at both the Codex and the WTO levels alerting exporting industries to the potential for adverse impacts.

In addition, as part of the chemical approval process the APVMA can choose to publish a Trade Advice Notice (TAN) seeking public comment on a proposed registration from a trade perspective. Information sought can be either direct, i.e., in relation to differences in chemical x commodity standards between Australia and potential export markets, or indirect, with regard to potential impacts on the export of other commodities through livestock feeding of crop byproducts. AH04007 has sought to provide relevant input into the TAN process

2. METHODOLOGY

2.1 Outline

Work within the project has been framed primarily by the activities of the various regulatory bodies associated with pesticide regulation in Australia and standard setting at Codex. Within the context of this framework project activities have been undertaken following consultation with the relevant HAL program manager and relevant industry stakeholders. In general the activities undertaken have been in the areas of liaison, communication and data generation and information collation. Liaison activities have been focused on establishing and maintaining contact with regulators at both state and federal levels involved in the areas of policy development and implementation.

Communication activities have centred on ensuring firstly, that horticultural industries are aware of the current status of chemical reviews, WTO notifications and Codex standards and the potential implications of the proposals contained therein. Secondly, that industries are given adequate time in which to develop considered responses to the proposed changes where necessary; thirdly, ensuring that regulatory agencies are provided with the horticultural

industry responses to any issues raised or requiring comment. And lastly, ensuring that chemical manufacturers are contacted and where possible involved in providing support for chemical uses identified as valuable.

2.2 Communication strategy

A communication strategy based upon two elements; direct contact with key stakeholders and an information dissemination strategy has been followed. Direct contact consisted of making contact with stakeholders via face-to-face meetings, telephone contact or participation in meetings and conferences. Information dissemination was based upon the provision of information via detailed updates on current regulatory issues to industry representatives for circulation.

The strategy involved contacting key industry personnel, nominated by HAL, then via electronic and conventional mail providing updates for their consideration and distribution within their associations via industry newsletters or magazines. General articles were also provided to horticulture print media on review progress and outcomes, e.g., Mango Matters and AMGA Journal.

2.3 Communication activities

2.3.1 Reporting/Presentations

I. Regular milestone reports, work plans and activity schedules have been provided, as per the agreed schedule, to HAL. Furthermore, regular updates, both written and verbal, were made to the responsible HAL Program Manager and the industry stakeholders. In addition, presentations on the current status of chemical reviews and the review process were also made to industry meetings, e.g., Growcom Forum, Summer Fruit IAC and Mango Growers Conference.

2.3.2 Liaison

I. Liaised with each affected HAL horticultural industry stakeholder, registrants, and allied industries to determine their stance towards chemicals under review.

II. Liaised with horticultural industries, APVMA and registrants to determine and develop the appropriate response from horticultural industries to chemical reviews.

2.3.3 Data generation/submission

I. Liaised with contractors managing R&D effort required to generate data on residues. This involved negotiating data requirements with the APVMA, assisting in the writing of residue trial protocols and visiting trial contractors and sites.

II. Collation of existing data sets from previously HAL funded research projects for submission to the APVMA and Codex, e.g., dimethoate residue data from FR98049, VG98139, AP98073, VG323, SF97016 and SF98021, buprofezin data FR02020, AVG270.

III. Through contact with industry participants facilitated the development and submission of industry responses to Review issues, such as confirming use patterns for pesticides and OH&S related pesticide application practices.

3 RESULTS AND DISCUSSION

3.1 Project Output

3.1.1 Communication activities

I) Chemical Updates Newsletter

AKC Consulting have produced a biannual newsletter which covers a range of chemical regulation issues both domestically and internationally as well as providing readers with contacts and sources of further information. The newsletter was distributed, predominantly, via existing industry based communication networks, such as industry development officers (IDO's) and Peak Industry Body (PIB) periodicals. This has allowed the project to distribute information widely to industry participants, such as growers and advisers. Information was circulated primarily via regular updates (see Attachment I).

II) Liaison

Where information was needed to respond to issues raised by the APVMA or at Codex input was sought from a range of sources. These included growers, industry representatives, government and commercial advisers, consultants and manufacturer representatives. Also, regular liaison with registrants, other cropping industries, Croplife, APVMA, FSANZ, state based bodies such as VFF, WAFF and NSWFA and other relevant bodies with regard to issues raised by chemical reviews occurred. This liaison occurred face-to-face, via telephone and in meetings.

III) Enquiry Service

The project has provided to HAL stakeholders a resource for those seeking information on current regulatory matters. This has been done via telephone and email contacts.

3.1.2 Facilitation of trial data

I) Dimethoate and fenthion trial data generation to support the continued access via MT06022 is ongoing were prepared in consultation with the APVMA to ensure data generated would meet regulatory requirements. The resulting data will be collated and reports written and submitted to the APVMA at the anticipated completion of the project in the latter part of 2009.

Table 1 Residue trial program for dimethoate and fenthion

Pre-harvest	Dimethoate	
Fruit	Tropical fruit edible peel	Persimmon
	Stone fruit	Peaches
		Cherries
	Tropical fruit - inedible peel	Lychees
		Pineapple
	Berries	Blueberries
		Blackberries
		Raspberries
		Table grape
		Strawberries

Pre-harvest Dimethoate

Vegetables	Cucurbit vegetables	Cucumber
		Zucchini
	Fruiting vegetables	Processing tomato
	Bulb vegetables	Onion
	Leafy vegetable	Chinese cabbage
		Leafy lettuce
	Vegetables Legume	Beans
		Peas
	Root & tuber vegetables	Beetroot
		Carrot
		Potato
		Sweet potato
	Stalk & stem vegetables	Celery
		Rhubarb
	Brassica vegetables	Broccoli
		Cauliflower
		Cabbage
		Brussels sprouts

Pre-harvest + Post-harvest

Vegetables	Cucurbit vegetables	Cucumber
		Zucchini
		Rockmelon

Post-harvest

Fruit	Tropical fruit - Inedible peel	Avocado
		Custard apple
		Papaya
	Citrus	Mandarins
	Stone fruit	Cherry
Vegetables	Fruiting vegetables	Capsicum
		Eggplant

Pre-harvest Fenthion

Fruit	Tropical fruit edible peel	Persimmon
	Stone fruit	Peaches
		Cherry
		Nectarine
	Berries	Table grape
Vegetables	Fruiting vegetables	Processing tomato
		Capsicum
		Eggplant

Post-harvest

Fruit	Tropical fruit - Inedible peel	Avocado
		Custard apple
		Mango
		Papaya
	Stone fruit	Cherry

Vegetables	Fruiting vegetables	Capsicum
		Eggplant
	Cucurbit vegetables	Cucumber
		Zucchini
		Rockmelon

II) Carbaryl protocols were prepared in consultation with Avocadoes Australia and the APVMA. Tenders were sought and the work commissioned with Agronico Research via project AV06020. Trials were completed and the data has been submitted to the APVMA.

III) For azoxystrobin, HAL and industry funded trials data was collated and provided to the manufacturer for inclusions in their submission seeking the establishment of Codex MRLs.

IV) Dimethoate trial data in support of capsicums was collated from the HAL funded projects and MT06022 and used to form the basis for a submission to support the establishment of a pre-harvest MRL at Codex.

V) Buprofezin trial data has been collated from previous HAL funded projects and manufacturer supplied information and a submission prepared to support the compound at Codex.

3.1.3 Submissions

3.1.3.1 APVMA

Chemical reviews undertaken by the APVMA follow a cyclic process with three opportunities provided for industry input. The first opportunity comes with the review announcement and the release of the scoping document. The second stage is when the draft Review Report is circulated and finally when the Draft Final Report is circulated for comment.

Formal submissions were made to the APVMA, on behalf of horticultural industries in response to APVMA initial reviews for carbendazim, thiophanate methyl, propiconazole and procymidone. Responses to preliminary review findings azinphos methyl, diazinon, diuron carbaryl, methiocarb etc (see Appendix II).

In addition, following consultation submissions were prepared and made in response to the APVMA's draft corporate plans in 2005, 2006 and 2008.

Table 2 Current status of chemical reviews undertaken by the APVMA

Chemical	Start	Industries consulted	Comments
2,4-D	2003	Citrus, pome fruit	Due to significant concerns over high volatile esters. Environmental assessment to be released before years end. Market removal. Little interest from horticulture.
Azinphos-methyl	1997	Citrus, Pome fruit, summer fruit, table grapes, macadamia nuts, berries.	Response prepared and provided to preliminary review report. Still under assessment.

Chemical	Start	Industries consulted	Comments
Carbaryl	1995	Avocadoes, citrus, table grapes, pome fruit, mangoes, macadamia nuts, summer fruit, berries, Growcom, Ausveg & processing tomatoes	A number of hort uses recommended for withdrawal or with use patterns significantly amended, i.e., extended WHP. Residue trials undertaken to generate trial data to support use in avocado. Data submitted to APVMA. Final review report anticipated 3rd Q 2009.
Carbendazim	2007	Pome fruit, summer fruit, table grapes, strawberries, Ausveg, Mangoes, citrus & bananas	Review scope document released. Preliminary review report anticipated 3rd Q 2009.
Chlorpyrifos	2000	Pome fruit, citrus, bananas, table grapes, Growcom, Ausveg, processing tomatoes & summer fruit	Currently under assessment. Final Review Report likely in late 2009. Likely outcome will be amendments to use patterns for a number of commodities, e.g., extended WHP and possible stipulation of maximum numbers of applications.
Diazinon	1996	Ausveg, citrus, Growcom, Onions, processing tomatoes, mushrooms, Nursery, bananas, pome fruit & pineapples	Under assessment. Residue data provided for pineapples, banana, onions and mushrooms. Concerns raised over potential inhalation exposure. Response and data provided to the APVMA.
Dimethoate	2004	Ausveg, pome fruit, Growcom, summer fruit, table grapes, processing tomatoes, nursery, avocado, bananas, custard apple, lychee, mangoes, papaya & persimmons	Under assessment Report: Residue data being generated still to be submitted. Anticipated loss of a number of post-harvest uses due to either dietary intake concerns and lack of residue data. Trial program near completion. Data submission Q3 2009.
Diuron	2002	Citrus, pome fruit, bananas, nursery, table grapes, pineapples & Ausveg	Under assessment Draft Report recommended restricting maximum rate to 0.9 kg ai/ha for hort uses. Response provided to APVMA on behalf of affected industries arguing against the recommendation.
Endosulfan	Completed		Data collated and submitted to Codex to maintain relevant Codex MRLs. POPs nomination - Response prepared and provided to DAFF.
Fenamiphos	2003	Bananas, Ausveg, processing tomatoes.	Under assessment - Report: nil Submission made on behalf of hort industries

Chemical	Start	Industries consulted	Comments
Fenthion	1997	Ausveg, Growcom, pome fruit, summer fruit, table grapes, processing tomatoes, nursery, avocado, bananas, custard apple, lychee, mangoes, papaya & persimmons	Under assessment - As per dimethoate
Fipronil	2003	Bananas, Ausveg, Nursery, mushrooms	Under assessment – Submission prepared and made on behalf of hort industries
Maldison	2003	Ausveg, Citrus, Pome fruit, summer fruit, table grapes	Under assessment Report: nil
Methamidophos	2002	Ausveg, Nursery, Processing tomatoes & summer fruit	Under assessment - Response prepared and provided to preliminary review report.
Methidathion	2002	Pome fruit, citrus, Ausveg, avocadoes, custard apples, mangoes, summer fruit, table grapes, Nursery, processing tomatoes, Growcom.	Under assessment. Due to dietary intake concerns APVMA have requested Syngenta undertake a voluntary product recall and relabel product removing uses on leafy vegetables. Scope of review likely to be extended.
Methiocarb	1997	Berries, table grapes, Nursery, Summer fruit & Ausveg	Under assessment Report: PRF report 2005. Submission made on behalf of hort industries
Methyl bromide	2005	Regarding APVMA permits PER7504, PER7870 & PER8159 covering the use of methyl bromide for export, interstate and intrastate quarantine disinfestation for fruit fly and thrips in fruit and fruiting vegetables.	Review recently initiated. Focuses on ensuring labels comply with Australia's commitments under the Montreal protocol.
Methomyl	2007	Pome fruit, citrus, berries, Ausveg, table grapes	Recall and relabel product removing uses on leafy vegetables. Potential dietary intake concerns. Formal review yet to commence.
Omethoate	2004	As per dimethoate	Under assessment - As per dimethoate.
Parathion-methyl	1995	Pome fruit, citrus, Ausveg & Summer fruit	Initial review completed Regulatory action taken 1999 Further data requirements and supplementary review required
Procymidone	2004	Ausveg, summer fruit, onions, table grapes & nursery	Under assessment Suspension and new instructions as of Dec 2004 Submission made on behalf of hort industries

Chemical	Start	Industries consulted	Comments
propiconazole	2007	Summer fruit, bananas, pineapples	Preliminary request for information. Response prepared and submitted. APVMA yet to decide whether to undertake a review.
sulphur dioxide	2008	Table grapes & Growcom	Preliminary request for information. Response provided on behalf of industry. APVMA decision to not initiate formal review. Have recommended label amendments.
thiophanate methyl	2007	Nursery	Review scope document released. Response prepared and submitted. Preliminary review report anticipated 3rd Q 2009.

3.1.3.2 FSANZ

Submission made to Food Regulation Standing Committee (FRSC) review of standard setting process of FSANZ. The issue highlighted was that of the MRL disconnect between APVMA MRLs and that of FSANZ (see Appendix II).

Following discussions with industry stakeholders and regulators an application was prepared requesting that FSANZ amend the Food Standards Code to establish Extraneous MRLs for the environmental contaminant dieldrin in root and tuber and cucurbit vegetables. The request was prompted by detections of dieldrin resulting in growers losing supply contracts on the basis of the contamination being viewed as a violation of the Food Code thereby constituting a major non-compliance from a QA perspective.

The requested action has been incorporated in FSANZ MRL proposal M1003. It is anticipated that the EMRL amendments will be promulgated in November 2009.

3.1.3.3 Codex

Formal submissions were made on behalf of horticultural industries in response to the CCPR periodic review program for endosulfan, carbendazim, dimethoate, pyrethrin and buprofezin (see Appendix III). A number of Codex MRLs have resulted from Australian horticulture submissions, e.g., dimethoate – capsicums, carbendazim – mangoes and macadamia nuts, pyrethrin – tree nuts, endosulfan – avocado, cucumber, custard apple, litchi, macadamia nuts, mango, papaya, potato and persimmon.

In addition participation in panel meetings and responses provided to help inform Australia's position on a number of Codex related issues.

3.1.3.4 Trade

As indicated WTO sanitary and phytosanitary (SPS) notifications are being monitored with input sought from industry and responses provided to government. Outlined below is a list of responses provided during the latter part of 2007 and into 2009.

Table 3 WTO SPS notifications monitored to which responses were provided

Country	**WTO Notification No.**	**MRL Issue**	**Action**	**Status**
EU	196	methomyl - citrus & pome MRL discrepancies	Industry notified, issue manageable through MRL guidelines.	Response sent to DAFF.
		Commission Decision 2008/934/EC	General notification re withdrawal of 49 chemicals. Potential adverse implications for exports to EU.	Watching brief as chemicals are being resubmitted.
		EU Regulation 396/2005	Industry notified re shift towards hazard-based rather than risk-based assessment of chemicals. Potential negative implications for EU exports.	Watching brief as the hazard criteria is still to be developed, agreed and applied.
Japan	191	various	No direct issues for horticulture identified	DAFF notified
	201	various	No direct issues for horticulture identified	DAFF notified
	206	various	No direct issues for horticulture identified	DAFF notified
	219	various	No direct issues for horticulture identified	DAFF notified
	226	NAA – pome fruit MRL discrepancy	Industry notified and feedback obtained. Issue manageable through MRL guidelines.	DAFF notified
	228	chlorantraniliprole – peppers, leafy vegetables & herbs MRL discrepancies	Limited vegetable exports, no industry input sought	Response sent to DAFF
	229	various	No direct issues for horticulture identified	DAFF notified
Taiwan	118	Various	No direct issues for horticulture identified	Response provided to DAFF
	150	chlorpyrifos – kiwi fruit, dimethoate – Brassica & mango, indoxacarb – leafy vegetables MRL discrepancies	Industry input sought from mangoes w.r.t. possible future market access Little or no vegetable exports, no industry input sought	Response sent to DAFF.
	156	endosulfan – pome fruit	Issue manageable through MRL guidelines.	Response sent to DAFF

Country	WTO Notification No.	MRL Issue	Action	Status
	160	Various	No direct issues for horticulture identified	Response sent to DAFF
	161	Imidacloprid – citrus, fludioxonil – pome fruit	Industries to be notified. For citrus and pome, if market important, options either to advise non-use or request DAFF to seek higher MRL.	Following input from industries, response will be provided to DAFF.
	163	Various	No direct issues for horticulture identified	Response sent to DAFF
Korea	189	Various	No direct issues in MRL discrepancies for horticulture identified	Response provided to DAFF
	200	tebufenozide, fenpyroximate – pome fruit	Industry notified and feedback obtained.	Response provided to DAFF
	229	Various	No direct issues in MRL discrepancies for horticulture identified	Response provided to DAFF
	267	various	No direct issues for horticulture identified	DAFF notified
	278	various	No direct issues for horticulture identified	DAFF notified
	311	aflatoxins - almonds	Industry notified and feedback obtained.	Response provided to DAFF
	320	Various	No direct issues in MRL discrepancies for horticulture identified	Response sent to DAFF
Thailand		New conditions for exports	No direct issues in MRL discrepancies for horticulture identified	Response provided to DAFF

3.1.3.5 Taiwan

DAFF sought input from industry on the prioritisation and supply of data to Taiwan as part of that countries chemical assessment program. This involved undertaking a comparison of maximum residue levels for chemicals approved in the 10 key horticultural export commodities in both Australia and Taiwan to identify MRL disparities. Following this step industry were consulted on the importance of these disparities and on the basis of the responses a prioritised list was formulated and provided to DAFF. On the basis of this list the APVMA are preparing data submissions, to be provided to the Taiwanese authorities, supporting the establishment of import tolerances reflecting Australian standards.

In addition, a formal submission was made on behalf of the Australian Citrus industry to the

Taiwanese Ministry of Health with regard to the proposed lowering of the MRL for guazatine (see Appendix IV).

3.1.3.6 Japan

Input has been provided to the APVMA on priority chemical x commodity combinations as part of the project in which the APVMA provides data submissions to the Japanese Ministry of Health, Labour and Welfare, with the aim of gaining MRLs established in Japan that reflect Australian standards.

3.1.3.7 Trade Advice

Responses to APVMA trade advice notices have been prepared and provided for the following; buprofezin – pome fruit, boscalid – tomatoes, capsicums and potatoes, chlorothalonil – processing peas, pyraclostrobin - tomatoes, eggplant, capsicums and mangoes, flubendiamide - tomatoes, capsicums and lettuce, trifloxystrobin – apples, pears, grapes and strawberries.

3.1.4 Technical support

AKC Consulting has been able to provide technical support to horticulture industry participants on matters relevant to pesticide related regulatory issues, such as data generation, data protection and WTO notifications. This has been done via face-to-face meetings, telephone and email contact.

3.2 PROJECT OUTCOMES

3.2.1 Improved Knowledge and Understanding

Australian horticultural industries are now better informed and knowledgeable about the pesticide regulatory changes occurring nationally. This has been achieved via project networking, industry liaison, newsletters and participation in industry meetings and conferences.

3.2.2 Pesticide Access

As a consequence of the project to endosulfan for the majority of uses sought have been retained as a consequence of trial data previously submitted. On the basis of trial data submitted access to chlorpyrifos will be maintained by the tomato industries. Access to diazinon for onions, pineapples, mushrooms and the nursery industry have been maintained.

Through linkages with the Minor Use Co-ordinator project AH04007 has been in a position to help inform the process of seeking chemical access through minor use permits. This has been achieved by highlighting potential opportunities for minor use permit applications due to new Codex chemical x commodity standards or those chemical x commodity combinations whose regulatory future is uncertain.

3.2.3 Codex Standards

Through activity of the project MRLs for dimethoate in mangoes and capsicums, carbendazim in mangoes and pyrethrins in tree nuts have been retained. In addition, through liaison with manufacturers Codex MRLs for azoxystrobin and buprofezin have been established.

Furthermore through maintaining a 'watching brief' horticultural industries have been alerted to proposed changes in standards on aflatoxins at the Codex Committee for Food Contaminants.

3.2.4 Improved participation

As a result of project activities in areas related to pesticide regulation Australian horticulture has had increased opportunities for involvement and contribution to the policy setting process. Participatory activities have included involvement in Australian panel meetings for the CCPR, involvement with the Australian delegation to CCPR, discussions with Codex Australia and Food Regulation and Safety of DAFF on issues relating to the development of Codex standards.

4 FUTURE CONSIDERATIONS:

4.1 Future review chemicals

A number of chemicals, for which reviews have been initiated but as yet final reports are unavailable include carbendazim, carbaryl, azinphos-methyl, diuron, fipronil, fenamiphos, maldison, methamidophos and methidathion. It is anticipated that many of these reports will become available over the next 12 months with reviews of other priority chemicals likely to be announced, e.g., trichlorfon, phorate and terbufos.

4.2 Security Sensitive Chemicals

The Attorney Generals Department (ADG) has initiated a process of reviewing 96 chemicals that have previously been identified as being of security concern. While the majority of these chemicals are either explosives or explosive pre-cursors a number of agricultural chemicals have been included. A risk assessment framework is being developed that is aimed as assessing risk and identifying any concerns over individual chemicals or vulnerable points in the supply chain. The assessment is calculated on the basis of potential impact, employability, vulnerability and level of terrorist interest.

Following the risk assessment the authorities have indicated that they will engage with industry to develop appropriate levels of risk mitigation. This can have potentially significant implications for Australian horticulture, particularly if access to certain chemicals becomes restrictive. The first assessments will be undertaken of explosive pre-cursors. It is not anticipated that agricultural chemicals will be reviewed until either late 2009 or early 2010.

5 RECOMMENDATIONS:

A. That the project be continued. The ongoing nature and time involved in completing chemical reviews makes the role of the chemical review coordinator critical with regard to horticultural industries being able to respond adequately to the various stages of APVMA reviews and the development of Codex standards.
B. That the issue of trade be more formally incorporated into a new project with formal linkages developed with the HMAC co-ordinator to ensure that information is circulated to relevant stakeholders and that government is

provided with timely accurate responses.

C. That the issue of access be broadened to include a broader range of pest management options, such as biorational or biological pesticides.

APPENDIX I: Ag Chemical Updates

AgChemical Update - January 2005

WHAT'S NEW

Below is a summary of various regulatory issues and chemical reviews currently being addressed both locally and internationally.

NATIONAL

The issue of cost-recovery for the APVMA and permits continued to be a contentious issue. The original proposal for modular fees was replaced by a proposal for a 'nominal' fee of $320 for minor use permits. However, there are now concerns over the potential cost of research permits. The current proposal has removed the exemption for government employees. This, coupled with the modular fee structure, could result in such permits costing thousands of dollars. Time will tell but such an approach has the potential to impact adversely on pesticide research.

The New Year has also seen the introduction of the new data protection legislation, linked to the US Australia Free Trade Agreement. This should provide an incentive for manufacturers to pursue minor uses. The legislation covers both new and existing chemicals and will provide an opportunity for manufacturers to gain some reward where they have generated data to support the registration of a new use. Unfortunately, the new legislation doesn't cover new data being generated for chemical reviews. Hopefully, this will be rectified, making the support of review chemicals more attractive to manufacturers.

CHEMICAL REVIEWS

The APVMA is actively pursuing a large number of chemical reviews. It is expected that many will progress through the next steps of the review process and hopefully be finalised over the next 6-12 months.

Fipronil. Data assessment is continuing.

Benomyl. This review is being finalized following the voluntary cancellation of the Marvel® registration by the manufacturer. A phase-out period for use of existing product will be permitted until 6 December 2006 (see APVMA gazette, January 2005). The question remaining now is whether the related compounds, carbendazim or thiophanate methyl, are likely to come under review in future.

Methyl parathion. Data assessment is continuing. Preliminary report for public comment is not anticipated before mid-year.

Diazinon. Following the 'uncoupling' of the crop and animal health uses, the crop review segment should be available for public comment around mid 2005.

Fenthion. Some aspects of the assessment of food uses to be conducted in conjunction with dimethoate, due to related issues and uses. This will not be completed in 2005. Assessment of non-food uses should be released for public comment in 2005.

Dimethoate. The review of dimethoate is under way with the APVMA currently assessing data. All locally available horticultural residue data was collated and submitted to the APVMA on behalf of the various industries. Of ongoing concern is the likely impact the review could have on Queensland fruit fly control and interstate quarantine and the movement of fresh produce.

Azinphos methyl. Data assessment is continuing, though developments are expected during the first half of 2005.

Endosulfan. Following the draft final report released in 2004, the completion of this review is anticipated by mid 2005. Industry responses were sought mainly on OH&S matters, specifically the proposed re-entry periods and water volume limits suggested for tree crop spraying. In both cases positive

outcomes are hoped for.

Chlorpyrifos. Due to the extension on data submission granted by the APVMA, finalization of this review is not anticipated within the next 12 months.

Carbaryl. It is anticipated that the next stage of the review process will be completed by mid 2005 with a draft final report released for public comment. At present, residue trial data is being generated for pome fruit and mangoes.

2,4-D. Data assessment continuing.

Methidathion. The toxicology review has been completed. An outcome has been the calculation of an acute reference dose, which will probably result in an acute dietary risk assessment being done. A preliminary risk assessment indicates that new residue data will be needed to support some uses.

Methamidophos. Data assessment is continuing.

Procymidone. Following the rescheduling of procymidone to an S7 and dietary intake concerns, the APVMA suspended all current uses in November. Thereafter, use in a number of crops was allowed but with amended use patterns. The APVMA is now seeking information on the use of procymidone. The response period for the review closes on February 25th and feedback is needed on the extent of use in horticultural crops.

How important is its use, and how it is being applied are the key questions, e.g., frequency and timing of use. AKC Consulting is collating industry responses preparatory to submission to the APVMA, and any additional industry comments or responses would be most appreciated. The review-scoping document can be found at the following web site:

http://www.apvma.gov.au/chemrev/procymidone_scope.pdf

International

Rotterdam Convention on Prior Informed Consent (PIC treaty).

Fourteen new chemicals have been added to the to the treaty's international "watch" list, all pesticides as follows: binapacryl, toxaphene, ethylene dichloride, ethylene oxide, DNOC and its salts, and monocrotophos and parathion (certain formulations of these latter two were previously included but are now fully covered) and dustable powder formulations containing a combination of benomyl at or above 7 per cent, carbofuran at or above 10 per cent and thiram at or above 15 per cent.

The “watch” list is an early warning system for sharing information on banned and severely restricted pesticides and other chemicals. Under the PIC treaty, which came into force in February 2004, a chemical that has been banned or severely restricted in two regions of the world is considered for addition to the Prior Informed Consent list. When a chemical is listed, all countries that are Parties to the treaty must indicate whether they consent to, or prohibit, the import. Previously 22 chemicals on the PIC list were pesticides. Of the fourteen added to the list, nine are pesticides, including the insecticides monocrotophos, parathion, and toxaphene. The initial list included the following pesticides: 2,4,5-T, aldrin, captafol, chlordane, chlordimeform, chlorobenzilate, DDT, 1,2-dibromoethane (EDB), dieldrin, dinoseb and dinoseb salts, fluoroacetamide, HCH (mixed isomers), heptachlor, hexachlorobenzene, lindane, mercury compounds, and pentachlorophenol, plus certain formulations of methamidophos, methyl-parathion, monocrotophos, parathion, and phosphamidon. The PIC Rotterdam Convention, website is http://www.pic.int.

Codex Committee for Pesticide Residues

Data Support

Endosulfan residue data previously generated and submitted to APVMA as part of the chemical review program is to be prepared for submission to the FAO to support the

retention of endosulfan MRLs at Codex.

The retention of the *carbendazim* MRL for tree nuts should be finalised once the registration in macadamia nuts is finalised in early 2005.

To support the retention of the *pyrethrin* tree nut MRL at Codex residue trial data is to be submitted to the FAO in March.

Interim MRLs (Maximum Residue Limits). A pilot project is currently underway to evaluate the potential for using national MRLs as interim MRLs in order to accelerate the MRL-setting process for new pesticides within Codex. If successful, this approach could help ensure that any residues of new chemicals on exported produce don't result in residue violations. Three compounds are being evaluated: trifloxystrobin (Flint®), fludioxinil (Maxim®) and bifenazate (Acramite®).

New MRLs: The MRLs adopted by Codex in 2004 for the following pesticide – crop combinations are: 2,4-D – citrus (1.0 mg/kg); Carbaryl – asparagus (15 mg/kg), beetroot (0.1 mg/kg), carrot (0.5 mg/kg), egg plant (1.0 mg/kg), capsicums (5.0 mg/kg), sweet potato (0.02 mg/kg), tree nuts (1.0 mg/kg); Deltamethrin – apple (0.2 mg/kg), bulb vegetables except fennel (0.1 mg/kg) carrot (0.02 mg/kg) citrus (0.02 mg/kg), grapes (0.2 mg/kg), legume vegetables (0.2 mg/kg), mushrooms (0.05 mg/kg), nectarine and peach (0.05 mg/kg); Diphenylamine – pear (5.0 mg/kg); Imidacloprid – apple (0.5 mg/kg) and pear (1.0 mg/kg), broccoli, brussels sprouts, cabbages and cauliflower (0.5 mg/kg), citrus (1.0 mg/kg), capsicum (1.0 mg/kg), tomatoes (0.5 mg/kg), apricot, nectarine and peach (0.5 mg/kg), plums (0.2 mg/kg); Methomyl – common bean (1.0 mg/kg), nectarine and peach (0.2 mg/kg), plums (1.0 mg/kg); Parathion-methyl – apple (0.2 mg/kg), nectarine and peach (0.3 mg/kg), grapes (0.5 mg/kg); Propargite – apple (3.0 mg/kg), citrus (3.0 mg/kg), stone fruit (4.0 mg/kg); Spinosad – brassica vegetables (2.0 mg/kg), leafy vegetables (10.0 mg/kg); Tebufenozide – almonds (0.05 mg/kg), avocado (1.0 mg/kg), blueberries (3.0 mg/kg), broccoli (0.5 mg/kg), cabbages (5.0 mg/kg), citrus (2.0 mg/kg), grapes (2.0 mg/kg), leafy vegetables (10.0 mg/kg), nectarine and peach (0.5 mg/kg), capsicums and tomatoes (1.0 mg/kg).

The hexaconazole (Anvil®) MRLs for pome fruit and grapes were deleted.

USA

Mancozeb. The US EPA recently announced the results of its re-evaluation of mancozeb. No issues have been identified with the currently registered agricultural uses and use patterns for mancozeb. The Agency has, however, raised some questions regarding application in turf, the use of wettable powder formulations, and homeowner garden uses.

Captan. The Agency has announced the results of its re-evaluation of Captan's cancer classification and concluded that captan is not likely to be a human carcinogen nor to pose cancer risks of concern when used in accordance with approved product labelling.

New MRLs: The MRLs proposed by the US EPA over the last 6 months for the following pesticide – crop combinations are:
Dicofol (Kelthane®) – pome fruit (10.0 mg/kg), stonefruit (5.0 mg/kg), cucurbits (2.0 mg/kg), citrus (6.0 mg/kg), strawberries (10.0 mg/kg); Fenbutatin oxide (Torque®) – tree nuts (0.5 mg/kg); Iprodione (Rovral®) – grapes (10.0 mg/kg), raisins (15.0 mg/kg), strawberries (0.5 mg/kg), peach (0.05 mg/kg); Propargite (Comite®) – citrus (10 mg/kg); Pyrimethanil (Scala®) – almond (0.2 mg/kg), banana (0.1 mg/kg), citrus (10.0 mg/kg), pome fruit (3.0 mg/kg), stonefruit (3.0 mg/kg), grape (5.0 mg/kg), raisin (5.0 mg/kg), onion (0.1 mg/kg), pistachio (0.2 mg/kg), strawberry (3.0 mg/kg), tomato (0.5 mg/kg); Tebufenozide (Mimic®) – citrus (0.8 mg/kg), grape (3.0 mg/kg), Fludioxinil (Switch®[1]) – Dry & succulent beans (0.4 mg/kg), citrus (10.0 mg/kg), pome fruit (5.0 mg/kg), melons (0.03 mg/kg); Methoxyfenozide (Prodigy®) – Mango (0.5 mg/kg), papaya (0.5 mg/kg), strawberries (1.5 mg/kg), legume vegetables

[1] Fludioxinil is co-formulated with cyprodinil in Switch®.

(1.5 mg/kg); Cyprodinil (Chorus®) – beans (0.6 mg/kg), Deltamethrin (Decis®) – pome fruit (0.2 mg/kg), tree nuts (0.1 mg/kg), cucurbits (0.2 mg/kg); Pyraclostrobin (Cabrio®) – citrus (2.0 mg/kg), pome fruit (1.5 mg/kg), legume vegetables (0.5 mg/kg)

New Technology. A number of new products under development have either recently gained or are about to gain US EPA approval. These include two new insecticides spirodiclofen (Envidor®) targeting mites and spiromesifen (Oberon®) for white fly and the fungicide fenamidone (Reason®) for phytophthora control from Bayer; dinotefuran (Starkle®) a novel neonicitinoid from Mitsui; flonicamid (Aria®) another novel neonicitinoid targeting aphids from ISK; cyazofamid (Ranman®) a new downy mildew compound from ISK; fosthiazate (Nemathorin®) targeting nematodes in tomatoes and potatoes; famoxadone (Tanos®) for alternaria and downy mildew control from Dupont and triflumizole (Procure®) for powdery mildew control from Crompton. Also the US EPA recently registered attract and kill devices for the control of Olive Fly. They contain a combination of ammonium bicarbonate, a *Bacillus pumilus* strain and citronellol.

EUROPE

MRL Harmonization. From January 1st the European Community will begin the process of harmonising all MRLs. The aim is to establish Europe-wide MRLs for pesticide residues. Over the next 18 months, the European Commission will compile a list of crops for which limits should be set, assess all national MRLs and select the most appropriate ones for use at the EU level, as well as identify pesticides where MRLs are not needed. These 'unified' MRLs will then come into force after a phase-in period.

Chemical Review. The ongoing review process in Europe saw the withdrawal of the following chemicals as of December 2004; flamprop M, imazethapyr, methidathion, triadimifon and tridemorph. However, some essential uses of flamprop M, triadimifon and methidathion have been allowed till the end of 2007. In addition, the following compounds recently gained inclusion in the EU list; dimethenamid-p, picoxystrobin, trifloxystrobin, carfentrazone-ethyl, fenamidone and pyraclostrobin.

REACH. In mid January a public hearing was held by the European Parliament on the EU's REACH (Registration, Evaluation and Authorisation of Chemicals) proposal for a new EU regulatory framework for chemicals. Under REACH the EU would modernise its legal framework on chemical products by establishing an integrated system for the registration, evaluation and authorisation of chemicals. The European Parliament and Council have begun working on the Commission's draft text, the first parliamentary reading in expected in late 2005.

CANADA

New MRLs. MRLs for some pesticides have been established by the PMRA over the last 6 months for the following pesticide – crop combinations: glufosinate (Basta®) – lentils (6.0 mg/kg), dry peas (3.0 mg/kg) and potatoes (0.4 mg/kg); fluazifop (Fusilade®) – strawberries (1.0 mg/kg), blueberries (0.1 mg/kg); lamda cyhalothrin (Karate®) – head lettuce (2.0 mg/kg), broccoli and cabbage (0.4 mg/kg), leeks (0.15 mg/kg) and tomatoes (0.1 mg/kg); glyphosate trimesium (Touchdown®) – peas (3.0 mg/kg), beans (1.0 mg/kg); fludioxinil (Switch® & Maxim®) – green onions (7.0 mg/kg), apricots, peaches and plums (2.0 mg/kg), strawberries (2.0 mg/kg), grapes (1.0 mg/kg), onions, dry bulb (0.2 mg/kg) and potatoes (0.02 mg/kg); pyrimethanil (Scala®) – raisins (8.0 mg/kg), grapes (5.0 mg/kg), bananas (0.05 mg/kg); bentazone (Basagran®) - peas (3.0 mg/kg), beans (0.5 mg/kg), leeks and onions (0.1 mg/kg), blueberries (0.05 mg/kg)

Further Information

If you have any questions or wish to discuss any points covered in this Report, please contact Kevin Bodnaruk on 02 9499 3833 or email akc_con@zip.com.au.

AgChemical Update - January 2006

WHATS NEW

Below is a summary of various regulatory issues and chemical reviews currently being addressed both locally and internationally.

NATIONAL

Data protection

Progress on data protection has been slow. To date the anticipated introduction of new regulations covering protection for data generated in response to chemical reviews has not occurred. In addition much needed amendments to cover the regulations for new and existing chemicals has also been delayed. It is hoped that the changes will occur this autumn sitting of Federal parliament.

MRL harmonization

The ongoing frustration with the inefficiencies of our two tiered MRL setting process continues. Most recently the Ministerial Council agreed to a harmonization process for MRL setting between the APVMA and FSANZ. The aim being to establish a single set of published MRLs rather than the two sets we currently have. An approach has been agreed but to date, unfortunately, no substantive changes have occurred.

A review is also occurring of FSANZ's assessment and approval process. This is being undertaken by the Food Regulation Standing Committee (FRSC). It is looking broadly at the standard setting process within FSANZ. Of particular interest is the apparent inability of the current approach to distinguish, administratively, between the establishment of basic and key food standards. It is hoped that any changes that occur as an outcome of the review will have a positive impact on MRL setting within FSANZ.

Minor use

Little progress has been made with government in the area of minor use. A number of initiatives have been discussed but, as yet none are not at the point of implementation. Hopefully progress will be made during 2006.

Label forum

Frustration with the structure and content of pesticide labels has been an issue within various sectors of agriculture for some time. In recognition of the level of dissatisfaction the APVMA held a labelling forum late last year.

Chemical reviews

Updated below are those reviews either recently initiated or where progress is anticipated over the next 6-12 months.

Fenthion & Dimethoate. It is anticipated that the reviews of fenthion and dimethoate will be progressed during the coming year. Of concern is the impact any recommendations may have on access for a number of industries.

Endosulfan. Following the completion of the review and publication of the Final Review Report product labels have been updated and finalised. Further updated user notices and forms have been developed by the APVMA. These can be found at *http://www.apvma.gov.au/chemrev/endosulfan.shtml*

Chlorpyrifos. Finalization of this review is anticipated within the next 6-12 months. Initial indications are that the APVMA will recommend changes in some use patterns, i.e., extended withholding periods. An update on the status of the review can be found at *http://www.apvma.gov.au/media/chlorpyri*

fos_statement.shtml

Carbaryl. Finalization of this review is also anticipated within the next 6-12 month. Residue trial data supporting continued use in pome fruit has been generated and submitted to the APVMA.

2,4-D. Drift concerns particularly from high volatile esters, has resulted in the APVMA requiring additional instructions to be included on all 2, 4-D labels. The APVMA has also indicated that it will be publishing and seeking comment on the environmental assessment in the near future. In the meantime various state authorities have implemented their own management schemes. For further information see *http://www.apvma.gov.au/chemrev/2,4-D_products_status.shtml*

Methidathion. As indicated previously the toxicology review has been completed. An initial outcome has been the proposed suspension of the use of methidathion on leafy vegetables.

Diuron. The diuron review has now moved into the next stage. Industry submissions were prepared and submitted to the APVMA on behalf of a range of horticultural industries. These were principally in response to the recommendation to substantially reduce the maximum rate per season that could be applied.

International

Japanese MRLs

Japan is about to change the way it regulates pesticide residues. From May 29th the Japanese authorities will be moving to a positive list system, i.e., if a specific crop x pesticide MRL isn't listed, residues must be below 0.01 mg/kg, in effect non-detectable.

The proposed MRLs have been derived from existing Japanese standards, Codex MRLs and in certain cases MRLs from Australia, Canada, the EU, NZ and the US. Details of the proposed MRLs can be found at *http://www.mhlw.go.jp/english/topics/foodsafety*. A final English version hasn't, as yet, become available.

EU MRL harmonisation

The European Commission is currently working towards developing a harmonised MRL system across the 25 Member States. The aim is to eliminate potential barriers to trade within the EU arising from the current system that allows countries to set their own national MRLs. Under the new system all future MRLs will be established at the EU level.

Until such time as the new system becomes operational, and to deal with the current sets of MRLs, temporary MRLs are to be established. It is understood that these are to be derived, in part, from current highest national MRLs. The lists of which were being collated in 2005. The list of highest national MRLs can be found at *http://europa.eu.int/comm/food/plant/protection/resources/publications_en.htm*

In the absence of an EU harmonised MRL, the Commission is proposing to impose a level of 0.01 mg/kg as the default MRL. Concerns have been raised over this approach, i.e., having such a low default level could, in the short-term, result in an increase in the number of MRL violations reported.

Codex Committee for Pesticide Residues

Data Support

Endosulfan residue data, previously submitted to the FAO, is still to be evaluated. It is anticipated that this will occur during 2006.

The retention of the carbendazim MRL for tree nuts should be finalised this year with a review of dietary intake completed in 2005.

A Codex MRL for pyrethrin in tree nuts has been retained. The new MRL is based on residue data generated in Australia from almonds and macadamia nuts.

Data generated to support the continued use of carbaryl in pome fruit as part of the APVMA chemical review program is to be prepared for submission to the FAO.

Interim MRLs (Maximum Residue Limits). A pilot project at Codex has seen the establishment of interim Codex MRLs for trifloxystrobin (Flint®), fludioxinil (Maxim®) and bifenazate (Acramite®). These will stand for the next 4 years and can be found at the following Report. *http://www.codexalimentarius.net/download/report/641/al28_24e.pdf*

New MRLs: A number of new MRLs were adopted at Codex in 2005 these included the following pesticide – crop combinations:
Cyprodinil - Almond hulls (0.05 mg/kg), Almonds (0.02 mg/kg), Apple (0.05 mg/kg), Beans, except broad bean and soya bean (0.5 mg/kg), Cucumber (0.2 mg/kg), Dried grapes (=currants, raisins and sultanas) (5 mg/kg), Egg plant (0.2 mg/kg), Grapes (3 mg/kg), Lettuce, Head (10 mg/kg), Lettuce, Leaf (10 mg/kg), Onion, Bulb (0.3 mg/kg), Pear (1 mg/kg), Capsicums (0.5 mg/kg), Prunes (5 mg/kg), Raspberries, Red & Black (0.5 mg/kg), Squash, Summer (0.2 mg/kg), Stone fruits (2 mg/kg), Strawberry (2 mg/kg), Tomato (0.5 mg/kg); Captan – Cucumber (3.0 mg/kg), Nectarine (3.0 mg/kg), Raspberries (20 mg/kg); Chlorpyrifos – potato (2 mg/kg); Deltamethrin – Leafy vegetables (2.0 mg/kg); Dimethoate – Globe artichoke (0.05 mg/kg), Brussels sprouts (0.2 mg/kg), cauliflower (0.2 mg/kg), celery (0.5 mg/kg), Mango (1.0 mg/kg), Olives (0.5 mg/kg), Turnips (0.1 mg/kg); Dodine – Pome fruit (5.0 mg/kg), peach (5.0 mg/kg), nectarine (5.0 mg/kg); Ethoprophos - banana (0.02 mg/kg), Cucumber (0.01 mg/kg), melons (0.02 mg/kg), capsicums (0.05 mg/kg), potato (0.05 mg/kg), tomato (0.01 mg/kg);
Famoxadone – Cucumber (0.2 mg/kg), Dried grapes (=currants, raisins & sultanas) (5.0 mg/kg), grapes (2.0 mg/kg), potato (0.02 mg/kg), summer squash (0.2 mg/kg), tomato (2.0 mg/kg); Methomyl – Beans (1.0 mg/kg), broccoli, Capsicums (0.7 mg/kg);
Methoxyfenozide – Broccoli (3.0 mg/kg), capsicum (2.0 mg/kg), Dried grapes (=currants, raisins & sultanas) (3.0 mg/kg), grapes (1.0 mg/kg), Lettuce head (15 mg/kg), Lettuce leaf (30 mg/kg), Pome fruit (2.0 mg/kg), Spinach (50 mg/kg), Stone fruit (2.0 mg/kg), tomatoes (2.0 mg/kg), tree nuts (0.1 mg/kg); Prochloraz – Assorted tropical fruit, inedible peel (7.0 mg/kg), Citrus (10.0 mg/kg); Spinosad – Dried grapes (=currants, raisins & sultanas) (1.0 mg/kg), grapes (0.5 mg/kg); Thiabendazole – mushrooms (60 mg/kg); Tolyfluanid – Lettuce head (15.0 mg/kg);

Deleted MRLs: MRLs deleted from Codex include: Dimethoate – pome fruit, grapes and plums; Dodine – grapes and strawberries; Fenamiphos – carrots, pineapples and strawberries.

USA

New MRLs: Over the last 6 months MRLs have been proposed, by the US EPA, for the following pesticide – crop combinations:
Hexythiazox - grapes at 1.0 mg/kg, raisins 4.0 mg/kg, citrus (0.5 mg/kg); pyridaben in or on papaya at 0.10 mg/kg; star apple at 0.10 mg/kg; sapote, black at 0.10 mg/kg; mango at 0.10 mg/kg; sapodilla at 0.10 mg/kg; sapote, mamey at 0.10 mg/kg; canistel at 0.10 mg/kg; fruit, stone, group 12 at 2.5 mg/kg; strawberry at 2.5 mg/kg; and tomato at 0.15 mg/kg; pyriproxyfen - legume vegetables at 0.20 mg/kg; onion, dry bulb at 0.15 mg/kg; grape at 2.5 mg/kg; strawberry at 0.30 mg/kg; white sapote at 0.30 mg/kg; flonicamid - Celery, at 1.2 mg/kg; cotton, at 0.5, pome fruit, at 0.2 mg/kg; stone fruit, except plum and fresh prune plum, at 0.7 mg/kg; lettuce, head, at 1.0 mg/kg; lettuce, leaf, at 4.0 mg/kg; plum, at 0.1 mg/kg; potato, at 0.2 mg/kg; at 0.4 mg/kg; prune, fresh, at 0.1; spinach, at 9.0 mg/kg; cucurbit vegetables

at 0.4 mg/kg; fruiting vegetables at 0.4 mg/kg; pymetrozine - asparagus at 0.04 mg/kg; etoxazole - almonds, hulls 2.0, grape at 0.50 mg/kg, grape, raisin at 1.5 mg/kg, tree nuts at 0.01 mg/kg; spirodiclofen - citrus at 0.3 mg/kg, pome fruit at 0.8 mg/kg, stone fruit at 1.0 mg/kg, tree nuts at 0.05 mg/kg, almond hulls at 20 mg/kg, pistachios at 0.05 mg/kg, grapes at 2.0 mg/kg and grape, raisin at 4.0 mg/kg.

EPA is proposing to revoke all the MRLs for tetradifon in or on apple; apricot; cherry; citron, citrus; crab apples; cucumber; fig; fig, dried fruit; grapefruit; grape; hop, dried; hop, vine; lemon; lime; meat; melon; milk; nectarine; orange, sweet; peach; pear; peppermint; plum, prune, fresh; pumpkin; quince; spearmint, tops; strawberry; tangerine; tea, dried; tomato; and winter squash.

New Technology. A new product developed as a replacement for some methyl bromide uses has recently gained US EPA approval. Arabesque™ & Andante™ are based on *Muscodor albus* QST 20799. It is a naturally-occurring fungus which when moist, acts as a pesticide by producing volatile chemicals that kill certain soil borne plant pathogenic organisms that are responsible for a range of plant diseases.

Further Information

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AgChemical Update - May 2007

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NATIONAL Regulatory issues

Prescribed chemicals

The Product Safety and Integrity Committee is currently working on a proposal to introduce higher tier training and accreditation requirements that would be needed to access higher risk chemicals. An initial discussion paper outlining the rationale and approach was produced last year for stakeholder input. The committee is now working on developing the criteria by which higher risk chemical products would be determined and what the additional requirements should be.

Chemicals of security concern

Following the release of the discussion paper last year and the recent round of presentations outlining the basis for determining chemicals of security concern the initiative PM&C have begun work on the next stage. How to assess products that contain the chemicals of concern, whether the formulated products potentially pose a security risk. To this end PM&C have engaged with a range of industry representatives to discuss ways of developing and gaining agreement on the principles to be used. At this stage a four stepped approach is being proposed from which it is intended that a system for identifying products of concern can be developed and also determine what measures will be needed to ensure security.

Minor use Forum

The APVMA have scheduled a forum on minor use titled 'Minor Use 07 - Future Directions' for June 21st. The Forum will be opened by the Minister for Agriculture, Fisheries and Forestry Peter McGauran and will feature presentations from Executive Director of the United States IR-4 Program Dr Jerry Baron, and Senior Minor Use Coordinator for the Canadian Pest Management Regulatory Authority Doug Rothwell. These two presentations will discuss the minor use programs that are already successfully operating in North America and the lessons that have been learnt from these programs.

Following this international section, speakers from the Australian research and development corporations and state and federal government will discuss domestic approaches to increasing pest control approvals for specialty crops and possible initiatives to achieve this. Participation in the minor use forum is free but registration is required

For more information and to register for this event, please contact Armaghan Morshedizadeh at the Meetings Manager on 02 9810 7322 or meetings@tmm.com.au

Labelling

The APVMAs label reform process is progressing, albeit slowly. Most recently the focus has been on more clearly defining what elements on a label needs to be regulated, i.e., what parts are meant to be mandatory and what should be advisory.

The aim is to develop best practice guidelines for labelling that improve information flow and provide clearer 'sign posts' on where relevant information can be found.

It is planned, once the approach and options have been agreed, to undertake some testing of the concepts. This is to be

done via questionnaire sent to chemical users review to complete and comment on what has been proposed. At this stage the thinking is that this would be done through training and user group organisations.

Export MRLs
A workshop was recently held at HAL to discuss issues associated with MRL compliance and maintaining export market access. The meeting looked at how best to begin the process of developing strategies to minimise the potential for MRL violations to occur. Discussions were also had on how, in the event of a breach, to best minimise potential damage to Australian horticultural export trade by ensuring clear coordination and communication in developing a response.

A working group was formed to begin the process of considering and developing potential options on how to develop an approach that best protects Australian trade. This working group is composed of representatives of horticultural industries, exporters, government and HAL.

Chemical reviews

Updated below are those reviews either recently initiated or where progress is anticipated over the next 6-12 months.

The APVMA are in the process of developing an enhanced model of public involvement. Their idea is for people with interest in a particular review to register so as to be kept informed and updated on any changes or developments concerning a product under review.

Fenthion & Dimethoate. These reviews are beginning to gather momentum. It is understood that the residue data review for fenthion has commenced and that report should be available before the end of the year. For dimethoate a significantly larger data set was provided by industry and the manufacturers and will take longer to assess with a report anticipated early 2008. In response to anticipated data gaps HAL is embarking on a substantial data generation program. The results of which, it is hoped, will help address any areas of concern and help maintain access to these much needed fruit fly control products.

Carbendazim (Bavistin, Spin Flo, Howzat etc) **Thiophanate methyl** (Banrot). The APVMA have indicated that the review of these two chemicals was initiated due to concerns over public health and occupational health and safety.

From an industry perspective information is being sought to clarify the extent to which the products are used and how they are being used. This information will be used as the basis for industry responses.

More detail about the review is available on the APVMA website: http://www.apvma.gov.au/chemrev/carbendazim.shtml

Also the APVMA has initiated a subscriber service whereby interested people can register to be kept informed of any developments at the following http://www.apvma.gov.au/listserv/carbendaziminfo.shtml

Methomyl. As a consequence over concerns related to methomyl use in hydroponic lettuce the APVMA moved to remove all leafy vegetables uses from product labels. This has action since been amended with permits approved for the use of the product in field grown situations.

Carbaryl. Finalization of this review is almost complete with residue trials for avocadoes underway. Once completed the data generated should serve to address the APVMA concerns and result in the use of the product being retained.

Azinphos-methyl. Industry responses to the reviews more contentious recommendations were developed and submitted to the APVMA. Counter

arguments were provided to the proposed limit of two applications per season, the removal of apricots and the 100 m buffer for tree crops. It was also stressed that the APVMA should explore alternative risk mitigation options and that this should be done in conjunction with industry.

Diuron. Following on the first stage of the review it is understood that revised recommendations are under development. It is gathered that these recommendations should be available for public comment within the next few months.

International

Japanese MRLs

The Japanese positive MRL list is now one year old and it certainly is having an impact. According to reports the level of MRL breaches detected in Japan has jumped five-fold. The Japanese government also appears to be increasing the level of monitoring. There are concerns that

EU MRLs

The European Commission continues to cull products or reduce MRLs. Most recently trifluralin and endosulfan have failed to gain authorisation and the majority of MRLs for azinphos methyl have been reduced to the limit of detection.

Codex Committee for Pesticide Residues

Data Support

Endosulfan residue data, previously generated to maintain access submitted to the FAO, is still to be evaluated. It is anticipated that this will occur during 2006.

The retention of the carbendazim MRL for tree nuts should be finalised this year with a review of dietary intake completed in 2005.

A Codex MRL for pyrethrin in tree nuts has been retained. The new MRL is based on residue data generated in Australia from almonds and macadamia nuts.

Data generated to support the continued use of carbaryl in pome fruit as part of the APVMA chemical review program is to be prepared for submission to the FAO.

Interim MRLs (Maximum Residue Limits). A pilot project at Codex has seen the establishment of interim Codex MRLs for trifloxystrobin (Flint®), fludioxinil (Maxim®) and bifenazate (Acramite®). These will stand for the next 4 years and can be found at the following Report. *http://www.codexalimentarius.net/download/report/641/al28_24e.pdf*

New MRLs: A number of new MRLs were adopted at Codex in 2006 these included the following pesticide – crop combinations:

indoxacarb	capsicums	0.3
	cucumbers	0.2
	tomatoes	0.5
	Lettuce (head)	
fenhexamid	strawberries	10.0
	capsicum	2.0
	lettuce	30.0

For 2007 the following have been proposed

thiacloprid	Strawberries	
	Cucumber	
	Tomato	
	capsicum	
propamocarb	capsicum	3.0
	tomato	2.0
	lettuce	100
pyraclostrobin	Capsicum	0.5
	Eggplant	0.3
	Tomato	0.3
	lettuce	2.0
pirimicarb	cucumbers	1.0

	zucchini	1.0
	tomatoes	0.5
	capsicum	0.5
	lettuce	5.0
quinoxyfen	strawberries	1.0

Deleted MRLs: MRLs deleted from Codex include: Dimethoate – pome fruit, grapes and plums; Dodine – grapes and strawberries; Fenamiphos – carrots, pineapples and strawberries.

USA

New MRLs: Over the last 6 months MRLs have been proposed, by the US EPA, for the following pesticide – crop combinations:

Further Information

If you have any questions or wish to discuss any points covered in this Update, please contact Kevin Bodnaruk on 02 9499 3833 or email akc_con@zip.com.au.

AgChemical Update - August 2007

WHATS NEW

Below is a summary of various regulatory issues and chemical reviews currently being addressed both locally and internationally.

NATIONAL Regulatory issues

FSANZ – APVMA MRL Harmonisation

There has finally been some progress on the vexed issue of MRL harmonisation. New legislation was passed in July to allow MRL setting to become a joint process. It is understood that the legislation will come into effect in October and that the first applications that could be handled this way by years end.

Unfortunately, while there has been progress it has been, potentially, a small step. MRLs established by the APVMA for minor use permits have been excluded. Also, while there will be harmonisation there we will not be complete alignment, with the FSANZ process potentially taking as much as 9 months longer than that of the APVMA.

Prescribed chemicals

The Product Safety and Integrity Committee are currently looking at a proposal to introduce higher tier training and accreditation requirements for high risk chemicals. An initial discussion paper outlining the rationale and approach was produced last year for stakeholder input. The committee is now working on developing the criteria by which higher risk chemical products would be determined and what the additional requirements should be.

Minor use

Following the Minor Use Forum, held in June, it is understood that a funding proposal is being developed, that if accepted by government, would see the creation of a Specialty Crops Unit in Australia. Support for the concept is strong from both peak industry bodies and the manufacturers. Hopefully the success stories relayed from similar initiatives in Canada and the USA will help convince government of the urgent need for such a step.

Productivity Commission Review

The Productivity Commission has announced a review of chemicals and plastics regulation in Australia. Additional information on the review and how to respond can be found at http://www.pc.gov.au/study/chemicalsandplastics/background.html

Labelling

The APVMAs label reform process is progressing, albeit slowly. Most recently the focus has been on more clearly defining what elements on a label needs to be regulated, i.e., what parts are meant to be mandatory and what should be advisory and how best to provide the information users need to know.

The aim is to develop best practice guidelines for labelling that improve information flow and provide clearer ‘sign posts’ on where relevant information can be found.

It is planned, once the approach and options have been agreed, to undertake some testing of the concepts. This is likely to be done via questionnaire sent to chemical users review to complete and comment on what has been proposed. At this stage the thinking is that this would be done through training and user group organisations.

Horticultural Exports and residue

compliance

A workshop was recently held at HAL to discuss issues associated with MRL compliance and export market access. The meeting looked at how best to respond in the event of a breach and begin developing strategies to minimise the potential for their occurrence in the future.

An outcome of the workshop and subsequent discussions is a proposal to form a Contaminant/Pesticide Residue Working Group. The objective of the group will be to develop mechanisms that will minimise risks to Australian horticultural export trade from potentially non-compliant contaminants and residues.

Chemical reviews

Updated below are those issues and reviews either recently initiated or where progress is anticipated over the next 6-12 months.

Priorities: The APVMA is currently revisiting its list of chemicals nominated for review. The intent is to re-prioritize the list which should provide industry with a clearer indication of when chemicals are likely to be reviewed and what issues will need addressing. what is likely to be needed and provide Following input from various agencies and the States prioritization of the various chemicals that are still currently

Consultation: The APVMA are trying to develop a mechanism for greater stakeholder involvement in the review process. The concept is for people with interest in a particular review to register so that they can be kept updated on any developments concerning that review.

The first review where this service is available, of interest to horticulture, is carbendazim. Registration can be done at the following address:

http://www.apvma.gov.au/listserv/carbendaziminfo.shtml

Dip disposal: An APVMA working group has recently been formed to explore the issue of dip disposal. The main issue to be addressed is the development of science-based national guidelines for safe and effective land based dip disposal. The first step will involve the APVMA assessing the range of chemicals currently approved for use in dips and identifying what information will be needed to allow assessments to be undertaken.

Fenthion & Dimethoate: These reviews are beginning to gather momentum. It is understood that the residue data review for fenthion has commenced and that report should be available by the end of the year. For dimethoate a significantly larger data set was provided by industry and the manufacturers and will take longer to assess. A report on dimethoate is anticipated in early 2009.

A substantial residue trial program is about to be initiated to generate data that is relevant to Australian crops and uses. The results of which, it is hoped, will help address potential areas of concern and help maintain access to these much needed fruit fly control products.

Carbendazim: Bavistin, Spin Flo, Howzat etc) **Thiophanate methyl** (Banrot). The APVMA indicated that the review of these two chemicals was initiated over potential public health and occupational health and safety concerns.

Information was sought from potentially affected industries to clarify the extent to which the products are used and how they are being used. This information was collated and formed the basis of a horticulture industry response.

Azinphos-methyl: ndustry responses to the reviews more contentious recommendations were developed and submitted to the APVMA. Counter

arguments were provided to the proposed limit of two applications per season, the removal of apricots and the imposition of a 100 m buffer for tree crops. It was also stressed that the APVMA should explore alternative risk mitigation options and that this should be done in conjunction with industry.

Diuron: Following on the first stage of the review it is understood that revised recommendations are under development and that they should be available for public comment early next year.

International

Japanese MRLs

The Japanese positive MRL list is over one year old and is having an impact. According to reports the level of MRL breaches detected in Japan has jumped five-fold. The Japanese government is also increasing its level of monitoring.

EU MRLs

The European Commission continues to cull products or reduce MRLs. Most recently trifluralin and endosulfan failed to gain authorisation, the majority of MRLs for azinphos methyl have been reduced to the limit of detection and the MRL for imazalil in pome fruit has been dropped to 0.02 mg/kg (the Australian MRL is 5.0 mg/kg).

Codex Committee for Pesticide Residues

Data Support

Endosulfan residue data, previously generated to maintain access was submitted to the FAO, MRLs have been established at Codex for avocadoes, broccoli, celery, cherries, cucumber, custard apple, eggplant, hazelnuts, litchi, macadamia nuts, mango, melons, papaya, potato, squash and sweet potato.

A Codex MRL for pyrethrin in tree nuts has been retained. The new MRL is based on residue data generated in Australia from almonds and macadamia nuts.

Data generated to support the continued use of carbaryl in pome fruit as part of the APVMA chemical review program is to be prepared for submission to the FAO.

Data generated to support minor-use permit applications for azoxystrobin are to be submitted as part of the submission to have Codex MRLs established in 2009.

New MRLs: A number of new MRLs were adopted at Codex in 2007 these included the following pesticide – crop combinations:

Compound	Commodity	MRL
Boscalid	Apple	2.0
	Banana	0.2
	Berries	10.0
	Grapes	5.0
	Pistachio nuts	1.0
	Stonefruit	3.0
	Tree nuts	0.05
Fludioxonil	Pome fruit	5.0
Indoxacarb	Lettuce, leaf	7.0
thiacloprid	Berries	1.0
	Capsicum	1.0
	Cucumber	0.3
	Eggplant	0.7
	Kiwi	0.2
	Melons	0.2
	Pome fruit	0.7
	Potato	0.02
	Stonefruit	0.5
	Tomato	0.5
	Tree nuts	0.02
propamocarb	Capsicum	3.0
	Cauliflower	0.2
	Cucurbits	5.0
	Eggplant	0.3
	Potato	0.3
	Radish	1.0
	Spinach	40.0
	Tomato	2.0
pyraclostrobin	Apple	0.5
	Brussels sprouts	0.2
	Cabbages	0.2

Compound	Commodity	MRL	Compound	Commodity	MRL
	Capsicum	0.5		Root & tuber vegetables	0.05
	Cantaloupe	0.2			
	Cucumber	0.5		Stone fruit	3.0
	Eggplant	0.3	quinoxyfen		
	Lettuce, head	2.0		Cherries	0.4
	Raspberries	2.0		Capsicums	1.0
	Stonefruit	1.0		Currants, Black	1.0
pirimicarb	Berries	1.0			
	Brassica vegetables	0.5		Grapes	2.0
				Lettuce, head	8.0
	Citrus	3.0		Lettuce, leaf	20.0
	Cucurbits	1.0		strawberries	1.0
	Fruiting vegetables	0.5			
	Lettuce	5.0			
	Onion, bulb	0.1			
	Pome fruit	1.0			

Further Information

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AgChemical Update - February 2008

WHATS NEW

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NATIONAL Regulatory issues

Prescribed chemicals

The Product Safety and Integrity Committee are currently looking at a proposal to introduce higher tier training and accreditation requirements for high risk chemicals. An initial discussion paper outlining the rationale and approach was produced last year for stakeholder input. The committee is now working on developing the criteria by which higher risk chemical products would be determined and what the additional requirements should be.

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An outcome of the workshop and subsequent discussions is a proposal to form a Contaminant/Pesticide Residue Working Group. The objective of the group will be to develop mechanisms that will minimise risks to Australian horticultural export trade from potentially non-compliant contaminants and residues.

Chemical reviews

Updated below are those issues and reviews either recently initiated or where progress is anticipated over the next 6-12 months.

Priorities: The APVMA has finalised reprioritizing the priority list of chemicals for review. The re-prioritize list can be found at

http://www.apvma.gov.au/chemrev/Nominations.shtml

In all there are 45 chemicals listed with nearly 20 used in horticulture. The Priority 1 list includes acephate, chloropicrin, methomyl, propiconazole and trichlorfon.

Acephate

Fenthion & Dimethoate:

A substantial residue trial program is underway aimed at generating trial data to allow more refined assessments to be undertaken by the APVMA as part of the review. The results of which, it is hoped, will help maintain access to these much needed fruit fly control products.

These reviews are beginning to gather momentum. It is understood that the residue data review for fenthion has commenced and that report should be available by the end of the year. For dimethoate a significantly larger data set was provided by industry and the manufacturers and will take longer to assess. A report on dimethoate is anticipated in early 2009.

Carbendazim: Bavistin, Spin Flo, Howzat etc) **Thiophanate methyl** (Banrot). The APVMA indicated that the review of these two chemicals was initiated over potential public health and occupational health and safety concerns.

Information was sought from potentially affected industries to clarify the extent to which the products are used and how they are being used. This information was collated and formed the basis of a horticulture industry response.

Azinphos-methyl: ndustry responses to the reviews more contentious recommendations were developed and submitted to the APVMA. Counter arguments were provided to the proposed limit of two applications per season, the removal of apricots and the imposition of a 100 m buffer for tree crops. It was also stressed that the APVMA should explore alternative risk mitigation options and that this should be done in conjunction with industry.

Diuron: Following on the first stage of the review it is understood that revised recommendations are under development and that they should be available for public comment early next year.

International

Japanese MRLs

The Japanese positive MRL list is over one year old and is having an impact. According to reports the level of MRL breaches detected in Japan has jumped five-fold. The Japanese government is also increasing its level of monitoring.

Japanese MRL violations

Hong Kong

Positive list

EU MRLs

The harmonisation of EU MRLs is progressing with lists of proposed provisional MRLs published in late 2007. process has moved a step closer European Commission continues to cull products or reduce MRLs. Most recently trifluralin and endosulfan failed to gain authorisation, the majority of MRLs for azinphos methyl have been reduced to the limit of detection and the MRL for imazalil in pome fruit has been dropped to 0.02 mg/kg (the Australian MRL is 5.0 mg/kg).

Codex Committee for Pesticide Residues

Compounds reviewed
Compounds recently reviewed with MRL recommendations made to the Codex Committee for Pesticide Residues include carbaryl, clofentezine, cyfluthrin, cyromazine, difenoconazole, dimethomorph, flusilazole, propiconazole, pyrimethanil, zoxamide

Further Information

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AgChemical Update - February 2008

WHATS NEW

Below is a summary of various regulatory issues and chemical reviews currently being addressed both locally and internationally.

NATIONAL Regulatory issues

Productivity Commission Review
The Productivity Commission has finalised its review of chemicals and plastics regulation in Australia. While there are a number of recommendations relevant to horticulture two significant ones appear to be:

- the regulation of Control of Use be transferred from individual States to the APVMA
- that MRLs set by the APVMA should be automatically incorporated into the FSANZ Food Standards Code

The full report and recommendations can be found at the link below

http://www.pc.gov.au/projects/study/chemicalsandplastics/docs/finalreport

Dip disposal: The APVMA is continuing to liaise with DEWHA regarding the development of dip disposal guidelines.

Chemical reviews

Updated below are those issues and reviews either recently initiated or where progress is anticipated over the next 6-12 months.

Priorities: The APVMA has finalised reprioritizing the priority list of chemicals for review. The re-prioritize list can be found at

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Acephate

Fenthion & Dimethoate:

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These reviews are beginning to gather momentum. It is understood that the residue data review for fenthion has commenced and that report should be available by the end of the year. For dimethoate a significantly larger data set was provided by industry and the manufacturers and will take longer to assess. A report on dimethoate is anticipated in early 2009.

Carbendazim: Bavistin, Spin Flo, Howzat etc) **Thiophanate methyl** (Banrot). The APVMA indicated that the review of these two chemicals was initiated over potential public health and occupational health and safety concerns.

Information was sought from potentially affected industries to clarify the extent to which the products are used and how they

are being used. This information was collated and formed the basis of a horticulture industry response.

Propiconazole: Industry input into the review were sought and a response developed and submitted to the APVMA.

Sulphur dioxide:

Dieldrin:

Diuron: Following on the first stage of the review it is understood that revised recommendations are under development and that they should be available for public comment early next year.

Propiconazole

International

Japanese MRLs

The Japanese positive MRL list is over one year old and is having an impact. According to reports the level of MRL breaches detected in Japan has jumped five-fold. The Japanese government is also increasing its level of monitoring.

Japanese MRL violations

Hong Kong

Positive list

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The harmonisation of EU MRLs is progressing with lists of proposed provisional MRLs published in late 2007. process has moved a step closer European Commission continues to cull products or reduce MRLs. Most recently trifluralin and endosulfan failed to gain authorisation, the majority of MRLs for azinphos methyl have been reduced to the limit of detection and the MRL for imazalil in pome fruit has been dropped to 0.02 mg/kg (the Australian MRL is 5.0 mg/kg).

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Further Information
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AgChemical Update - February 2009
(Project AH04007)

WHATS NEW

Below is a summary of various regulatory issues and chemical reviews currently underway both locally and internationally.

NATIONAL REGULATORY ISSUES

Productivity Commission Review
The Productivity Commission has finalised its review of chemicals and plastics regulation in Australia. There are a number of recommendations relevant to horticulture, of particular note are:

- that the regulation of Control of Use be consolidated under the authority of the APVMA
- that MRLs set by the APVMA should be automatically incorporated into the FSANZ Food Standards Code

COAG have agreed to the proposed recommendations and it is understood that various government departments have been tasked with reviewing current arrangements and develop new approaches for the implementation of the recommendations. The timeframe for completion of this phase set for early 2010.

The full report and recommendations can be found at the link below
http://www.pc.gov.au/projects/study/chemicalsandplastics/docs/finalreport

APVMA Chemical reviews

Updated below are those issues and reviews either recently initiated or where progress has occurred or anticipated in the near future.

Priorities: The APVMA priority list of chemicals for review can be found at

http://www.apvma.gov.au/chemrev/Nominations.shtml

In all there are 45 chemicals listed with nearly 20 used in horticulture. The Priority 1 list includes acephate, chloropicrin, fipronil, methomyl, propiconazole and trichlorfon.

Fenthion and Dimethoate: The trial program to augment previously submitted data is well underway. The first season's pre-harvest trials have been completed and the second season is underway. Post-harvest residue trials are about to commence. Related trial work on post-harvest treatment rates is also underway.

It is understood that the APVMA is in the process of finalising inert-agency elements of these reviews. It has been indicated that, at this stage, the APVMA intends to finalise the reviews once an assessment of all available data has been completed, including the data from HAL trials once have been completed, submitted and taken into consideration. This is anticipated to be either late 2009 or early 2010. See the link below for more information

http://www.apvma.gov.au/chemrev/dimethoate.shtml

Carbendazim: Bavistin, Spin Flo, Howzat etc) **Thiophanate methyl** (Banrot). As indicated previously the review of these two chemicals was initiated over potential public health and occupational health and safety concerns.

It is understood that the review is well progressed with a draft report becoming available during 2009.

FSANZ

Dieldrin: A request has been made of FSANZ to address the issue of the environmental contaminant dieldrin in the Food Standards Code. Currently few commodities are covered for extraneous contamination and FSANZ have been asked to amend the Code to include a number of commodities potentially at risk through contact with soil, e.g., cucurbits. In response FSANZ have recently published a notification, (Proposal M1003) indicating that amendments for dieldrin are under consideration. See the link below

http://www.foodstandards.gov.au/_srcfiles/M1003%20MRLs%20(Apr,%20May,%20June,%20Aug%202008)%20AAR%20FINAL.doc

INTERNATIONAL

New Zealand

In NZ Environmental Risk Management Authority has recently revoked approvals for methyl parathion and endosulfan. Whether this decision has any implications for Australian exports to NZ are uncertain. It is believed that under the TTMRA, food meeting FSANZ MRLs for a particular pesticide can be sold in NZ irrespective of the status of the NZ registration for that pesticide or the NZ MRL status.

For example, for endosulfan, despite the registration and use in NZ now being withdrawn, the MRLs are still currently in place, so food from Australia that complies with either, the current NZ MRLs, the FSANZ MRLs or Codex MRLs should be acceptable. Nevertheless, it is understood that clarification of the matter is being pursued through DAFF.

EUROPE

Meanwhile changes to pesticide regulation in Europe continue apace.

Commission Decision 2008/934/EC and the voluntary withdrawal of a number of active substances from regulatory review.

Late last year the EU Commission took a decision not to include 49 compounds in Annex 1 to 91/414/EEC. It is understood that this was, primarily an administrative / bureaucratic solution to allow new data to be submitted while ensuring review timelines were met. This involved giving registrants the option of voluntarily withdrawing their compounds from the review program then resubmitting with any additional supporting data.

The compounds withdrawn are listed below with those registered for use in Australia horticulture underlined:
Acetochlor, Acrinathrin, Asulam, Bitertanol, Bupirimate, Carbetamide, Carboxin, Chloropicrin, Clethodim, Cycloxydim, Cyproconazole, Dazomet, Diclofop-methyl, Diethofencarb, Dithianon, Dodine, Ethalfluralin, Etridiazole, Fenazaquin, Fenbuconazole, Fenbutatin oxide, Fenoxycarb, Fluazifop-P, Flufenoxuron, Fluometuron, Fluquinconazole, Flurochloridone, Flutriafol, Guazatine, Hexythiazox, Hymexazol, Isoxaben, Metaldehyde, Metosulam, Myclobutanil, Oryzalin, Oxyfluorfen, Paclobutrazol, Pencycuron, Prochloraz, Propargite, Pyridaben, Quinmerac, Sintofen, Tau-fluvalinate, Tebufenozide, Tefluthrin, Terbuthylazine and Thiobencarb.

See the link below for more detail-
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:333:0011:0014:EN:PDF

Registrants are now able to resubmit these compounds, with the additional data.

Revision of Directive 91/414/EEC
EU Reg 396/2005

On 13 January the European Parliament adopted a Regulation to replace the current legislation on plant protection products. The new legislation is meant to

increase the protection of human health and the environment and serve to increase the level of harmonisation within the EU. The new regulation introduces a hazard-based approach to the assessment of pesticides. The final provisions of which were adopted by the European Parliament on 13th of January 2009. It is anticipated that they will be formally adopted by the European Council in March 2009.

Implications

The new rules could result in the removal of a number of chemicals from the EU. The potential impact of this regulation is uncertain due to a lack of detail over the likely hazard criteria and their application. In addition, it is understood that the new rules will not enter into force until Q3/4 2010 and will only apply to the next regulatory review of chemicals, expected around 2015 for most currently-registered compounds. Contrary to a number of media reports where it was suggested that 22 pesticides were to be banned the new regulation does not contain such a list.

For more information see http://www.apvma.gov.au/new/pesticides_reg.shtml or http://www.europarl.europa.eu/news/expert/background_page/064-45653-012-01-03-911-20090108BKG45652-12-01-2009-2009-false/default_en.htm

Private Standards

The UK Co-operative Supermarket has moved to temporarily prohibit the use of eight insecticides on own-brand fresh produce. These are Acetamiprid, Clothianidin, Dinotefuran, Fipronil, Imidacloprid, Nitenpyram, Thiacloprid and Thiamethoxam. This temporary action is due to a concern over possible impacts on bees.

See the link below for more information http://www.co-operative.coop/ethicsinaction/takeaction/planbee/what-The-Co-operative-is-doing-for-bees/

Codex Committee on Pesticide Residues

Upcoming MRL decisions

The 2009 meeting of the Codex Committee on Pesticide Residues will be reviewing MRL recommendations made for azoxystrobin (e.g., asparagus, banana, berries, brassica vegetables, bulb vegetables, celery, citrus, cucurbits, grapes, legume vegetables, lettuce, mango, papaya, peanut, pistachio, strawberry and tree nuts), boscalid (banana and kiwi fruit), buprofezin (citrus, mango, cucumber and tomato), chlorantraniliprole (e.g., celery, cucurbits, fruiting vegetables, grapes, leafy vegetables, pome fruit, root and tuber vegetables and stone fruit), cyhalothrin (e.g., asparagus, berries, bulb vegetables, cherries, citrus, cucurbits, fruiting vegetables, flowerhead brassica, legume vegetables, mango, peaches, plums and pome fruit), cypermethrin (e.g., asparagus, berries, brassica vegetables, carambola, cucurbits, durian, grapes, leafy vegetables, legume vegetables, litchi, longan, mango, okra, onion, olives, papaya, sweet peppers, pome fruit, root and tuber vegetables, stone fruit and strawberries), dimethoate (head lettuce and capsicums), imidacloprid (e.g., berries, root and tuber vegetables, strawberry and tree nuts), mandipropamid (e.g., broccoli, cabbage, celery, cucumber, grapes, leafy vegetables, melons, onion bulb, peppers, potatoes and tomato) methomyl (e.g., apples, cucurbits, lettuce, pear and tomato), spinetoram (e.g., lettuce, oranges, pome fruit, tomato and tree nuts), spirotetramat (e.g., cabbage, celery, citrus, cucurbits, fruiting vegetables, grapes, leafy vegetables, pome fruit, stone fruit and tree nuts), and tebuconazole (e.g., brassica vegetables, carrot, garlic, leek, head lettuce, mango, bulb onion, papaya, plums, pome fruit, tomato and watermelon.

More detailed information can be found at http://www.fao.org/ag/AGP/AGPP/Pesticid/JMPR/Download/2008AnnexIFinal.pdf

Further Information

If you have any questions or wish to discuss any points covered in this Update, please contact Kevin Bodnaruk on 02 9499 3833 or email akc_con@zip.com.au.

APPENDIX II. Industry submission in response to Reviews.

December 21st, 2006

Dr J. Smith
APVMA
PO Box E240
KINGSTON ACT 2604

Dear Dr Smith,

Re: Development of the APVMA's Corporate Plan 2006-2009

Horticulture Australia Ltd (HAL) appreciates the opportunity to have input into the further development of the APVMA's Corporate Plan for 2006-2009 as requested in the recent letter of XXXXXX. HAL would propose the following for further consideration by the APVMA, that of scientific competence, consistency and low risk pesticides.

In the Corporate Plan it is indicated that the APVMA will strive to "*recruit, develop and retain good people*". HAL considers this to be critical to the successful future operation of the APVMA. Therefore, HAL believes the APVMA needs to make a priority of ensuring that staff is equipped with the necessary skills to not only effectively assess applications but to also make balanced risk-management decisions. To this end HAL believes that the APVMA should seek to implement staff training programs utilizing external instructors and ensuring individuals gain first hand exposure to farming and farming practices, i.e., to help enable staff to place pesticide use in context.

Under its current Corporate Plan the APVMA undertakes to provide an efficient and effective system of registration that is supported by consistent evidence-based risk assessments. In order to achieve the objectives as outlined in the Corporate Plan HAL believes the APVMA needs to place greater

emphasis on achieving consistency and transparency in regulatory decision-making. This raising of this issue is prompted by concerns among some HAL a member that decision-making in a variety of situations appears to be inconsistent and lacking in scientific rigour. The concern being that there appears to be a tendency to rely too heavily on bureaucratic process, at times, rather than an informed scientific assessment.

Finally, HAL believes that the area of low risk pesticide regulation needs greater attention. HAL appreciates that the APVMA has attempted to develop some initiatives in this area with, unfortunately little success to date. Nevertheless, HAL believes there needs to be greater consideration given to the issue, particularly with regard to biorational pesticides and their regulation. Increasingly smaller horticultural industries are seeking access to newer reduced risk compounds, such as biorational pesticides, but encountering little interest from manufacturers as current regulatory hurdles act as a deterrent.

Yours sincerely,

December 21st, 2006

Dr E. Bennet-Jenkins
APVMA
PO Box 6182
KINGSTON ACT 2604

Dear Dr Bennet-Jenkins,

Re: Development of the APVMA's Operational Plan 2009–2010 and Strategic Corporate Plan

Horticulture Australia Ltd (HAL) appreciates the opportunity to have input into the further development of the APVMA's Operational and Strategic Corporate Plans, as asked for in the recent letter of November 5th.

HAL is generally supportive of the APVMAs current objectives and strategic direction and in the main believes that the organisation is having some success in their achievement. Nevertheless, HAL considers that there are a number of priority areas that need to receive increased attention; these are outlined in detail below.

In the Operational Plan it is indicated that the APVMA wishes to optimize the regulatory framework within which it operates. With the issue of a more harmonised and integrated approach to regulation identified as an element of the strategy. In the light of the recommendations contained in the Productivity Commission Report HAL believes that achieving more uniform Control of Use Regulations, at the State level, and harmonised MRL setting between the APVMA and FSANZ should be priorities in the development of the future strategic plan.

In the Corporate Plan it is indicated that the APVMA will strive to "*recruit, develop and retain good people*". HAL considers this to be critical to the successful future operation of the APVMA, i.e., in terms of its key objective of making regulatory decisions supported by

evidence-based risk assessments. To this end HAL believes that the APVMA needs to make a priority of retaining effective, experienced employees while developing a training framework aimed at enhancing their skills and those of new recruits. The development of programs that utilize opportunities for interaction with external experts in risk assessment, whether via training courses, secondment or participation in international fora are needed. At a more practical level allowing individual's opportunities to gain first hand exposure to pesticide users and user practices would also be of benefit as such experience would help staff place pesticide use in context.

Under its current Corporate Plan the APVMA has indicated, as an objective to, "*maintain and improve scientific quality and rigour*". HAL is uncertain how this is being assessed or what level of success has been achieved, particularly with respect to external agencies. Of specific concern is the apparent lack of a formal framework within which any disagreement could be resolved. In terms of external agencies it is unclear whether the APVMA has the capacity, or authority, to direct or advise agencies in the event of a divergence of scientific opinion or if an agency's recommendation were to rely too heavily on process, rather than informed scientific assessment. HAL believes that from a stakeholder perspective there would be value in the APVMA enunciating the current mechanisms being employed to ensure that decisions are science-based both internally and within external agencies.

In terms of regulatory reform HAL believes that the APVMA needs to give increased consideration to the areas of labelling, low risk pesticide regulation and minor use. In terms of labelling while there have been some positive developments there has been little progress of late and HAL believes that this is an area in need of greater activity.

HAL understands and appreciates that the APVMA has attempted to develop some initiatives in the area of low-risk pesticides; unfortunately, they have not been particularly successful. Nevertheless, HAL believes that the issue of low-risk plant protection products, particularly biorational pesticides and their regulation needs to be taken up. Increasingly smaller horticultural industries are seeking access to newer reduced risk products, such as plant extracts, marketed internationally but encounter little interest from manufacturers with current regulatory hurdles often identified as deterrents to commercialisation. HAL suggests that this should be an area of greater emphasis particularly in the context of international collaboration and increased use of contemporary regulatory science.

In terms of minor use HAL asks that the APVMA persist with its current endeavours to explore how

minor crop industries can gain access to pesticides. To date, progress in this area has been relatively meagre and at present apparently stalled with little progress achieved via external initiatives such as the MULO project. Nevertheless HAL believes that significant gains can be made but believes that any future initiatives be taken forward in parallel with any international activities, i.e., not predicated on hoped for outcomes from collaboration with either external agencies or international jurisdictions.

Finally, HAL has concerns over the ability of the APVMA to effectively inform government policy. HAL acknowledges that this is an area highlighted in the current Corporate Plan but has serious concerns over the capacity of the APVMA to have an impact, particularly with regards to linkages with DAFF. HAL is concerned that in relation to pesticide regulation there has been a significant loss in expertise within DAFF and as a result DAFF may be unable to effectively respond to any APVMA initiative.

Yours sincerely,

HAL Project Number: AH04007

February XXX, 2009

Review of Cost Recovery Arrangements 2008 – Draft CRIS
APVMA
PO Box 6182
KINGSTON ACT 2604

Re: Review of Cost Recovery Arrangements

Horticulture Australia Ltd (HAL) appreciates the opportunity to contribute to the further development of the APVMA's cost recovery arrangements.

In general terms HAL is supportive of the APVMA's current approach, i.e., using the levy as a balancing factor and not pursuing 100% cost-recovery through fees. HAL agrees that such an approach would act as a significant disincentive for new products and innovation. However, HAL strongly disagrees with the proposed changes to fees associated with minor use permit; HAL objections are outlined in detail below.

The APVMA's Operational Plan[2] indicates that new guidelines and policies for minor use are to be developed to 'enable timely access to safe and effective chemicals'. The introduction of a $700 fee would not only seem to contradict this objective, it would also serve to penalise growers seeking access.

The draft CRIS indicates that minor use permits are required because manufacturers find the registration of certain pesticide uses is not commercially justifiable. This infers there is only a small market for the minor use. Anecdotal/market information tells us that this situation continues to prevail, and that manufacturer interest in minor crops has not increased, in fact it may even be decreasing. For this reason, a minor use fee increase would seem to be counter-productive.

The draft CRIS describes the current $320 fee as nominal, HAL understands this level was primarily chosen to discourage impractical permit requests, and to a lesser extent in recognition of the industry's limited capacity to pay. A combination of the sustained drought, increased costs, and market conditions have further eroded minor crop growers' ability to pay.

The APVMA acknowledges in the draft CRIS that growers and grower organisations already pay both the costs of generating required data and the permit fee, yet the APVMA proposes to more than double minor use permit fee indicating that this constitutes 100% recovery of its administration costs.

A $700 administration fee suggests that a considerable amount of time needs to be devoted to processing 3-4 page permit applications. Is this the case in reality or has the amount been derived via extrapolation from other application related activities, i.e., handling full registration dossiers for new

[2] Operational Plan 2008-2009

products? Unfortunately, no information is provided as to the basis of the $700 fee.

This lack of clarity suggests that the stated APVMA position on minor use lacks sincerity, i.e., income generation rather than the development of new guidelines to enable 'access to safe and effective chemicals' is the primary motivation. This view is reinforced with the proposed fee to cover both new applications and renewals. In the case of renewals, where no additional data is provided, it is difficult to see how $700 administration costs could be incurred. In addition, the proposal that fees be indexed would, over time, increase costs to growers and further inhibit minor industries' access to chemicals. Strengthening the impression the APVMA see minor use as an income stream to be exploited.

The Federal governments guidelines on Cost Recovery[3] indicate that agencies should – "assess whether adopting cost recovery would undermine the objective of the activity" and "ensure that cost-recovery is not undertaken simply to earn revenue". Given the APVMA position on minor use the introduction of a $700 fee would seem contradict both these objectives.

In summary, HAL believes the outcome of these proposals will be to penalise and constrain small and minor industries by restricting their ability to access needed chemicals. If costs are too prohibitive, this could have the unfortunate and undesired effect of encouraging illegal use. This result would be in no-one's interests

HAL therefore strongly rejects the proposal to increase minor use fees to levels that cannot be sustained by growers. HAL believes that a fairer and more equitable two tiered fee structure, as follows, should be considered:

- No fee charged for a minor use permit application that arises from an industry strategic review of pest management needs
- A nominal fee ($320) payable for ad hoc requests, i.e., those not origination from an industry review.

This would reward those industries that have given due consideration to issues such as IPM and trade, and still provide a revenue stream for the APVMA. HAL would welcome an opportunity to discuss, in more detail, the above proposal.

While acknowledging the need for the APVMA to adequately fund it's activities HAL does not believe lifting fees for minor use is a cost-effective mechanism of achieving this outcome.

Yours sincerely,

[3] Australian Government Cost Recovery Guidelines July 2005 Financial Management Guidance No.4

Response to DAFF on EU legislation

What is the extent of industry knowledge and concern with the legislative changes being proposed in the EU?

In general industry stakeholders associated with exports are aware of the proposed legislative changes through links to EU based organizations. The level of detail of this awareness would vary considerably, as would their level of concern. Obviously, those dealing more with exports to Europe would have greater concerns.

What perceived impact on Australian industries is expected from the changes to EU pesticides legislation?

There are two broad concerns. Firstly, if the new legislation results in removal of any pesticides from the EU market, detectable residues of those removed pesticides on imported commodities will constitute a violation. It is anticipated that this would make achieving compliance extremely difficult, if not impossible in some cases, effectively restricting market access of Australian exports.

The second concern relates to longer term pesticide access. The Australian crop protection market constitutes approximately 1-2% of the global total, whereas the European market is of the order of 35%. The potential withdrawal of any pesticide active ingredients from Europe may adversely affect the economic viability of those compounds leading to manufacturers ceasing production. This would result in a possible negative flow-on effect, i.e., the affected compounds would eventually become unavailable in Australia.

Unfortunately, we won't know the full extent of any impacts until such time as the legislation is finalized and implemented.

Do you see scope for the government to try to moderate the EU proposals, bearing in mind any similarity of regulatory regimes/standards in Australia? Do you perceive similarities in both Australian and EU regulatory approaches?

While Australia currently collaborates with EU representatives in various international work-sharing projects I doubt there would be much scope to moderate the proposed legislative changes, given their origin. The thrust of the proposed legislation appears to be a move towards basing risk management decisions primarily on hazard assessments. This would appear to be at odds with the approach currently followed in Australia and other international jurisdictions, such as Codex, US, Canada etc.

However, there may be scope for Australia to moderate any adverse impacts on Australian export industries. For example, opportunities may exist for the Australian government to negotiate acceptance of Australian standards (MRLs, MLs etc), as they relate to traded horticultural/agricultural commodities. This perhaps could be achieved within the context of the European Community-Australia Mutual Recognition Agreement, or some similar arrangement, i.e., acceptance of Australian standards as import tolerances?

Are the industries considering, or moving to adopt, strategies to address the consequences of changes in the EU, if adopted in their present form? Examples include information bulletins to exporters on EU import requirements.

Currently, we're unaware of any industry specifically developing strategies aimed at addressing the possible 'fallout' from the proposed legislation. Primarily because it is unclear exactly what the impacts might be as the criteria for assessment have yet to be fully defined.

The apple industry has recently developed guidance documents on the use of pesticides in fruit production aimed at the EU. The document is aimed at ensuring MRL compliance as well as complying with specific retailer requirements, i.e., secondary/non-regulatory standards. Other sectors such as stone fruit, cherries, mangoes, etc are and will be keeping a close watch on developments and communicating to exporting members through regular bulletins.

Do you believe the proposed new EU legislation is moving away from risk-based to a hazard-based system of regulation? Would you see that raising WTO concerns?

Yes, as indicated previously the proposed legislation appears to base risk management decisions primarily on assessments of hazard. The current uncertainty over the proposed legislation relates to how this would actually work in practice.

In terms of the WTO, the basic logic of the SPS agreement is that risk management would be science based with the objective of providing an adequate level of protection, what ever that might be. The agreement does not seek to globally harmonise the level of protection. Obviously this allows countries to have more stringent standards, provided they are scientifically justified. Therefore, for the proposed legislation, should it come into effect, to be safe from challenge it would need to be shown it is based on a valid assessment of risk and clearly aimed at the control of that risk.

New Data Requirements - withdrawal of support for pesticide products by chemical manufacturers – implications for ongoing availability of a range of chemicals

What flow on effects are perceived in Australia for chemicals withdrawn from the larger EU chemical market - what are the key products currently in use in Australia that might be withdrawn from the EU market under changed official regulations? - are there viable alternatives to these products in Australia?

As indicated above concerns have been expressed over the long-term availability of any pesticide active ingredient that, as a consequence of the proposed legislation, is removed from the market. Unfortunately, there is considerable difficulty in identifying potential alternative compounds as it is uncertain exactly how the legislation would be applied and to which compounds. For example, the PSD identified a number of compounds that 'may be candidates for substitution'. It is unclear what this will mean in practice.

There may be many potential alternatives to compounds identified for withdrawal however their long-term availability might also be threatened should they fall into the 'candidate for substitution' category.

Non-regulatory Food Standards - Action by supermarket chains etc to overlay more stringent standards for commercial reasons and implications for setting MRLs - impacts of GLOBALGAP and extent of this practice in Australia

What are your views on non-regulatory standards, ie. are they essentially a commercial marketing tool over which governments have little or no control? Is there a perception that Australian supermarkets impose similarly stringent requirements over and above Australian standards?

It is generally believed that the private quality assurance standards of major EU retailers and the restrictions on use of certain pesticide active ingredients they contain are driven primarily by a combination of potential market advantage, due diligence associated with the UK Food Safety Act (1990) and pressure from non-government organisations. In the UK the retailer standards relating to

pesticides either prohibit the use of certain pesticides or require prior agreement via derogation irrespective of MRLs. It is probable that governments would see themselves as having little control, as essentially the retailer requirements relate more to perceived improved 'quality' attributes such as greater wholesomeness due to nil or diminished pesticide residues.

At this stage, Australian retailers have not implemented their own private standards, per se. However, it is understood that such a step would have been implemented in 2007 by at least one major retailer had it not been for high level government and industry intervention but it is still under active consideration.

HAL response to Productivity Commission Review of plastics and chemicals regulation

HAL appreciates the importance of the issues being addressed in the Draft Report and is supportive of many recommendations contained therein. However, HAL has some serious reservations with regard to certain aspects of the Draft Report and the resulting recommendations. HAL would like to offer some general and detailed comments with regard to certain recommendations and or seek clarification. These primarily cover MRL setting, use of international data, recognition of overseas schemes, control-of-use and minor use.

Firstly, HAL welcomes Draft recommendation 5.9 that maximum residue levels set by the APVMA should be automatically incorporated into the food standards code and Draft recommendation 6.3 that APVMA approved labels should be recognised as being sufficient for workplace requirements.

HAL however, has significant reservations over Draft recommendation 4.6, i.e., that the National Registration Scheme should be extended to cover control-of-use. HAL agrees that the states and territories having their own differing control-of-use regimes is not desirable. HAL believes that having different state based schemes per se is not problematic in itself provided they achieve the same outcome. At present HAL does not believe this is the case and welcomes the Report highlighting this point.

However, HAL has significant concerns over the potential implications of control-of-use becoming a federal responsibility while being administered at the state level. The concern of HAL is that such an arrangement would require federal funding of any state based activities in this area. As HAL understands the APVMA operates under a cost-recovery structure, costs associated with such a shift would be born by registrants and ultimately the users, i.e., the farmers. Consequently HAL queries how such a proposed shift would be managed in practise. HAL is concerned that the cost of implementation and management to the farming community and ultimately the consumer could be considerable.

HAL would appreciate clarification of what is meant by more extensive "utilisation of international data" HAL acknowledges that there are elements of duplication in risk assessments undertaken by the APVMA but understands that initiatives exist, at the international level, aimed at reducing duplication, i.e., OECD work share projects, seeking to develop guidelines that would serve to increase opportunities for greater harmonisation. Notwithstanding such initiatives HAL would be concerned if consideration were given to the APVMA moving away from its current science based approach in which agricultural chemicals are assessed within an Australian context, e.g., residue and efficacy data that relates to Australian use patterns.

In terms of "greater recognition of appropriate overseas schemes and more extensive utilisation of international data and modelling tools" HAL queries what would be viewed as 'appropriate' and by whom. The current risk assessment tools and models used within the European Community have been developed within a policy framework driven by the Precautionary Principle, where safety factors used are often not wholly science based. An example of this is the current debate over suitable variability factors when estimating acute dietary intake of pesticides. In Australia, the US and at JMPR[4], a variability factor of 3 is used. However, the European Community currently refuses to accept this value and insists that a variability factor of 5, 7 or higher would be more appropriate, ostensibly to provide greater safety margins. This is despite a recent EFSA discussion paper [5]indicating that utilising a factor of 3 had a marginal impact on the number of compounds qualifying for MRLs. As a

[4] Report of the 2006 Joint FAO/WHO Meeting on Pesticide Residues.

5 Opinion of the Scientific Panel on Plant protection products and their Residues on acute dietary intake assessment of pesticide residues in fruit and vegetables. http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1178629328713.htm

consequence HAL would be very concerned should, in the future, regulatory decisions, made in Australia, be based primarily upon assessments undertaken overseas.

HAL, also queries the statement regarding timeliness. In terms of timeliness HAL understands that the statutory timeframe for gaining a new agricultural chemical registration in Australia is shorter than for either the USA or the European Community. As the Report indicates problems with achieving these timeframes were highlighted by manufacturers. However, as indicated by the ANAO audit[6], statutory timeframes were met for 95-87% of pesticide applications from 2001-02 to 2005-06, suggesting to HAL that where timeframes were not met issues other than recognition of overseas data or duplication of risk assessments played a role.

In regard to minor use HAL believes there may have been some misunderstanding in the Report over the costs of achieving an approval with that of the cost of gaining a registration per se. The major impediment in gaining access to pesticides in minor crops is the costs associated with data generation, not the fees associated with an application. In granting approvals for the use of a pesticide in minor crops the APVMA must be satisfied that the product is safe to the crop, efficacious and poses no concerns in terms of consumer exposure or trade. In many cases aspects related to use in minor crops can be extrapolated from uses in major or related crops. Unfortunately, extrapolation is not always possible with local data having to be generated.

The cost of such data generation can be prohibitive, particularly for small or emerging industries. Furthermore, for growers of minor crops to fully understand how a product can be used effectively and be confident in the performance of a product suitable trial data may also be required

In the Report it is indicated that benefits from public funding of pesticide research needs to be clearly articulated and where possible quantified. In a recent study (Crowe *et al*. 2006[7]) it was reported that the benefits of public investment in herbicide research in grains was gained primarily by farmers with a benefit: cost ratio of 1.5 and an internal rate of return of 28%. It was concluded, in this instance, that the grain farmers rather than consumers or manufacturers gained the lion's share of benefit as Australia exports most of its grain. Looked at in the context of Australian horticulture it could be concluded that this would not be the case as the majority of locally produced commodities are consumed domestically.

[6] ANAO (Australian National Audit Office) 2006, Regulation of Pesticides and Veterinary Medicines, Australian Pesticides and Veterinary Medicines Authority, Audit report no. 14, Canberra.

[7] Bronwyn Crowe, Bob Lindner, & Rick Llewellyn. 2006. The benefits and beneficiaries of "public" investment in herbicide use research and development. 50th AARES Conference, Sydney.

DISCUSSION PAPER ON THE SCOPE OF PRODUCTS IN THE NATIONAL REGISTRATION SCHEME AND REGULATED BY THE APVMA

Horticulture Australia Limited (HAL) welcomes this opportunity to contribute to the PSIC Discussion Paper on the scope of the National Registration Scheme.

HAL is the industry body for the Horticulture sector, the fastest growing agricultural industry in Australia with production in excess of $6.0 billion annually. HAL works towards meeting both the current and strategic needs of individual horticulture industries. As access to and use of farm chemicals is integral to sustainable production for many horticultural commodities HAL believes that having an efficient National Registration Scheme is fundamental to the sectors long-term viability.

HAL believes that the primary outcome of this review should be a move towards achieving greater regulatory clarity and efficiency while not increasing regulatory burden. Specific areas in need of consideration include overhauling the flawed processes involved in achieving listed registration and reservation from registration, as well as the development of new approaches to handle the advent of novel pest management technologies because current requirements have the potential to seriously impede grower access to potentially valuable new tools. In terms of policy this will need to be robust and to accommodate the dynamic nature of technological change and farming practices.

Scope of the NRS

HAL believes that the question as posed, i.e., whether a product falls within the scope of the NRS, is too narrow. HAL believes that a decision as to whether a chemical falls within the scope of the NRS should be on the basis of specific science-based risk assessment criteria rather than current legislative definitions or policy. Consequently, HAL believes that a clear enunciation of the risk assessment principles and framework for the NRS is required.

As currently outlined the chemical assessment framework does not appear to be based explicitly on the use of risk assessment but contains elements thereof. Also, it is unclear from the provided framework how the ‘riskiness’ of a chemical will be assessed and by whom and how data gaps or uncertainty are to be addressed. Allied to these concerns is a need for greater thought in the identification and development of appropriate regulation for low risk products.

The processes and criteria involved will need to be robust to accommodate the dynamic nature of change in technology and farming practices and as a result HAL believes that trying to develop categories on the basis of existing chemicals or current uses may be too narrow an approach.

Listed and reserved

As indicated in the discussion paper the current approach to reserved from and listed registrations is "not achieving the desired effect", with to date, no Standards or Conditions having been placed into regulations. The major difficulty with the current approach is that it is disproportionate, in requiring the establishment of a regulation, to finalise approval for what are essentially minimal risk uses. The current approach, as a result has been found to be inefficient and impractical.

HAL believes that a process by which approval for a Standard or a Condition is achieved should be at the level of the APVMA, i.e., follow a similar path to that of current chemical approvals. It seems incongruous, for example, that the application of a pesticide by aircraft can be authorised by the APVMA but the establishment of a Standard for a general disinfectant requires enacting of a regulation.

In addition to simplifying the processes involved in setting Standards or Conditions, HAL believes PSIC should review the criteria associated with the development of conditions of reservation so as to allow easier access to low risk products.

Low risk products

The issue of gaining access to low risk products is of increasing concern to horticultural industries. They are wishing to gain access to alternative pest management technologies such as biorational pesticides, e.g., plant oils, plant extracts or antagonist micro-organisms. This has occurred, in part, as a response to pest resistance, consequences of regulatory action, i.e., APMA chemical reviews, consumer concerns about pesticide residues and environmental impacts.

This interest has resulted in HAL committing significant funding for biorational pesticide development in such areas as covered crops. Specific areas of potential use include organic farming, integrated pest management (IPM) and high value minor crops where the cost of development and registration coupled with low potential returns discourage the development of conventional pesticides. Biorational pesticides can also play a role in managing residues. The use of biorational pesticides would have the potential to reduce the risk of MRL violations thereby aiding Australia's national and international markets potential by reducing the likelihood of market access restrictions arising from MRL violations.

However, despite the current level of interest there are few biorational products available in Australia. A significant barrier to their increased availability, unfortunately, is the Australian regulatory system with its current data requirements and associated high costs of achieving a registration. This is primarily a result of biorational products being dealt with in the same manner as conventional synthetic pesticides, i.e., regulators requiring data packages identical to those for conventional pesticides.

The need to foster the development and use of biorational pesticides has been recognised internationally. In the US, it has been accepted that biorational pesticides differ markedly from traditional synthetic chemical pesticides with initiatives taken to facilitate their registration[8]. In the US system the data required to support a typical biopesticide can be significantly less than for conventional pesticides as it recognised that biopesticides tend to pose fewer risks than conventional pesticides. For example, in assessing risks to human health the EPA takes into account the origins of the biorational pesticide, e.g., if they are found in common foods or approved as food flavourings. Notwithstanding the revised requirements the EPA still undertakes thorough risk assessments to ensure that a biorational pesticide will not have adverse effects on human health or the environment.

The European Commission, in its policy paper *Sustainable use of plant protection products* stressed

the importance of IPM and the replacement of older pesticides with safer and more selective products such as biorational pesticides. The OECD has also recognised that the take-up IPM and pesticide risk reduction will be slow due to the lack of viable alternative control methods and the fact that in general regulatory procedures are not flexible enough to deal with biological or reduced risk products.

Biorational pesticides will only have a future in Australia if regulatory requirements are scaled down for certain groups of plant protection products with reduced risk profiles, the process is simplified and becomes less expensive. Unless there is significant change, access to such products in Australian will continue to lag or be non-existent. As a consequence, growers will be at a competitive disadvantage and the wider community will miss the benefits of them not having access to safer, environmentally friendly alternatives to conventional pesticides.

There is a need, therefore, to establish the best approach with regard to minimum data requirements that is proportional to the risk posed. HAL therefore proposes that consideration be given to the development of a separate approach for the regulation of biorational pesticides, i.e., a more pragmatic approach. One that provides a process that facilitates the development of such products through reduced data requirements and registration costs. This is particularly important given the current high cost of product development, testing and registration and uncertainty over commercialisation.

[8] In 1994, the Biopesticides and Pollution Prevention Division was established in the US EPA's Office of Pesticide Programs.

Product Safety and Integrity Committee - National user training and accreditation scheme for restricted (higher risk) chemical products:

Horticulture Industry Response

Thank-you for the opportunity to comment on the proposed draft risk criteria for higher risk chemical products. Horticulture Australia understands that the impetus for the development of the criteria was to help identify chemicals which through the gaining of specific higher order skills users would be able to maintain access to other wise problematic pesticides, i.e., as a result of training regulators could be confident that users would have the knowledge and capacity to manage the attendant risk appropriately. On this basis HAL and its member industries support the concept and encourage its further development in the hope that areas of concern are addressed. The following comments on the criteria, their application and the future implementation of the scheme are offered for your consideration.

Criteria

HAL queries the relevance of certain rationale. Of particular concern is the rationale behind the criteria 'Residues Risk (Target Commodity)'. Much of the rationale listed does not appear to consider current fresh produce marketing arrangements and the fact that in the majority of situations farmers have no input into where of how their produce is sold. Within our current system to '*be able to manage production and supply to avoid sending produce with unacceptable residues to market*' is impractical. In Australia, exports of horticultural produce can and are sourced from wholesale markets over which individual growers have no control. Produce supplied to wholesale markets are grown to meet Australian standards and growers will not be aware of the destination of a commodity were it to be exported.

Therefore, HAL questions how chemical prescription and a training linked system could address this issue as under this rationale the majority of farmers could not comply, i.e., the outcome would be few if any farmers would be able to satisfy requirements and gain access to a listed chemical. To address this issue is PSIC considering proposing the development of an allied quality assurance or Vendor Declaration scheme?

HAL also believes that a degree of overlap also exists between some criteria. The need to differentiate between 'Residue Risk (Non-target)' and 'Environment' is acknowledged as a means of highlighting different aspects of pesticide impacts, i.e., acute versus long-term, but suggests that in essence they deal with the same issue, i.e., unwanted off-target contamination. HAL believes that the key rationale should be the ability to manage pesticide use and implement necessary risk mitigation techniques, e.g., knowledge of drift management, understand implications and record keeping. HAL feels that using rationale such as the '*potential*' of a chemical to poison non-target species is too broad and subjective.

Application

From the provided information it is unclear how the criteria were or are to be applied. Was the draft list of chemicals prepared by ascribing values to specific criteria and then scoring against individual compounds? If so, how was the scoring system derived, do the criteria have weightings and does a threshold exist, i.e., at what level would a chemical be considered for prescription? Without this information the current process lacks any transparency and is open to misinterpretation, i.e., that the criteria have been developed and used to justify inclusion of certain chemicals rather identify chemicals of concern.

HAL also has reservations over the inclusion of 'previously reported trade violations' as a rationale

without knowing what implications a violations would have on a chemicals status. For example, HAL understands that there have been recent MRL violations with a herbicide in lettuce and grain protectants into Japan. Would such violations trigger 'reviews' of the chemicals and their potential inclusion on the list?

HAL believes that for industry to have confidence in the process, worked examples need to be provided. The procedures and methods should provide a sound foundation for assessing chemicals and HAL does not believe, on the basis of the information provided to date, that this is the case.

Implementation

A number of concerns have been raised over how such a scheme would be implemented. Particularly with regard to current inconsistencies that exist between various state based training programs, i.e., how will accreditation between states be managed, and differences between State based Control of Use regulations? HAL also encourages PSIC to consult with the Agri-food Industry Skills Council, if this has not previously occurred, as AFISC has responsibility for developing the tools (units of competency, assessment protocols, training support materials) for the national recognition of workplace activities such as access/use/disposal etc of higher risk chemicals.

HAL also has concerns that the prescribed chemicals listing scheme may be superseded by impending developments in the area of security Sensitive chemicals management and as such add an additional layer of complexity to an already complicated area of regulatory activity.

Jenny Ritchie
DAFF
GPO 858
Canberra ACT 2601

Regarding your letter of July 7th, Horticulture Australia Ltd (HAL) wishes to participate in any ongoing discussions regarding the development of a national control of use framework and appreciates this opportunity to provide input into the development of a discussion paper for future stakeholder consultation.

HAL believes that the foundation the Australian farm chemical regulatory system, i.e., the review of chemicals undertaken by the APVMA, using a risk-based weight of evidence approach is sufficiently robust and comprehensive to provide the level of environmental and consumer protection deemed necessary by the wider community. Nevertheless, HAL agrees with the Report of the Productivity Commission (PC) that a national framework for control-of-use could be beneficial and that the "*greatest benefits are likely to come from having a uniform approach to off-label use of chemicals*"[9] and that this could be achieved through the removal of inconsistent implementation of APVMA label conditions.

In terms of the listed suggestions, HAL regards many as inappropriate as they appear to go well beyond the scope of control-of-use and seemingly questioning aspects of the National Registration System. It is the understanding of HAL that control-of-use relates to how the sale, handling, use and disposal of farm Chemicals are managed. As a result HAL believes these are the areas upon which PSIC should focus its attention not a wholesale review of the National Registration System.

In general terms, HAL believes that many elements of the different control of use regimes, currently employed, are comparable and harmonization is unlikely to be problematic. However, one key area of divergence, as highlighted by the Productivity Commission, is that of 'off-label' use. Significant differences currently exist in the regulatory approaches employed by different jurisdictions, i.e., performance-based versus more prescriptive approaches. Reconciling these differences, given the previous lack of progress on this issue[10], will be challenging. HAL, while favouring a more performance-based approach, believes the national framework should be one based on an appropriate assessment of risk. How this risk is assessed and how the system performs from a compliance and enforcement perspective will need to be explored in detail.

One significant area of concern for HAL is that of funding. A potential $10 million cost in the APVMA taking on this task was mooted in the PC Report[11]. As part of its recommendation the PC indicated that the "*APVMA should recover additional costs through a mix of charges and levies*"[12]. While cost savings could be anticipated the PC report acknowledged that "*the extent and timing of*

[9] page 223 Chemicals and Plastic Regulation PC Research Report July 2008
[10] page 221 Chemicals and Plastic Regulation PC Research Report July 2008
[11] page 224 Chemicals and Plastic Regulation PC Research Report July 2008
[12] page 228 Chemicals and Plastic Regulation PC Research Report July 2008

accrual of those savings is unclear"[13]. The PC also acknowledges that "*the new regime could lead to a significant change to current funding arrangements*". Therefore, it can be inferred that an increase in the APVMA budget will be required and that changes to the current funding arrangements may be a consequence.

The PC Report indicated that the funding of the proposed control-of-use regime should be subject to government cost recovery guidelines[14] in terms of efficiency and cost-effectiveness but suggests that a resetting of current arrangements would be "*unlikely to have significant cost-effectiveness implications*"[15]. The Federal government's guidelines on Cost Recovery[16] indicate that agencies should "*assess whether adopting cost recovery would undermine the objective of the activity*" and "*ensure that cost-recovery is not undertaken simply to earn revenue*". On this basis HAL believes given the broader public good aspect of control of use any additional costs should be borne by government, not by users and as a result the costs of compliance for horticultural industries should be the minimum necessary.

Ultimately the purpose of a national control-of-use regime will be to add force to regulatory safeguards for the environment, public health, worker safety and trade. HAL believes that how these elements are to be addressed, i.e., the risk criteria utilised, the type and nature of compliance and enforcement activities after approval, needs to be the basis for discussions in the development and implementation of a national control of use framework.

Your sincerely,

[13] page 224 Chemicals and Plastic Regulation PC Research Report July 2008
[14] page 228 Chemicals and Plastic Regulation PC Research Report July 2008
[15] ibid
[16] Australian Government Cost Recovery Guidelines July 2005 Financial Management Guidance No.4

Responses provided to State reviews of legislation

Regulatory Impact Statement – Proposed Pesticides Regulations 2009.

Horticulture Australia Ltd (HAL) would like to thank NSW DECC for the opportunity to submit comments in response to the Regulatory Impact Statement (RIS).

HAL is generally supportive of the DECC preferred option of replacing the current Regulation with the proposed Regulation, particularly, given the anticipated development of a national framework for the regulation of agricultural and veterinary chemicals. HAL appreciates the importance of the issues being addressed in the RIS and would like to offer some general comments with regard what has been outlined.

HAL sees as positive the move to reference both the Food Standards Code and the APVMA's MRL Standard with regard to residues. The potential for discrepancies to occur between the two has been an ongoing source of frustration for growers and a cause of confusion in the market place. As indicated in the RIS referencing both will provide much needed clarity and avoid misidentifying produce as containing prohibitive residues where a MRL discrepancy may exist.

HAL queries the anticipated benefits[17] as outlined with regard to trade impacts. While acknowledging that effective implementation of the Pesticides Regulation would be expected to reduce risks of domestic impacts, i.e., fresh produce exceeding MRLs, HAL fails to see the link with reduce trade impacts. Compliance with domestic MRLs is no guarantee of compliance with standards in importing countries. Residue incidents tend to arise through a lack of information on what standards exist in an importing country rather than misuse of a pesticide.

In relation to Part 4 of the Regulation in relation to record keeping, clause 14 (2), seems to suggests that a record would need to be hand written. Is this in fact the case, i.e., electronic records would not be deemed acceptable? Many growers utilise computers for managing information and record keeping in relation to their farming enterprise. Having to make separate hand written records of pesticide applications would seem unnecessarily burdensome. It would be appreciated if DECC could provide clarification of this point.

Regards,

[17] Page 31 RIS: Proposed Pesticides Regulation 2009

Review of the Agricultural and Veterinary Chemicals (Control of Use) Regulations 1996 - Discussion Paper.

Horticulture Australia Ltd (HAL) would like to thank Vic DPI for the opportunity to submit comments in response to the Review of the Agricultural and Veterinary Chemicals (Control of Use) Regulations 1996 Discussion Paper.

HAL appreciates the importance of the issues being addressed in the Discussion Paper but has serious reservations with regard to the types of approach being proposed. HAL would like to offer some general and detailed comments with regard to options that have been outlined to address the areas of market failure that have been identified.

General comments:

HAL recognizes that trade, environmental and public health concerns exist over the use of crop protection chemicals but feels that any strategies proposed should provide an effective mechanism for addressing the areas of concern. However, HAL has serious reservations that increased regulation, a neighbour notification scheme or mandating hazard assessment practises, as outlined in the Discussion Paper, would achieve this aim. Particularly as it appears that the responsibility for ensuring the successful operation of the options would appear to rest disproportionately with the farmer.

HAL believes that the development of a voluntary guidance document that could be linked with industry Codes of Practice would be a more suitable approach to adopt rather than introducing a new range of regulatory controls. HAL believes that such a linkage would be a more logical mechanism to address the issues raised without increasing the complexity of the regulatory framework within which farmers currently operate.

Detailed comments:

Adverse impacts on trade

HAL acknowledges that difficulties have occurred in export markets through MRL non-compliance. However, HAL doesn't believe that the introduction of additional controls, as outlined, would necessarily overcome these problems. As indicated in the Discussion Paper residue incidents tend to arise through a lack of information, either about what has been applied or what standards exist in an importing country. Given the large number of horticultural commodities that can be exported and the array of chemical options available for use in Victoria, due in part to the Victorian Control of Use

legislation, HAL feels that unless appropriately targeted the introduction of a vendor declaration system could add considerably to the complexity of the process. Particularly, where a farmer is not necessarily producing for export, i.e., a commodity could be purchased at the wholesale market, but to ensure integrity of the system could be required to complete vendor declarations. It is also unclear how produce that is moved from interstate would be dealt with where presumably a vendor declaration type system may not be in place.

HAL believes that issues relating to trade could be better dealt with through the development of national industry based approach. To this end HAL is currently working through the Horticulture Market Access Committee (HMAC) to develop an Export Residue Management Plan. The main elements of this plan are to increase awareness of issues relating to MRL compliance, identify communication channels so as to allow relevant information to be accessed and in the event of a violation ensure a swift and positive response.

Potential options to address environment-related and public health adverse impacts

Notification

HAL is concerned at the potential impact that a neighbour notification requirement, as outlined in the Discussion Paper, could have. HAL believes that the introduction of such a requirement would be both burdensome and problematic, with regard to its operation. While the options, as indicated in the discussion paper, may make the requirement more approachable (page 14), HAL is particularly concerned over how such an approach could be implemented. Particularly, as it is suggested that such a scheme could potentially provide effective veto powers to neighbours.

The Discussion Paper is also unclear how notification would occur and to whom a notification should be made, i.e., what constitutes a neighbour? On page 17 it is indicated that information would have to be provided prior to a treatment. It is unclear what time frame would be available for a notification to occur. This could be problematic where a farmer, due to environmental conditions or pest pressure needs to treat but could potentially need to both contact and gain approval from a number of potential neighbours.

Further the Discussion Paper is unclear how such a scheme could be administered. In terms of a farmer having to gain consent, would a farmer have the right of appeal in the event of a disagreement? Should a failure to reach agreement occur to whom could the farmer or neighbour appeal?

It is also uncertain what purpose notification would serve, particularly given the underlying causes

linked to adverse impacts in the Discussion Paper, i.e., lack of awareness, lack of knowledge of chemical properties and failure to take adequate account of environmental conditions. HAL believes that these underlying causes could be better addressed through targeted training programs and the provision of relevant information on chemical labels rather than the implementation of a notification type scheme.

Environmental hazard assessment

HAL is concerned that the Discussion Paper appears to place the onus for decision-making, with regard to risk assessment and management, upon the farmer. The Discussion Paper is unclear how sensitive areas/crops would be identified. Is the presence of people (page 16) to be the main criteria, and would this be the responsibility of the farmer to determine?

Greater guidance and information would be needed to enable farmers to make considered decisions as to what is 'sensitive' and when. The potential risk posed by a pesticide, i.e., areas of sensitivity, may vary considerably depending upon the product to be applied, the season, the neighbouring crops, prevailing climatic conditions etc, the Discussion Paper provides no indication how this would be managed?

The Discussion Paper while indicating that the use of wind monitoring equipment could become a requirement it is unclear how this information would be used by a farmer in undertaking a risk assessment or how they would identify an appropriate drift management option. For example, how does a farmer choose what techniques should be employed to reduce risk under specific atmospheric conditions. With what confidence can a farmer apply the drift reduction measures outlined on labels, where such measures exist? Consequently, it is unclear how making a requirement for wind monitoring equipment would, in practise, assist in minimising adverse environmental impacts without being linked to appropriate training and information.

Regulated spraying distances

HAL agrees that the use of regulated spraying distances or buffer zones can be an effective tool in limiting unwanted off-target exposures. However, the concept of regulated spraying distances needs to be expanded upon and greater guidance provided with regard to assessing risk. Should all off-target areas be treated as being of equivalent sensitivity or can areas be graded and buffer distance amended depending upon the chemicals or types of application to be made? Furthermore, in some intensive horticultural areas it would be extremely difficult for a farmer to be able to identify all potentially sensitive areas due to the variety of crop plantings and crop rotations that may be occurring in a growing area.

Review of Pesticide Legislation and Policies in Western Australia
Horticulture Industry Response

Thank-you for the opportunity to comment on the Policy and Recommendations Report. Horticulture Australia (HAL) is sympathetic to the rationale behind the review, i.e., to address specific areas of concern as highlighted in the Report and on this basis supports the need for such a review and, in principle the resulting recommendations. HAL, however, has number of reservations over certain aspects of the report, and offers the following comments on specific recommendations and their future implementation for your consideration.

Firstly, HAL is concerned that while a Code of Practice has been identified as the desired approach, the Report does not provide detail on how it is to be developed, the timeframes likely to be involved and how the elements of the Code, mandatory and non-mandatory, will link with legislation. For industry to have confidence in the approach to be adopted a clear process needs to be enunciated indicating how stakeholders will be able to participate in its development.

Secondly, given the rather ambitious goal, that the Code "would bring together all relevant information on the best practice use of pesticides, in all circumstances and by all types of users" HAL is concerned as to how this will be achieved, particularly given the diversity of pesticide use in WA. An outcome of the introduction of the Code is to minimize unwanted impacts of pesticide use and HAL believes that to achieve effective risk minimization the various elements of the Code need to be based on sound and clearly articulated risk analysis and risk management principles. Otherwise HAL is of the view that an overly simplistic and conservative approach could be adopted leading to a Code that was essentially precautionary in nature and unnecessarily prescriptive.

Further it is unclear how the various elements of the Code would be updated, so as to maintain relevance. The National Operating Principles indicate that any regulatory system should be "*responsive to technological change*" and be "*committed to continuous improvement*". Industry therefore believes that one aspect that needs to be outlined prior to the initiation of any work is how mandatory protocols and procedures within the Code would be elaborated, updated and managed. The concern being that unless properly managed, rather than bringing flexibility, the Code could, in time, become restrictive thereby, hindering the capacity of pesticide users to adopt innovative risk mitigation practices.

Thirdly, reference is made to a number of specific matters upon which the Code could act, such as mandatory training, record keeping, buffer zones and adverse effects regulations. HAL is generally supportive of such proposals provided they are nationally consistent. It is generally acknowledged that problems with pesticides are primarily a result of a lack of awareness, lack of knowledge of chemical properties and failure to take adequate account of environmental conditions. Consequently, HAL believes that targeted training programs and the provision of relevant information on chemical labels would be a significant step in reducing adverse impacts or pesticide use.

Regarding training a number of concerns have been raised over how the scheme would be implemented. Particularly with regard to current inconsistencies that exist between various state based training programs, i.e., how will accreditation between states be managed? In addition, HAL believes that the Agri-food Industry Skills Council should be included in the process as it has responsibility for developing the tools (units of competency, assessment protocols, and training support materials) for the national recognition of workplace activities such as access/use/disposal etc of chemicals.

HAL does, however, have significant reservations with the concept of neighbour notification and believes that unless properly managed could be both burdensome and problematic. HAL is particularly concerned over how such an approach could be implemented, i.e., when, how, what, to whom would a notification be made (what constitutes a neighbour?) and to what purpose? Would a farmer have to gain consent, would a farmer have the right of appeal in the event of a disagreement? Should a failure to reach agreement occur to whom could the farmer or neighbour appeal?

Lastly, HAL believes that point 3 of Recommendation 4, i.e., "*Use for a crop/pest combination registered in another jurisdiction"*" needs further clarification. Concerns have been raised over the intent of the statement "*agricultural users of pesticides in WA should be allowed to use a pesticide in this State for any registered crop/pest combination on the label*". Specifically questions have been raised as to whether this proposed arrangement would also include situations where a crop/pest combination appears on only one label, i.e., registered in WA on one product label but other products could be used.

HAL is supportive of any initiative aimed at overcoming inconsistencies in State registrations. However, it cannot support a scheme that could potentially undermine current data protection regulations. Gaining and maintaining access to pesticides, for many horticultural crops can be particularly problematic. Recent changes to data protection regulations have helped improve the situation by providing incentives for manufacturers to invest and seek label extensions, particularly for off-patent products. HAL is concerned that if the proposed WA approach does allow use of 'any product', irrespective of specific product approvals, the recent gains will be lost and could jeopardize the ability of industries to attract future manufacturer investment in the development of existing products for horticulture.

In conclusion HAL is broadly supportive of a Code of Practice and encourages its further development but believes that the Code should be outcome based and provide enough flexibility to enable growers to employ a range of practices to ensure compliance. HAL also stresses that in the development of the Code there be ample opportunities for stakeholder input, that it be structured to allow easy revision and that the risk assessment and management elements be science based.

CBRN Security Branch
Office of National Security
Department of the Prime Minister and Cabinet
PO Box 6500 Canberra ACT 2600

HAL Response to Draft Report of the Control of Chemicals of Security Concern

Horticulture Australia Limited (HAL) welcomes this opportunity to contribute to the discussion into chemicals of security concern in Australia. HAL is the industry body for the Horticulture sector, which has production in excess of $6.0 billion annually and represents approximately 25% of total Australian agricultural employment. The use of farm chemicals is integral to production within the sector and therefore the management of, and access to farm chemicals is of vital importance. HAL believes that having an effective risk assessment procedure for chemicals of security concern will be fundamental to the sector's long-term viability while guarding against potential threats to the broader community.

While supportive of the discussion paper recommendations, HAL has reservations on certain points. The following are both general and detailed comments on the issues outlined in that paper.

General comments:

HAL recognizes importance of effectively managing chemicals of security concern and is broadly in favour of the approach outlined in the discussion paper. In particular HAL believes the proposed industry involvement will be critical to ensure effective risk assessment and implementation of mitigation measures, while minimising unnecessary disruption to commercial activity.

HAL also believes that it is fundamental to the success of any risk mitigation strategies that COAG ensures a consistent national approach is followed in their implementation. . In addition, ongoing industry consultation will be fundamental to ensure that any strategies proposed are relevant and appropriately targeted.

Detailed comments:

HAL acknowledges the complexity of the risk analysis process and broadly agrees with the

framework outlined in the discussion paper. However, there are some specific concerns. Firstly, while the risk assessment process is focused on the supply chain, there is little indication of the context of potential threats, or the perceived vulnerability of areas that might be targeted by criminal activity. HAL is concerned that the process of considering specific end-points could be driven by 'hazard constructs' rather than actual scenarios, resulting in overly zealous risk mitigation measures, i.e., how realistic is the worse-case scenario that might be used in identifying risk.

Secondly, HAL accepts that there is no simple recipe for evaluating and managing risks and agrees with the proposal that control measures be focused on relevant areas and be proportionate to the assessed risk. However greater detail is required on what will underpin the risk assessment process. The discussion paper indicates that the process will be based upon the Australia/New Zealand Risk Management Guideline (AS/NZS 4360:2004), and that strategies must be developed in partnership, with security outcomes balanced against financial impact. However, it is unclear how this is to be achieved.

The general concepts in the Guideline will need to be adapted to assess and manage the risks associated with chemicals of security concern. Unfortunately, the Discussion Paper sheds little light on how this is to occur. Of particular importance is what attitude to risk will be applied, i.e., whether science-based decision triggers such as numerical thresholds or indices will be used, or whether decisions will be based on a precautionary approach. This will be critical the assessment process begins to deal with individual chemical products, as distinct from chemicals actives. HAL considers that clarification of this point is important because zero risk is impossible to achieve when managing chemicals of security concern, largely because it involves attempting to deal with criminal activity.

In view of this, HAL requests that prior to the risk assessment methodology being set out, a consultation process takes place so that the risk analysis approach can be clearly enunciated and understood by all stakeholders. This is particularly important to ensure risk mitigation measures do not rest disproportionately with the farmer.

INDUSTRY CAPABILITY STOCKTAKE

The first National Industry Reference Group of Chemical Security (NIRG) meeting in March 2009 agreed to a stocktake of resources available to the Australian chemicals sector to improve chemical security.

On behalf of the NIRG, the Chemical Security Coordination Unit (CSCU) is seeking information on resources such as codes of practice, guidelines, standards, training materials and information sharing protocols that your association has developed, is aware of, or is considering developing; to assist its members improve chemical security.

Whilst completing this questionnaire is voluntary, and we fully appreciate the time and effort required, it will assist in tailoring future engagement activities and strengthening and streamlining chemical security arrangements.

The information provided in this questionnaire is in addition to any information you have provided previously to the National Industrial Chemicals Notification and Assessment Scheme (NICNAS). If your answer to any of the questions has already been provided to another Australian Government agency, such as NICNAS, to save your time, do not provide the information again. Rather, provide the contact details of the relevant government agency and the date it was provided.

Please note that information gathered will be treated in confidence and will only be shared amongst National Government Advisory Group (NGAG) and NIRG members unless permission is given to do otherwise.

Following the return of the surveys, the CSCU will collate the data and present the findings to the next NGAG and NIRG meetings.

Questions about the survey can be directed to Tim.Killesteyn@ag.gov.au or

(02) 6141 2990

Thank you for taking the time to complete this questionnaire.

Contact Details

Association:	Horticulture Australia
Contact name:	
Position:	
Phone:	
Email:	
Address:	

Question 1a

Please select the types of chemicals that are of interest to your association.

- Industrial chemicals
- Agricultural and veterinary chemicals
- Explosives

Question 1b

Please select which elements of the supply chain apply across your association.

- Transport
- Disposal
- Import / export
- Retail
- Storage
- Manufacture
- Wholesale
- Use

Question 1c

Of the 96 chemicals listed in the *COAG Report on the Control of Chemicals of Security Concern*, please circle / tick the chemicals that are relevant to your association. (Please note that the chemicals of potential security concern contained in the list are indicative only)

A	**CAS #**
Aldicarb	116-06-3
Ammonia (anhydrous)	7664-41-7
Ammonium nitrate*	6484-52-2
Ammonium perchlorate^	7790-98-9
Arsenic pentoxide	1303-28-2
Arsenic trioxide	1327-53-3
Arsine	7784-42-1
Azinphos methyl	86-50-0
B	
Bendiocarb	22781-23-3
Beryllium sulphate	13510-49-1
Bromine	7726-95-6
C	
Cadusafos	95465-99-9
Carbofuran	1563-66-2
Carbon disulphide	75-15-0
Carbon monoxide	630-08-0
Chloropicrin	76-06-2
Chlorfenvinphos	470-90-6
Chlorine gas	7782-50-5
Cyanide calcium	592-01-8
Cyanide mercury	592-04-1
Cyanide potassium	151-50-8
Cyanide sodium	143-33-9
Cyanide zinc	557-21-1
Cyanogen bromide	506-68-3
Cyanogen chloride	506-77-4
D	
Diazinon	333-41-5
Dichlorvos	62-73-7
Diethyl phosphite	762-04-9
Dimethyl phosphite	868-85-9
Dimethyl mercury	593-74-8
Dimethyl sulphate	77-78-1
Disulfoton	298-04-4

E	**CAS #**
Endosulfan	115-29-7
Ethion	563-12-2
Ethyl mercury chloride	107-27-7
Ethyldiethanolamine	139-87-7
F	
Fenamiphos	22224-92-6
Fluorine gas	7782-41-4
Fluoroacetic acid	144-49-0
Fluoroethyl alcohol	000371-62-0
Fluoroethyl fluoroacetate	459-99-4
H	
Hydrochloric acid	7647-01-0
Hydrogen chloride	7647-01-0
Hydrogen cyanide	74-90-8
Hydrogen peroxide^	8007-30-5
Hydrogen sulfide	7783-06-4
M	
Mercuric chloride	7487-94-7
Mercuric nitrate	8046-70-6
Mercuric oxide	8028-34-0
Mercurous nitrate	7782-86-7
Methamidophos	115182-35-9
Methidathion	950-37-8
Methiocarb	716-16-5
Methomyl	16752-77-5
Methyl fluoroacetate	453-18-9
Methyldiethanolamine	105-59-9
Mevinphos	7786-34-7
N	
Nitric acid^	
Nitric oxide	
Nitromethane^	78989-43-2
	90880-94-7
	75-52-5

O	**CAS #**
Omethoate	1113-02-6
Osmium tetroxide	7446-13-1
Oxamyl	23135-22-0
P	
Paraquat	2074-50-2
Parathion methyl	63653-66-7
Perchloric acid^	7601-90-3
Phorate	298-02-2
Phosgene	75-44-5
Phosphide Al	8005-48-9
Phosphide Mg	12057-74-8
Phosphide Zn	12037-79-5
Phosphine	7803-51-2
Phosphorus	7723-14-0
Phosphorus oxychloride	39380-77-3
Phosphorus pentachloride	10026-13-8
Phosphorus trichloride	37231-52-0
Potassium chlorate^	7790-93-4
Potassium nitrate^	96193-83-8
Potassium perchlorate^	7778-74-7
Propoxur	114-26-1
S	
Sodium azide^	26628-22-8
Sodium chlorate^	7775-09-9
Sodium fluoroacetate	62-74-8
Sodium perchlorate^	7601-89-0
Sodium nitrate^	7631-99-4
Strychnine	6899-11-2
Sulfur dichloride	39461-36-4
Sulfur monochloride	12771-08-3
Sulphuric acid	7664-93-9
T	
Terbufos	13071-79-9
Thallium sulfate	87993-82-6
Thionyl chloride	7719-09-7
Thiophosphoryl chloride	3982-91-0
Triethanolamine	7376-31-0
Triethyl phosphite	122-52-1
Trimethyl phosphite	121-45-9

^ explosive precursor
* security-sensitive ammonium nitrate (SSAN) [ammonium nitrate, ammonium nitrate emulsions and ammonium nitrate mixtures containing greater than 45 per cent ammonium nitrate, excluding solutions]
Note: CAS means the Chemical Abstracts Service, a division of the American Chemical Society

Or

Γ Tick here if all, or potentially all, of the above listed chemicals are relevant to your association.

Do members of your association transport any of the above chemicals and / or products containing the above chemicals in bulk? **Yes / No**

If yes, please list the main chemicals: _____

_____

Do members of your association handle other dangerous goods? **Yes / No**

Question 2
Of the 96 chemicals listed in the *COAG Report on the Control of Chemicals of Security Concern*, there are 12 that are precursor chemicals for explosives. Please indicate which products containing these chemicals are relevant to your association.
Note: If your association/members have already provided this information in the NICNAS voluntary call for information on chemicals, dated 7 April, 2009, please just indicate this rather than repeating what has already been provided.

Precursor chemical	List products manufactured, transported, sold, used etc which contain this chemical	How is your industry involved with this chemical? ie transport, retail, manufacture etc	Concentration (if known)	Quantities (if known)
Ammonium perchlorate				

Hydrogen peroxide	Hydrogen Peroxide	Use, irrigation system hygiene	50%	Unknown
Nitric acid	Nitric Acid	Use, irrigation system hygiene	60%	Unknown
Nitromethane				
Perchloric acid				
Potassium chlorate				
Potassium nitrate	Use as fertiliser.	Usually applied via irrigation, but can be foliar.	13.6 % N 37.4% K, Usually granular in 25kg bags	Unknown. Large farms might purchase by the pallet
Potassium perchlorate				
Sodium Azide				

Sodium chlorate				
Sodium perchlorate				
Sodium nitrate				

Question 3

Does your association produce / distribute materials or resources, in relation to chemicals of potential security concern.

These resources could include, for example, codes of practice, guidelines, training programs, industry standards, occupational health and safety standards, security standards, education material, and ongoing education programs.

Please list any relevant codes / guidelines / programs that could potentially be used for future controls or engagement strategies involving chemical security.

Element of Supply Chain	**List of relevant codes, guidelines etc**
Across whole supply chain	
Import	
Transport	
Manufacture	
Retail	Agsafe
Wholesale	
Use	Individual industries can have Codes of practice, e.g., Olive growers are encouraged to become accredited to OliveCare quality control program. In addition, individual operations will have HACCP, SQF, ISO9002 or GlobalGAP accreditation. Further, individual industries can provide OHS, educational material and training programs in relation to chemicals and their use.
Disposal	

Question 4

Based on other security risks, are there any materials and/or arrangements which you currently do **not** have in place but which you believe could be usefully developed to increase chemical security?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Question 5

Please name any other associations that currently are **not** a part of the National Industry Reference Group or National Government Advisory Group that you believe have produced materials of value. Please also list these materials if known.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Question 6a

Please indicate which type of organisations your association represents and liaises directly with:

☒ Directly with industry businesses

☒ Members only organisations (businesses across Australia)

☒ State / territory counterparts

☐ Directly to all businesses within Australia

☐ Australian industry employer groups

☐ Australian industry unions

☐ State / territory industry employer groups

☐ State / territory industry unions

☐ Other e.g. international

_____

_____

Question 6b

How do you communicate with those members/ organisations? Please indicate how often (e.g. weekly, monthly, on an as needs basis, annually):

☒ Group email – Usually on an as needs basis

☒ Newsletters – Can be via monthly or quarterly publications

☒ Forums - Can be on an annual basis

☒ Conferences – As per forums can be on an annual basis, however biennial conferences can also occur for some industries

☐ Briefings_____

☒ Internet - HAL and individual commodity associations have web sites

☒ Training sessions / educational courses - Usually on an as need basis, i.e., where a specific issue is to be addressed

☐ Open days _____

☒ Other - Farm field days, which are usually organised on a regional basis

Question 6c

Of the mechanisms that you indicated that you use, please indicate any methods that could be used to disseminate information regarding chemical security. Please number them in priority order of which you think is the most effective (with 1 being the most effective):

☒ Group email - 1

☒ Newsletters - 2

☒ Forums - 4

☒ Conferences - 4

☐ Briefings_____

☒ Internet – 5

☒ Training sessions / educational courses – 3

☐ Open days _____

☒ Other – 4

If you do not directly liaise with businesses, do you rely on your state / territory counter part to distribute information? **Yes/ No**

Which organisations / sections in your industry do you **not** have contact with?
HAL and the individual national industry associations can and do liaise directly with business but can also utilise State based grower organisations where these exist, e.g., Fruit Growers Victoria or West Australian Fruit Growers Assoc.

Please list any other relevant information and / or comments.

Thank you for your time.

Chemical Review Responses

AKC Consulting Pty Ltd
26/12 Phillip Mall
West Pymble NSW 2073

14 November, 2003

The Manager, Chemical Review
Australian Pesticides and Veterinary Medicines Authority
PO Box E240
KINGSTON ACT 2604

RE: APVMA review of 2,4-D

AKC Consulting would like to submit the following comments with regard to the use of 2,4-D in citrus, where it can be used as a plant growth regulator both pre and post-harvest. This response is made on behalf of Australian Citrus Growers Association and has been collated from comments received from various industry participants including researchers, consultants and industry representatives.

Should you have any questions regarding the information provided please don't hesitate to contact me either on 02 9499 3833 or akc_con@zip.com.au.

Yours sincerely,

Kevin Bodnaruk

Pre-harvest Use

When used pre-harvest 2,4-D helps avoid premature fruit drop by preventing early abscission. Applications are only likely to occur during the early part of the season. Its use in different citrus crops varies with greatest use occurring in navel oranges. In navel oranges its use can be on as much as 40% of the crop in the southern states whereas only 15-20% of growers apply the product pre-harvest in Queensland. When used it is usually applied only once. When use pre-harvest 2,4-D is applied as a high volume foliar spray application.

Post harvest treatment

Post-harvest it is used to reduce loss of the calyx after fruit packing. This serves to inhibit disease penetration through the exposed abscission layer on the fruit. As per QDPI Board Approval 70012, 2,4-D can be applied post-harvest to combat *Alternaria alternata* and *Diaporthe/Diplodia* spp. It is also registered for the control of colouring in fruit through post-harvest treatment. A significant part of the crop is treated with 2,4-D in this manner.

Post-harvest application of 2,4-D is either by bin dipping or drenching and is usually applied in a wax or with a fungicide. This process usually occurs outside the packing shed. It involves a forklift driver placing a field bin (loaded with citrus) onto a conveyor. The bin automatically travels into an area where the bins is immersed or flooded for 30-60 seconds with the solution. The time depends upon the quantity to be treated, i.e., double bins would require 60 seconds of the conveyor.

When applied as a drench the solution would be sprayed as an overhead flood treatment using extremely coarse nozzles. The material is applied automatically and operators do not need to be present. The area is usually enclosed to avoid splash and to allow the fungicide to drain into a bottom tank. Excess solution is collected in this tank and recirculated. After drenching, the bins travel to the other end of the conveyor to fully drain; the forklift driver then moves the bin off the conveyor for drying prior to being taken into the packing shed.

Typically tank size would be 1000-2000L. A trained operator monitors the tank. The daily work rate is difficult to determine as use is related to number of bins. Typically, however, the treatment operation would last no more than 1-2 hours per day. Top ups and 2,4-D replacement is variable from packing shed to packing shed. The recharging of the solution again would be variable, as it would depend upon fruit throughput. However, it is unlikely to be more frequent than every 2-3 days. The

potential, therefore for worker exposure, is extremely limited.

Residues:

Residues of 2,4-D resulting from its use in citrus are not expected to be significant. Data from the NRS[18] residue survey conducted in 1998 with 2,4-D detected in only 8.7% of samples. Of these detections only 1% were above the limit of reporting 0.5 mg/kg and significantly below the MRL.

Table 1: 1998 NRS Survey results for citrus

Crop	Sample No	<LOD	LOD-LOR	LOR-1.0 mg/kg
Lemons	15	15	-	-
Mandarins	46	43	2	1
Oranges	239	216	21	2

LOD is 0.05 mg/kg
LOR was 0.5 mg/kg, i.e., 10% of Australian MRL.

The NRS monitoring data is in agreement with data reported by the 2001 JMPR. Post-harvest residue trial data was submitted by the USA in support of the retention of the 2,4-D CXL of 1.0 mg/kg. The US residue trials[19] found a HR of 0.61 mg/kg and a STMR of 0.3 mg/kg, reported on a whole fruit basis. On the basis of the data submitted, the JMPR recommended a Codex MRL of 1.0 mg/kg.

Dietary Intake

It is not believed that potential dietary exposure will be of concern. The compound is not acutely toxic with the 2001 JMPR indicating that the setting of an acute reference dose was unnecessary.

The highest residues are likely to result from post-harvest treatment and any residues resulting from such a treatment with 2,4-D would primarily reside in the skin, i.e., would either not be present or be at negligible levels in the edible portion. Further lowering potential exposure levels.

References:

Australian National Residue Survey Results 1998

[18] National Residue Survey
[19] Johnson, G.D. and Strickland, M.D 1995 & 2001.

Johnson, G.D. and Strickland, M.D. 1995. Magnitude of residues in/on California citrus fruit after growth regulator treatments with (2,4-Dichlorophenoxy) acetic acid isopropylester. Final Report: Lab Project no. 101-004: R28941: R289402. Western EcoSystems Technology.

Johnson, G.D. and Strickland, M.D. 2001. Magnitude of residues in/on California citrus fruit after post harvest treatments with (2,4-Dichlorophenoxy) acetic acid isopropylester. California Citrus Quality Council, Auburn, CA. Project ID CCQC 00-01.

Pesticide residues in food – 2001 Evaluations. Part 1 – Residues. FAO Plant production and protection paper 171.

AKC Consulting Pty Ltd
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29 February, 2008

Sharon Pike, Chemical Review
Australian Pesticides and Veterinary Medicines Authority
PO Box 6182
KINGSTON ACT 2604

RE: APVMA preliminary assessment of acephate

Dear Sharon,

AKC Consulting would like to submit the following comments regarding the use of acephate in horticultural and ornamental crops. This response is made on behalf of horticultural industry associations and has been collated from comments received from various industry participants including researchers, consultants and industry representatives.

In general the use of the compound is limited with a particular focus on resistance management of certain problematic pests such as Western flower thrips. When used it is targeted against the specific pest as part of a resistance management strategy, i.e., a rotational option with a differing mode of action to current standards.

Should you have any questions regarding the information provided please don't hesitate to contact me either on 02 9499 3833 or akc_con@zip.com.au.

Yours sincerely,

Kevin Bodnaruk

Horticulture Australia Ltd
Level 1, 50 Carrington St
2000 Sydney NSW

Evaluator, Azinphos-methyl Review
APVMA
PO Box E240
KINGSTON ACT 2604

Azinphos-methyl – Preliminary Review Findings - HAL Response

Horticulture Australia Limited (HAL) welcomes this opportunity to comment on the October 2006 Azinphos-methyl Preliminary Review Findings (PRF). HAL, as the industry body representing the Horticulture sector, has consulted industries potentially affected by the recommendations contained within the Azinphos PRF. This has resulted in concerns being raised over a number of recommended regulatory actions.

Specifically, HAL's concerns relate to the proposed deletion of apricots, the limit of 2 applications per year and the 100 m buffer. Consequently HAL wishes to bring these concerns to the attention of the APVMA and propose alternative options for consideration. Outlined below are specific comments relating to recommendations of concern.

Review Recommendations

6.2.2 Deletion of use patterns

The use on apricots is to be deleted.

In the PRF it is indicated that the use on apricots should be deleted from labels due to residue concerns, i.e., exceedance of the ARfD. HAL considers the proposed deletion from apricots is unwarranted. In the PRF it is indicated that estimated dietary exposure for children between the ages of 2 and 6 years is 104% of the acute reference dose (ARfD). HAL believes that the calculation has resulted in a significant overestimate of likely exposure and suggests that the proposed deletion, on the basis of a 4% exceedance, is disproportionate as it does not necessarily represent a health risk to consumers.

HAL appreciates the purpose of short-term dietary risk assessment is to determine the 'potential' risks associated with the consumption of various food commodities but questions the approach taken by the APVMA with regard to apricots. HAL believes that the APVMA has been overly conservative, particularly given the number of uncertainties associated with this risk assessment, e.g., use of the MRL as a default highest residue value and the figure used for the large portion size.

HAL acknowledges that in the absence of sufficient residue trial data the use of the MRL as a default value is unavoidable. However, given that the MRL, by its nature, will be set higher than a residue resulting from crop treatment HAL suggests that a 4% exceedance of the ARfD is not sufficiently risky to justify the response. Particularly when considering the data presented from one trial in the PRF, where residues at 14 days were 0.15 mg/kg, i.e., more than ten fold lower than the MRL value used in the calculation. Further, the 1993 JMPR reported three apricot trials from Spain with residues after 14 days at the level of 0.13-0.23 mg/kg, following treatment at 1.9 kg ai/ha, higher than the Australian maximum rate. Demonstrating that for apricots the use of the MRL, as a default, results in a significant over estimate of dietary exposure.

HAL also queries the rationale behind the use of 35.368 g/kg bw as the large portion size in the dietary intake calculation. This value corresponds to just 0.9% of respondents to the National Nutrition Survey. A level at which HAL would have little confidence that it provides an accurate representation of dietary consumption. In addition, HAL notes that in previous reviews, e.g., carbaryl, the APVMA used the value 21.811 g/kg bw in the calculations, which was based upon 6.3% of respondents. Using this figure as the large portion size dietary exposure for children between the ages of 2 and 6 years would be 74% of the ARfD. Further using the highest residue found in the trials reported by the 1993 JMPR results in an estimate of dietary exposure of just 9% of the ARfD.

Consequently, HAL believes that the calculation undertaken by the APVMA has resulted in an overly conservative estimate of acute dietary risk. Given the level of uncertainty over key elements of the calculation, as indicated above, HAL believes an exceedance of the ARfD by just 4% does not represent a potential consumer health risk and that the proposed withdrawal from apricots is disproportionate.

HAL therefore, advocates a reconsideration of the recommendation to withdraw and suggests that if risk mitigation is still deemed necessary that alternative measures be considered. For example, extending the withholding period to 21 days would seem a more appropriate response.

6.23 Restraint statements

DO NOT apply more than two applications per production season.

This recommendation arises due to environmental risks identified by the APVMA from multiple applications of azinphos-methyl. HAL has two significant concerns with this recommendation; firstly, that this recommendation implies that the APVMA is applying a zero-risk approach and secondly that the basis for the recommendation is the extent to which program spraying might occur.

Bird toxicity

In Section 3.4.3.2 it is acknowledged that the risk to birds from dietary exposure is minimal however, it is stated that *risk from Australian usage…under certain circumstances cannot be ruled out since birds were casualties in the US orchard trials*. In these trials (Sheeley *et al.*

1989 and Johnson *et al*. 1989) total bird deaths, presumed to have been caused by azinphos-methyl, were two and eight respectively, i.e., 7.4 and 4.6% of total casualties. A further 24 bird deaths were suspected of having been caused by azinphos-methyl. The 'suspicion' was based upon the location of scavenged carcasses or feather spots when found in relation to treatment times, i.e., based upon a temporal association. As the studies were conducted over 16 orchards, which presumably covered a considerable area (individual orchards varied in size from 4 to 34 ha) and occurred over a 3-4 week period, the number of bird deaths either directly attributed to azinphos-methyl, or suspected, does not seem to suggest an unacceptable level of risk.

Consequently, HAL questions the need to restrict use to no more than two applications. Particularly, as it is acknowledged in the PRF that there have been no reports of bird fatalities attributed to azinphos-methyl use in Australia. HAL considers the level of precaution, inherent in such a recommendation, as being unwarranted.

Current use pattern

HAL queries the basis for the APVMA's concerns over program spraying in the PRF. As indicated the primary users of azinphos-methyl in horticulture are pome and stone fruit producers, industries in which integrated pest management (IPM) is extensively practised. HAL understands that its use is regional and is applied only an as need basis, i.e., program spraying no longer occurs, due to the uptake of IPM. In stone fruit azinphos-methyl is primarily applied for Oriental fruit moth (*Grapholita molesta*) or Lightbrown apple moth (*Epiphyas postvittana*). For both of these pests a number of alternative treatments exist, such as pheromone based mating disruption (OFM) and conventional insecticides indoxacarb, spinosad, thiacloprid, fenthion and parathion-methyl.

In pome fruit it is mainly used for the control of Codling moth (*Cydia pomonella*). As with stone fruit a number of alternative treatments are available. In addition the prevalence of this pest varies from absent in Western Australia, one generation in Tasmania to as many as three generations in Queensland. As a consequence the potential need for treatment and the possible use of azinphos-methyl will vary significantly from region to region. Also it has continued to be used as it has allowed the survival of certain biological control agents that are a key part of apple industry IPM efforts, i.e., survival of predatory mites.

As indicated azinphos-methyl is not the only control option available. In Queensland, the region with greatest Codling moth pressure, Codling moth is managed primarily through the use of pheromones. It is estimated that only a small proportion of orchards (~20%) would use insecticides exclusively due to either young trees or the blocks being ill suited to pheromones use[20]. In these orchards azinphos-methyl would not be used as the complete program for Codling moth control due to resistance concerns[21].

In the Stanthorpe area it is recommended that azinphos-methyl be used in rotations with other products such as thiacloprid, indoxacarb or fenoxycarb[22]. The aim is to cover each of the three generations of Codling moth with a different chemical group. In terms of application intervals, for Codling moth control they are typically 14 days before Christmas and 21 days after Christmas. In this region the maximum number of azinphos-methyl treatments would be between three and four occurring on only a small portion of the Stanthorpe region.

Therefore, HAL believes that the APVMA's concerns over program spraying are unfounded and are most probably an artifact of the reviews longevity, i.e., initiated in mid 1990s, and reflects possibly old, out-of-date information. As the azinphos-methyl use pattern in Australia would extend to no more than four applications with treatment intervals of greater than 28 days, due to rotations with other insecticides, HAL suggests a more appropriate recommendation would be to limit the total number of applications to four.

6.23 Restraint statements

DO NOT apply to deciduous trees between leaf fall and petal drop.

HAL appreciates that this recommendation is prompted by concerns over potential bee exposure. However, as indicated in the PRF the majority of azinphos-methyl use is post-flowering in tree and vine crops. As a result HAL believes that a more suitable restraint would be to limit cover spray applications to post-flowering only. This would have the added benefit of ensuring there would be no foliar residues with which foraging bees could come into contact.

[20] Stephen Tancred (Orchard Services Pty Ltd) Pers comm..
[21] Thwaite WG, Williams DG, Hately AM (1993) Extent and significance of azinphos-methyl resistance in codling moth in Australia, in Pest Control & Sustainable Agriculture. CSIRO, Australia.
[22] Queensland Deciduous Fruit Spray Schedule

6.26 Protection of wildlife, fish, crustaceans and environment

DO NOT apply within 100 meters of a downwind aquatic and wetland area including agricultural ponds or surface streams and rivers.

HAL queries the assumptions behind the recommendation for a 100 m buffer, i.e., aquatic invertebrate toxicity, rate and frequency of azinphos-methyl use. While acknowledging the acute toxicity of azinphos-methyl to aquatic invertebrate's HAL is concerned that the APVMA appears to be compounding worse-case upon worse-case in assessing potential impacts resulting in a potentially extreme scenario upon which to base risk mitigation measures.

Firstly, the HAL questions the focus upon fixed ponds in the risk assessment as the apparent determinant in the development of the risk management recommendation. HAL believes that further refinement of the risk assessment is required where potential impacts of exposure to flowing streams are needed. Using fixed shallow water bodies as the main risk determinant is unrealistic particularly as such an assessment ignores the impact of flowing water, i.e., the water volume would be changing and constantly diluting the insecticide. HAL believes that such a refinement would result in the proposal of buffers appreciably smaller than 100 m. In addition, HAL assumes that the 'agricultural ponds' referred to are farm water storages or dams. Given that the purpose of these dams is to irrigate crops, i.e., they are depleted regularly or drained, HAL does not believe that a restraint based on their potential exposure is warranted.

HAL believes that the protection of aquatic invertebrates in flowing streams should be the focus and that buffer zones of 20 to 30 m would be more appropriate.

Secondly, HAL questions the use and relevance of an estuarine/marine invertebrate (Mysid shrimp) in the fresh water aquatic risk assessment. Further HAL queries the LC_{50} value used for Mysid shrimp. In the US EPA preliminary risk assessment an LC_{50} level of 0.21 μg ai/L is given, not 0.12 μg ai/L as indicated in the PRF. Further, the EC_{50} levels used in Q-value calculations are based upon studies using technical material. In the PRF it is indicated that that in studies where the formulated product was used azinphos-methyl showed appreciably less toxicity, e.g., for daphnia by a factor of two or more, suggesting that the impact of formulated product would be significantly less.

Thirdly, a rate of 1.5 kg ai/ha is used as the basis for calculating the potential maximum dose. In Australian pome and stone fruit orchards azinphos-methyl would be applied in a maximum of 2 to 2,500 L of water, i.e., a maximum rate of 1.225 kg ai/ha, but more generally 0.98 kg ai/ha. Arguably not a huge difference, nevertheless, HAL believes such refinements are needed to ensure that the risk assessment and resulting risk management options are relevant, e.g., explore the possibility of capping the rate per hectare to that actually being used rather than on an assumption.

Fourthly, HAL believes that greater consideration needs to be given to the development and practical application of buffer zones. HAL suggests that other risk management options such as employing vegetative buffer zones of unsprayed crop rows or tree wind-breaks should be contemplated. Particularly, as the use of wind-breaks has been shown to significantly reduce drift by up to 70-90% from orchards (Van de Zande *et al*., 1999 and Walklate, 1999)[23]. HAL also believes that greater consideration, from a risk management perspective, should be given to linking applications to buffer zone widths, e.g., greater buffer zone where early season applications are made. In the UK, for example, LERAP utilises a classification system for application techniques according to drift risk[24], i.e., by using approved drift reduction methods buffer zones can be reduced.

In addition the proposed 100 m buffer zone appears to assume uninterrupted open space between orchard edge and a water course. It seems to ignore the location of the majority of pome and stone fruit orchards in Australia, i.e., surrounded by or interspersed within forested areas, unlike cotton or broadacre farms. In such situations a 100m buffer is both impractical and unnecessary as the intervening trees would effectively prevent any drift moving significant distances.

Finally, HAL believes that as the intervals between azinphos-methyl applications are likely to be 21-28 days and the number of treatments would be no more than four, which would occur in only one region, the probable environmental impact would be minimal. As the degradation of azinphos-methyl residues is relatively rapidly HAL believes that any potential impacts on aquatic invertebrates would be slight and transient.

[23] Van de Zande *et al*. 1999. Drift measurements in the Netherlands as a basis for differentiation of risk mitigation measures. Walklate J.P. 1999. Drift reduction by vegetation. In Workshop on Risk Assessment and Risk Mitigation Measures, Sept 1999. Federal Biological Research Centre for Agriculture and Forestry, Biology Division, Braunschweig, Germany.
[24] Local Environment Risk Assessment for Pesticides (LERAP) 1999.

Conclusion

For the reasons outlined above HAL believes that the risk characterisation and resultant regulatory recommendations contained in the PRF have overestimated the level of risk posed by the use of azinphos-methyl. HAL suggests that the APVMA should further refine elements of its risk assessment and give consideration to alternative risk management options. In particular, industry believes that the APVMA should reconsider the recommendations to delete the use from apricots, limit the maximum number of applications to 2 and impose a 100 m buffer zone.

HAL suggests that the APVMA should consider engaging with industry to discuss the development of practical risk mitigation measures that can be readily adopted and integrated into current pest management programs. For example, limiting the number of applications to 4, specifying a maximum water volume and rate per hectare as a regulatory requirement, i.e., labelled[25], and provide a range of drift mitigation options, e.g., buffer zones or wind-breaks.

[25] A label statement could read "Apply no more than 1 kg ai in a maximum spray volume of 2000L/ha."

CARBARYL DRAFT FINAL REVIEW REPORT

HORTICULTURE RESPONSE.

K Bodnaruk
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SUMMARY:

This paper is provided in response to the Carbaryl Draft Review Report on behalf of a range of horticultural industries affected by the reports recommendations. The paper attempts to address two significant issues identified in the report, that of a lack of data relevant to current approved use patterns and dietary intake concerns.

As indicated in previous submissions to the APVMA the use of carbaryl is limited to where it has a role in the management of certain pests, for which there are either few or no alternatives. As has been previously identified by the APVMA many older products are subject to 'label drift', i.e., use pattern diverges from label recommendations over time. It was believed that carbaryl was subject to this phenomenon. Therefore, to clarify how carbaryl is being used, input was sought from relevant industry participants on current agricultural practices.

It was found that in all cases the current label recommendations did not adequately reflect the main use pattern for carbaryl, i.e., the pre-harvest interval was considerably longer than 3 days. More detailed information is provided to enable the APVMA to reassess those uses, identified as problematic by industry, against the clarified use patterns.

1 Citrus

1.1 Withholding period

Through industry liaison it has been indicated that the use of carbaryl in citrus is limited primarily to the production areas of coastal Queensland. Further it was indicated that when used it is applied principally during the early fruit development growth stage, i.e., many months before harvest. On this basis, it has been concluded that the current labelled three day withholding period does not reflect current good agricultural practice (GAP). Industry has indicated that a significant extension of the withholding period would not adversely affect the use of carbaryl in citrus.

An extension of the withholding period would also address concerns identified in the report over short-term dietary intake. From previously submitted residue data, where the rate was comparable to that applied in Australia,[26] it is proposed that a withholding period of 28 –35 days be considered by the APVMA. It is believed that such a withholding period would also address the stated dietary intake concerns.

1.2 MRL establishment

In the report it was indicated that there was insufficient data to establish a group MRL for citrus but that the data supported an MRL of 10 mg/kg for oranges. In the APVMA residue guidelines it is indicated that a crop group MRL could be established from extrapolations from oranges and lemons[27]. It is understood that the submitted data contained 5 residue trials in lemons, reported from Europe, and 16 residue trials in oranges, from Japan, with application rates comparable to that used in Australia, i.e., 100 g ai/hL. Six of these trials provide data at the proposed withholding period of 28-35 days.

As a result the citrus industry asks that the APVMA reconsider the data with a view to establishing a citrus group MRL based on the revised withholding period.

2. Pome fruit

2.1 Withholding period

The Draft Review Report recommended that fruit thinning be the only use retained for pome fruit due to dietary intake concerns. Data from a recently completed Australian residue trial, funded by Horticulture Australia Limited (HAL) and Apples and Pears Australia Limited (APAL), indicate that a WHP of between 49 and 63 days would result in residues that would mitigate the stated dietary

[26] Bayer (Mie1991, Yamaguchi 1991, Shizuoka 1989, Wakayama 1989) and JMPR (South 1998)

[27] APVMA Residue Guideline No. 24 - Residue Trials to Obtain Permanent MRLS for Crops

intake concerns. In this trial 3 applications of carbaryl were made at 100 g ai/hL resulting in residues of 0.239, 0.467 and 1.044 mg/kg, 63, 49 and 35 days after treatment respectively, see Attachment I[28]. This data is comparable with residue data reported in the JMPR review of carbaryl where residues at a pre-harvest interval of 28 days. Additional Australian trials are planned for the upcoming season. This data will enable further refinement of the withholding period and dietary intake assessment.

2.2 MRL establishment

In the report it was indicated that data supported the establishment of an MRL of 0.01 mg/kg, which would cover the fruit thinning use. On the basis of the attached trial report and a withholding period of 49-63 days it is proposed that the APVMA consider establishing a temporary MRL of 0.5 mg/kg, rather than the 0.01 mg/kg as recommended. This would accommodate the current fruit thinning use as well as allow some early season insecticide use, until the additional residue trials have been completed and the assessments refined.

[28] Burn 2004 (Study AP03022)

3 Tropical fruit - inedible peel

3.1 Withholding period

At present there are no alternatives available, as a result it is important to industry to maintain access to the pesticide in the short to mid-term. As with coastal citrus carbaryl is primarily used during the fruit development stage of crop growth. As a result a withholding period of 3 days is deemed unnecessary. Withholding periods of 28-42 days are suggested as appropriate for the majority of tropical fruit for which carbaryl is currently approved.

3.2 MRL establishment

The report indicates that there is insufficient data provided to establish MRLs. The mango and avocado industries indicate that they will undertake the generation of the required data. As an interim it is therefore proposed that the APVMA consider establishing temporary MRLs to allow the relevant data to be generated. It is further proposed that the APVMA consider using the citrus data as a possible guide in the establishment of the temporary MRL.

Further in the Draft Final Report the NESTI calculations indicate substantial exeedance of the ARfD for carbaryl. As the peel is not eaten it is suggested that the APVMA, as an interim, refine their assessment on the basis of relationship identified between residues found in citrus pulp to that of whole fruit, i.e., 5%. It is believed that the result reported for bananas, i.e., residues in pulp at 92% of those in skin, are anomalous, as carbaryl is only slightly systemic[29], and therefore should not be taken as indicative for the crop group.

4. Stone fruit

4.1 Withholding period

As with previous commodities, use of carbaryl is primarily during the fruit development growth stage. As a result a withholding period considerably longer than 3 days mandated by the current label has been identified as practicable. To this end the industry proposes a withholding period of 28 –35 days as being more reflective of current good agricultural practice.

4.2 MRL establishment

In the report it was indicated that a MRL of 3 mg/kg was appropriate for apricots, nectarines and plums with a MRL of 5 mg/kg for peaches, based on data relevant to the currently approved Australian uses, i.e., a WHP of 3 days. The stonefruit industry suggests that a substantially lower

[29] The Pesticide Manual. ed. C.D.S. Tomlin.

MRL, e.g., 0.5 mg/kg, be established based on the extended withholding period being proposed.

5 Vegetables

5.1 Withholding period

The report indicates that all vegetable uses be deleted from labels due to dietary exposure concerns. This is a reflection of the current 3 withholding period. The various vegetable commodity groups affected indicate that a WHP of three days is unnecessary. On the basis of the residue data submitted to JMPR it is proposed that the use pattern be amended to allow a WHP of 14 days for all crops, other than leafy vegetables. It is believed that extending the withholding period to 14 days should address the dietary intake concerns identified within the Draft Final Report.

There are also a number of vegetable commodities where the peel is not ingested, e.g., pumpkins, melons and gourds, it is suggested that the APVMA consider using the peel to pulp relationship, found in citrus, to refine the dietary intake assessments for these commodities.

5.2 MRL establishment

Various MRLs are proposed in the report for vegetable commodities ranging from 0.1 mg/kg for potatoes to 20 mg/kg for cauliflower. On the basis that the withholding period of 3 days does not reflect current GAP it is suggested that the APVMA reassess possible MRLs relevant to the proposed WHP of 14 days.

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Carbaryl – Preliminary Review Findings - HAL Response

Horticulture Australia Limited (HAL) welcomes this opportunity to comment on the July 2006 Carbaryl Preliminary Review Findings (PRF). HAL is the industry body for the Horticulture sector working towards meeting both the current and strategic needs of individual horticulture industries. In this capacity HAL has consulted industries potentially affected by the recommendations contained within the Carbaryl PRF. This has resulted in concerns being raised over recommended changes concerning the application of carbaryl in orchards.

HAL questions certain aspects of the baseline scenarios used to estimate occupational exposure and risk and the proposed requirements to mitigate that risk. Specifically, HAL's concerns relate to mixing/loading and application of SC formulations in orchard situations and apparent inconsistencies between the conclusions reached and the resultant recommendations. Outlined below are specific comments relating to recommendations of concern.

Review Recommendations

5.1.7 Application methods for SC products

Changes to mixing/loading

Use of enclosed transfer/mixing systems for preparation of carbaryl SC products is required to reduce the exposure of operators mixing and loading for aerial, boom spray and orchard airblast application to acceptable levels.

HAL acknowledges that the personal protective equipment (PPE) requirements on current carbaryl product labels are insufficient, i.e., labels only require that handlers wear elbow length PVC gloves. However, HAL believes that the proposed changes for airblast spraying are disproportionate.

Under Scenario 2 (Mixing and loading 500 SC formulations) it is indicated that a combination of gloves and overalls is sufficient to assure an adequate dermal exposure MOE for a mixer/loader. Unfortunately, no estimate of potential inhalation exposure for open mixing of an SC from orchard application is provided. The conclusions drawn appear to be based upon higher work rates associated with aerial application and involve the handling of approximately 640 kg of carbaryl in the SC form. As the maximum amount of carbaryl handled in a day, for orchard airblast application is estimated at 15 kg, the 40 fold margin upon which the regulatory decision is based is considered excessive.

HAL suggests that to reduce exposure risks more appropriate mitigation measures should be considered. For example, using WP inhalation exposure values from PHED model 4, an Aggregate MOE of 464 is derived with the use of half-face respiratory protection, overalls and gloves. Well above the 100 level to ensure adequate protection. Therefore, HAL suggests that a proposal to require the use of closed mixing loading systems is unnecessary and that the use of overalls, gloves and either half or full-face respiratory protection should be sufficient to address any mixer/loader exposure concerns associated with the SC open mixing scenario.

Recommended changes to current application methods
Operators applying carbaryl by orchard airblast must be protected by engineering controls.

The reasoning behind this recommendation is unclear. HAL suggests that additional PPE requirements would be sufficient and should be considered to generate acceptable exposures, as an alternative to relying on engineering controls.

Under section 2.5.3[30] of Volume 2, it is indicated that even with overalls and gloves "mixer/loaders can handle daily no more than…… 450 kg of carbaryl in SC formulations" and "These amounts…. are insufficient to support the anticipated work rates associated with broadacre use", whereas in section 3.2 of Volume 1 the use in orchards has been added[31]. HAL is uncertain why the use in orchards has been included given the assumptions used within Scenario 5[32], i.e. that approximately 15 kg of carbaryl would be applied at the maximum anticipated work rate of 15 ha/day, i.e., 450 kg of carbaryl is not a relevant quantity when considering risk mitigation measures for airblast applications.

Further under Scenario 5, Airblast application by open cab[33], it was concluded that a "combination of gloves and overalls provides sufficient protection for persons applying carbaryl by airblast at the anticipated work rate." The PRF indicates that potential concerns exist when exposure levels for mixer/loader and application are aggregated. However, within the PRF no base-line scenario for mixing/loading and application of SC is provided. Only the risk mitigation scenarios for SC application of closed mixing/loading coupled with PPE of overalls and gloves for application was presented.

HAL believes that the APVMA should consider the impact on MOE of additional risk mitigation measures, such as respiratory protection. For example, applying WP inhalation values the use of half-face respiratory protection would result in an MOE for SC application exposure of 171. An aggregate MOE incorporating half-face respiratory protection, overalls and gloves for mixing/loading and application would result in an MOE of 125 above the 100 level required to ensure adequate protection. Given that these MOEs are based upon WP inhalation values should provided added confidence that such an approach would provide

[30] page 83 Volume 2
[31] page 13 Volume 1
[32] page 75 Volume 2
[33] page 74 Volume 2

adequate protection. This would also have the added benefit of providing consistent PPE requirements across the use of SC based formulations in orchard spraying.

AKC Consulting Pty Ltd
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30 June, 2007

The Manager, Chemical Review
Australian Pesticides and Veterinary Medicines Authority
PO Box E240
KINGSTON ACT 2604

RE: APVMA review of carbendazim/thiophanate-methyl

AKC Consulting would like to submit the following comments regarding the use of carbendazim and thiophanate-methyl in horticultural and ornamental crops. The compounds are used either as foliar sprays or as post-harvest treatments. This response is made on behalf of horticultural industry associations and has been collated from comments received from various industry participants including researchers, consultants and industry representatives.

Should you have any questions regarding the information provided please don't hesitate to contact me either on 02 9499 3833 or akc_con@zip.com.au.

Yours sincerely,

Kevin Bodnaruk

Table of Contents

Fruit and vegetable crops - Pre-harvest Use

Carbendazim can be applied as a foliar treatment pre-harvest to apples, pears, grapes, stonefruit, macadamia nuts, strawberries and cucurbits for a range of diseases. From industry feedback the use of carbendazim as a foliar treatment is limited, i.e., when used no more than 1-2 applications. This is, in part, a consequence of resistance development, e.g., *Botrytis cinerea* in grapes and strawberries, and the implementation of resistance management strategies, i.e., limiting the number of applications, and the requirement for alternation strategies, i.e., rotating with triazole and or strobilurin fungicides.

Application

Carbendazim based products can be applied using mechanized sprayers, i.e., air blast or boom sprays. It is believed that the extent to which workers may be exposed to carbendazim during mixing, loading, and application, or to foliar residues during harvesting or pruning, some days or weeks after application, is limited.

In tree crops the spray tank capacity is most commonly 2,000 litres. Tractor travel speed, depending upon terrain would generally be in the range of 2.5-4.0 km/h. An average planting density would be 200-250 trees per hectare, translating to inter-row spacing of about 5 m, i.e., approximately 2 km of travel per hectare sprayed. This would mean that in a high volume (dilute of about 2-2,500 L/ha) spraying system a tree crop applicator could spray approximately 1.0-1.5 ha in 90 to 110 minutes, i.e., 6 ha in a 6 hour work day. This time would include mixing and travelling time, which could total 30 minutes or more per tank load. In a low volume or semi-concentrate system, a grower could spray 2.0-3.0 ha on a single tank increasing n the equivalent time of 120 to 130 minutes, i.e., a daily area treated of 9-10 ha. On this basis the maximum amount of active ingredient handled per day would be in the order of 6.25 kg ai/day, i.e., based on the highest tree crop application rate of 25 g ai/hL and an application volume of 2,500 L/ha over 10 ha. The rate for grapes, while higher, is limited to 550 g ai/ha as well as lower application volumes, e.g., a maximum of 1000 L/ha.

In cucurbits carbendazim is applied for the control of powdery mildew at rates of 200-250 g ai/ha. Applications would normally be done in water volumes of 500 to 700 L/ha. Areas covered and work rates would be similar to that of tree crop spraying, i.e., 10 to 15 ha per working day, with the maximum amount of active ingredient handled in the order of 3.75 kg ai/day.

Mixing, loading and application

Current labels specify PPE of cotton overalls, buttoned to the neck and wrist, a washable hat, elbow length PVC gloves and a half-face respirator. It is believed that these existing requirements would provide adequate protection during the mixing and loading process. For applicators, it is also believed that the labeled PPE would provide adequate protection from exposure. However, where engineering

controls, such as the use of an enclosed tractor cab are available, the use of the half-face respirator could be dispensed with.

Turf and ornamental use

The use of carbendazim in turf and ornamentals is limited. In turf the control of Dollar spot is subject to a CropLife Resistance Management Strategy, i.e., "Do not apply more than two consecutive sprays of fungicides from the same activity group…", which results in a range of different fungicides being applied in rotation when treatment is needed.

In ornamentals the use of carbendazim is extremely limited with thiophanate methyl being the main compound applied. In the commercial nursery industry thiophanate methyl is used either as a foliar treatment or drench or as a granule incorporated into potting media.

It is believed that the potential for worker exposure from the use of thiophanate methyl is low. This is due primarily to the current label safety directions and the formulations available.

In terms of current safety directions the label indicates that when preparing to mix or drench with a thiophanate methyl based product cotton overalls, buttoned to the neck and wrist, a washable hat, elbow length PVC gloves and goggles be worn. Further a re-entry/re-handling interval of 12 hours is stipulated with regard to treated plants and or potting media.

Thiophanate methyl formulations also contribute to the low exposure potential as the wettable powder (WP) is provided in water soluble packaging, i.e., low potential for inhalation exposure to the WP dust. It is also believed that the method for use of the granule, i.e., incorporation into potting media, would also limit the scope for exposure.

Application

In the nursery industry, application can either be by motorised knapsack or motorised hand-line equipment making high-volume applications. This thiophanate methyl based products would be applied using equipment that would hold between 15 and 200 L of spray solution.

Approximate work rate (number of work hours/day for greenhouse application) is understood to be not more than one to two hours/day. This is due to the primarily to the nature of Australian commercial nursery operations, i.e., the areas under cover are not large.

Post harvest treatment

Stone fruit:

Uncertain of the extent of use, the following information was obtained from the low-chill area of SE Qld. The most common process is to dip in a tank for a minimum of 60 seconds (see Figures 1, 2 & 3). This covers tank mixes with Qld Fruit Fly control products. The dip tanks are usually a standard 900L capacity. Fruit are placed into the dip from field bins. The guidelines state that the container must not come in contact with the dip. In general the dips consist of an open system which is used during harvest for several days. The dip mix is replaced every 2-3 days.

Mangoes:

Commercial packing sheds use fully automated "hot tank" dipping facilities (see Figures 5 and 6). The fruit is taken up a conveyor belt and placed into a tank of water for a preliminary wash. It is then automatically extracted in measured loads and placed in an enclosed hot bath of Carbendazim. The capacity of the hot bath can vary from 1500 L to as much as 4000 L and is charged with 1.5 to 4.0 L of carbendazim (500 g ai/L). Passage through the hot bath is approximately 5 mins. The dips can be topped-up via an automated feeder tank system which continuously replaces dip removed by the fruit during operation. New dip solutions are made up every two days so that at maximum packing (30 tonnes/day) the usage is about 4.3 L of carbendazim, or 2.2 L/day.

Staff are not required to attend the machinery, only being required to collect fruit off conveyers after brushing. Alternatively plunge dips may be used where a forklift is used to deposit bins of fruit into a dip for the requisite time. The volume of turnover, i.e., fruit through put, determines how often the dip is changed i.e., 1-3 days with high turnover resulting in dips being changed daily.

Bananas:

In the case of bananas, information to date indicates that the use of carbendazim for crown rot control is limited.

Citrus:

There are two types of packing shed operations where carbendazim can be applied to citrus.

Bin Dipping or drenching: This process usually occurs outside the packing shed. It involves a forklift driver placing a field bin (weighing approximately 500 kg when loaded with citrus) onto a conveyor. The bin automatically travels into an area where the bins is either immersed or flooded for 30 seconds with the fungicide solution. When applied as a drench the solution would be sprayed as an overhead flood treatment using extremely coarse nozzles. The material is applied automatically and operators do not need to be present. The area is usually enclosed to avoid splash and to allow the

fungicide to drain into a bottom tank. Excess solution is collected in this tank and re-circulated.

After 30 seconds, the bin travels to the other end of the conveyor to fully drain and then be moved by forklift off the conveyor for drying prior to being taken into the packing shed. The holding tank is typically 1,000 to 2,000 L and contains 500 ppm of carbendazim, i.e., 0.5 - 1.0 kg ai per tank. A trained operator monitors the fungicide tank. Daily work rates are difficult to determine as use is related to number of bins being handled. As a consequence 'top ups' and fungicide replacement is very variable from shed to shed. An average packing shed would handles approximately 100 bins of fruit a day with larger sheds having a capacity to treat as much as 500 bins/day (250 tonnes).

In-line fungicide: The fungicide can be applied on the packing line. The fruit move along rollers or brushes to an area where the fungicide solution is sprayed or flooded onto the fruit. The solution is usually collected and recirculated. The area is usually well enclosed to stop splash and drift. The holding tank is typically 200 to 300L and contains 500ppm ai carbendazim, therefore 100-150 g ai per tank. A trained operator monitors the fungicide tank. Daily rate is again difficult, but, as a guide, many sheds prepare new spray solutions daily. An average packing shed using in-line spraying could treat between 50 to 100 tonnes per day.

Pome fruit:
When used carbendazim is most commonly applied using a flood-drenching system where 'immersion' is achieved with the solution applied overhead onto the bins for a set time, rather fruit placed in a dip. All drenching systems have a reserve tank where the solution is mixed, drawn from and flooded onto the bins. Recirculating systems are used, i.e., where the drained solution is collected and returned to the tank.

The size of the mixing tank can vary, but for any sizable operation, minimum would be several hundred litres. The majority of use would be via automated systems where the bins are placed on a conveyor and the speed of the conveyor determines the time under the drench. Most growers would have the conveyor type system.

An operator would be present to place and remove bins from the conveyor. While the system functioned they would also ensure its correct operation, i.e., conveyor, drench times etc. Drenching occurs in the range of 30 sec-1 min roughly, depending on the system, and most would drench 60-100 bins/hour with a single layer system.

In terms of a typical work rate and the amount of product applied, using a standard 1200 litre tank

and applying a rate of 50ml/100L, 600 mL of carbendazim would be used for a day's dipping of 100 bins, i.e., approximately 40-50 tonnes of fruit.

The extent to which carbendazim is being used post-harvest in pome fruit is decreasing. This is due, in part, to recent MRL reductions in the major export market of the European Union, effectively making the use of carbendazim post-harvest untenable.

Rockmelons

The use of carbendazim in rockmelons is limited with application being either by immersion dipping or flood spray, depending on the shed setup. As carbendazim is relied upon more as a pre-harvest treatment its use post-harvest is restricted due to restrictions placed on the use of fungicides via resistance management strategies.

Dip disposal

In terms of dip disposal it is understood that pack houses generally comply with local council regulations. This can involve either pumping into holding tanks for disposal either on farm (as per label directions), or for off-site removal.

Appendices

A. Small pack house dipping system.

Outlined below is an example of a dipping system from a small packing shed. This system was disassembled, but nevertheless provides an indication of the type of system used to treat low-chill stonefruit.

Figure 1. Harvested fruit placed into tank. Water flow is used to carry fruit to rollers.

Figure 2. This roller system sits inside the above dip tank and carries the fruit towards the grading system.

Figure 3. If required, fruit emerging from the dip can be treated with a flood spray (for fruit fly) which is contained in the box at the head of the rollers.

Figure 4. The treated fruit then move along rollers, where it is air dried prior to grading and packing.

B. Mango post harvest treatment system – fungicide dip and an in-line insecticide flood spray.

Figure 5. Fruit loaded onto conveyer.

Figure 6. Fruit is then deposited into a fungicide dip. The scoops move the fruit through the dip (in the direction of the arrow).

Figure 7. Following fungicidal treatment the fruit is then treated in a flood spray system. The treated fruit then moves in the direction of the arrow to air dry before grading and packing.

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Diazinon – Preliminary Review Findings - HAL Response

Horticulture Australia Limited (HAL) welcomes this opportunity to comment on the June 2006 Diazinon Preliminary Review Findings (PRF). HAL is the industry body for the Horticulture sector working towards meeting both the current and strategic needs of individual horticulture industries. In this capacity HAL has consulted industries potentially affected by the recommendations contained within the Diazinon PRF. This has yielded additional information which industry hope will allow the APVMA to address areas of concern highlighted by the OCS, particularly with regard to inhalation exposure and its use in enclosed spaces such as nursery greenhouses and mushroom houses.

The information HAL has obtained, it is hoped, will allow the APVMA to refine the baseline scenarios used to estimate occupational exposure and risk and enable the Authority to moderate a number of the requirements previously proposed to mitigate that risk. Specifically, HAL believes that the data will allow the relaxation of proposed measures associated with re-entry and re-handling. Outlined below are specific comments relating to proposals of concern.

Proposals of Concern

3.3 Proposed variations to labels

3.3.1 Agricultural products Crops

Cauliflower – Delete claim

HAL queries the status of diazinon use in cauliflowers. In Tables 7 and 9 of the PRF it is indicated that the label claim for cauliflowers should be deleted. The current label claim is for a rate of 0.7 – 1.4 L/ha in brassicas. A permit currently exists for its use in cauliflowers, i.e., PER8812 WA only with expiry 30/1/07, at a rate of 700 mL/ha. In support of this permit trial data from three residue trials[34] was submitted to the APVMA in February of this year. These trials showed that following multiple applications, residues of diazinon in the harvested commodity were all <0.01 mg/kg, 14 days after the final application. HAL requests that the APVMA utilise this data in reconsidering the proposed deletion and propose an amended label claim for cauliflower of 0.7 L/ha.

Turf – Delete claim

Diazinon is currently approved for use on both commercial and domestic turf. HAL acknowledges exposure concerns from domestic use and agrees with the proposed removal but suggests an alternative approach with regard to its use in commercial turf. HAL believes that the use on commercial turf could be maintained following further refinement of the risk assessment leading to amended PPE requirements and use restrictions. To allow the APVMA to refine the risk assessment the reports of Rosenheck 1999 and 2000 are provided.

HAL believes that any potential exposure risks associated with mixing, loading or application can be effectively managed through the mandating of appropriate PPE requirements, e.g., gloves, overalls and half-face respiratory protection. In terms of post-application exposure Rosenheck (2000) found that there was rapid dissipation of both airborne and transferable diazinon levels shortly after application. Airborne diazinon residue values were found to be very low with most residues below LOQ by 2 hours after application, with irrigation further reducing measurable residues by a factor of approximately 2. In the same study it was found that the average half-life of transferable diazinon residues on turf was 2.7 hours, with the use of irrigation reducing the average residue by a factor of approximately 4, e.g., 0.004μg/cm² ai for a liquid application.

Therefore, HAL believes coupling the requirement for irrigation immediately after treatment, with a

[34] Dal Santo, P (2006). Residues of diazinon in cauliflower following four applications of diazinon insecticide to cauliflower close to harvest. Study No. diazinonAVG524.

re-entry period of 8 hours would reduce post-application exposure risks from commercial turf to negligible levels.

3.3.4 Specific label variations required

Do not apply in enclosed spaces such as glasshouses or greenhouses

In the nursery industry, application to potting media can either be by knapsack or motorised hand-line equipment. When using diazinon the spray solution is applied as a drench directly to the surface of the pot. Normally the equipment used in such operations hold spray solutions of between 15 and 50 L. While pot size would vary pots treated would typically range between 100mm and 200 mm in diameter. It is estimated that the volume of spray solution applied per pot would vary from 50-150 mL, i.e., based on the surface of the potting mix being at least 1 cm below the rim of the pot and the drench filling approximately half of this volume (calculated using the formula $v = \pi r^2 h$). After drenching follow-up overhead irrigations are used to aid movement of the chemical solution down into the pot media.

Therefore, the number of pots treated would be between 300 and 1000 per 50L of spray solution. Each pot would take approximately 10 seconds to treat using low pressure equipment. Allowing for travel between pots and time for mixing and loading an individual could treat a maximum of 1500-2000 pots in a working day, i.e., 8 hour working day with an application period of 6 hours. As diazinon is only used as a spot treatment it is unlikely that more than 1 spray solution would be applied, i.e., a maximum of 1000 pots treated using 50L of spray solution covering an area of approximately 7.5 to 10 m^2 of pot surface. This would result in the diazinon application process taking no more than 1-2 hours per working day.

At the labelled rate of 2 mL/10L (16 g ai/hL) this would result in a total of 10 mL of diazinon, i.e., 8.0 g ai, being applied. At the quarantine treatment rate of 6 mL/10L (48 g ai/hL) the amount of active ingredient applied would be 24 g or 30 mL of product. Given the small amounts applied it is believed that through the utilisation of appropriate PPE requirements, i.e., half-face respiratory protection, overalls and gloves during mixing, loading and application, that margins of exposure can be effectively managed. HAL therefore suggests that in the light of the information on work rates and volumes used that the APVMA reconsider this recommendation.

Proposed re-entry periods

Nursery plants - Do not allow entry into treated areas...within 48 hours of spraying

In a study completed in 1996 (Tribolet[35]) airborne diazinon levels were measured in greenhouses following applications of 675, 921 & 741 g total active ingredient to areas of 0.54, 0.83 and 0.65 ha[36] respectively, quantities that are significantly higher than would be used in Australian greenhouses. This study reported airborne diazinon levels, 24 hours after the applications, of 3.1 to 10.0 μg/m^3.

It is believed that under the Australian use pattern airborne diazinon levels would be appreciably less than those reported by Tribolet as the rate and quantities applied are lower. Nevertheless using the maximum reported level, at 24 hours after application, from the Tribolet study an estimate of possible Australian worker inhalation exposure was calculated, see Table 1.

Table 1 Estimate of worker inhalation intake of diazinon over an 8 hour working day.

	Inhalation rate (m^3/h)[37]	8 hour intake (m^3)[38]	Diazinon intake[39] (μg/d)	Body weight (kg)	Diazinon intake (μg/kg bw)
Adult male	2.5	20	200	70	2.9
Adult female	1.6	12.8	128	70	1.8

From Table 1, it can be seen that estimated worker inhalation intake is well below the ARfD for both men and women, i.e., 29 and 18% respectively. Further if the mean of measured 24 h airborne diazinon levels is used, i.e., 5.6 μg/m^3, estimated intake levels drop to 16 and 10% of the ARfD. Therefore, HAL believes that a 24 hour re-handling or re-entry requirement would be sufficient to minimise any potential inhalation exposure to workers or retail customers.

The mean 24 hour post-application airborne diazinon levels found by Tribolet were significantly below that reported by Lunchick (1997), i.e., 5.6 μg/m^3 as against 22 μg/m^3, despite the apparent rate per unit area applied being higher. It is believed that the results reflect differences in the capacity of the treated areas to 'allow' volatilisation, i.e., inorganic surfaces vs organic materials such plants and potting media, as diazinon is strongly adsorbed onto soil and has low mobility.

Mushrooms - Do not re-enter treated areas or re-handle treated mushrooms for 14 days after treatment.

HAL believes the proposed 14 day re-handling restriction be reduced and suggests that a seven day

[35] R. Tribolet (1996). Study 171/93: Exposure monitoring in greenhouses – Diazinon (G24480).
[36] Table 2 page 20 of Tribolet 1996.
[37] Based on 'moderate' inhalation rates
[38] Based on an 8 hour working day

interval would be more appropriate. The basis for this proposal is the rapid decline in airborne diazinon levels measured in Tribolet (1996) and Lunchick (1997) and the type of work practices employed in a mushroom house, i.e., there would be minimal risk of exposure seven days after treatment. Tribolet (1996) reported a 20+ fold decrease in airborne diazinon levels to below 1.0 $\mu g/m^3$ three days after a greenhouse treatment, while Lunchick (1997) reported decreases of between 5 and 10 fold in airborne diazinon levels seven days after pest control treatments, all to levels well below the ARfD.

In mushroom farming management of CO_2 levels within the growing room is critical to achieving economic levels of production. As a result CO_2 levels are monitored and managed throughout the crops life using mechanical ventilation, i.e., active replacement of growing room air to maintain CO_2 concentrations at desired levels. This process can see the air within a growing room replaced a number of times prior to the commencement of harvest. As a result HAL believes that the combination of rapid decline in airborne diazinon levels and air replacement within a growing room would result in minimal risk of inhalation exposure seven days post-treatment.

Within the first seven days post-treatment there is minimal entry of workers into the growing room. During the first three days potential worker exposure would be limited to a single entry per day, primarily to check temperature and moisture levels and possibly to undertake an irrigation in the growing room. The length of time in the growing room would be no more than 10-15 minutes per day. Depending upon growing conditions entry into the 'treated' room may increase to three times from 4 or 5 days post-treatment, with a maximum of 45 minutes spent in a growing room. During this period HAL believes that proposed PPE requirements would be sufficient to manage any potential exposure.

As the diazinon treatment is applied either to compost or the casing material the potential for dermal contact would be minimal, i.e., exposure via the dermal route, during harvesting would be negligible. This coupled with the anticipated low airborne diazinon levels, HAL believes, indicates that the aggregate exposure risk, seven days post treatment, would be extremely low and risk mitigation measures are not required. Therefore, HAL suggests a 7 day re-handling interval as being more appropriate.

Critical comments

[39] Utilizing the highest measured 24 hour post-application airborne diazinon level, from Tribolet 1996, viz $10\mu g/m^3$

Do not… handle treated pots, within 48 hours of spraying

HAL suggests that a 24 hour restriction on handling of treated pots is sufficient to minimize the risk of exposure. As indicated above inhalation exposure would be of the order of 1.0-1.6 μg/kg bw, 24 hour after treatment. Dermal exposure would be minimal as only the potting media would be drenched therefore potential aggregate exposure could be assumed to be only marginally greater than the inhalation exposure. Further Tribolet (1996) reported dislodgeable foliar residues of 5.2, 73 and 29 μg/100cm^2 24 hours after treatment. Using 4% dermal absorption it can be seen that the dermal uptake of diazinon is unlikely to contribute greatly to exposure. Further the data indicates that dissipation of airborne and dislodgeable foliar diazinon is rapid within the first 24 h[40].

Therefore, HAL suggests that a re-handling requirement of 24 hours should be sufficient to address any exposure concerns associated with the use of diazinon in nurseries.

[40] Table 13. Tribolet 1996.

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Mr S McCutcheon
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Dieldrin - Extraneous Residue Limits

Dear Mr McCutcheon,

Ausveg is the national peak industry body representing Australian vegetable growers. In this capacity Ausveg wishes to raise the issue of certain anomalies in the Food Standards Code in relation to dieldrin. Dieldrin extraneous residue limits (ERLs) have been established for a number of vegetable commodities; however, the industry wishes to highlight the fact that there are significant omissions, e.g., cucurbits and root and tuber vegetables. The existence of which can result in farmers incurring significant financial losses in the event of a positive detection, i.e., a detection constitutes a breach of the Food Standards Code jeopardising contracts to supply.

The absence of an ERL for dieldrin in these commodities is believed to be an oversight; consequently Ausveg requests that FSANZ considers establishing dieldrin ERLs for Fruiting vegetables, Cucurbits and Root and tuber vegetables at a level of 0.1 mg/kg.

Dieldrin is an environmental contaminant, over which farmers have no control. As a result Ausveg believes that establishing the proposed ERLs would not only remove the threat posed by adventitious residues but also bring the Food Standards Code into line with current international standards, e.g., Codex and major trading partners such as New Zealand and the USA.

Attached, please find information in support of this request.
Regards,

David Anderson

Establishment of an Extraneous Residue Limit for dieldrin in Fruiting vegetables, Cucurbits and Root and tuber vegetables.

Executive Summary

Standard 1.4.2 – Maximum Residue Limits of the *Australia New Zealand Food Standards Code* (the Code) stipulates the requirements for residues of agricultural and veterinary chemicals in food. The Standard includes a separate Schedule for Extraneous Residue Limits (ERLs). An ERL is the maximum permitted limit of a pesticide residue, arising from environmental sources other than the use of a pesticide directly or indirectly on the food.

Ausveg is seeking to have an anomaly in the Food Standards Code amended by having ERLs established for the environmental contaminant dieldrin in Fruiting vegetables, Cucurbits and Root and tuber vegetables at the level of 0.1 mg/kg. Currently ERLs exists for a number of representative commodities from these crop groups, such as Carrots, Cucumbers Horseradish, Parsnip, Potato and Radish at 0.1 mg/kg. Unfortunately, any detection of dieldrin, in other commodities breaches the Food Standards Code. Such breaches can result in significant financial loss. The establishment of an ERL for dieldrin would help address this problem. In addition, the establishment of an ERL would bring the Food Standards Code into alignment with international standards (see Section 1.5).

Provided in this document is monitoring data demonstrating the extremely low frequency of detections and supporting information indicating that even where detections occur the impact from a dietary intake perspective would be minimal.

1.1 Introduction

Standard 1.4.2 – Maximum Residue Limits of the *Australia New Zealand Food Standards Code* (the Code) stipulates the requirements for residues of agricultural and veterinary chemicals in food. The Standard includes a separate Schedule for Extraneous Residue Limits (ERLs). An ERL is the maximum permitted limit of a pesticide residue, arising from environmental sources other than the use of a pesticide directly or indirectly on the food.

Purpose of application

The purpose of this Application is to seek a variation to Schedule 2 of Standard 1.4.2 – Maximum Residue Limits through the inclusion of dieldrin ERLs of 0.1 mg/kg for Fruiting vegetables, Cucurbits and Root and tuber vegetables.

Justification for the application

An Extraneous Residue Limit (ERL) refers to a pesticide residue arising from environmental sources (including former agricultural uses) other than the use of a pesticide directly or indirectly on the commodity. In Australia such residues have occasionally been found on certain commodities grown in or on the soil such as members of the family Cucurbitaceae, e.g., melons and pumpkins, and for which the Food Standards Code has no ERL established.

Increasingly in Australia producers are implementing food quality assurance schemes, an element of which is a requirement for residue monitoring. A consequence of dieldrin detection, in the absence of an ERL, is that the grower is considered non-compliant as the detection is a breach the Food Standards Code. The result of such detections can be loss of accreditation, loss of contracts to supply and ultimately the loss of the grower's livelihood.

Further compounding the problem faced by growers encountering such environmental contaminants is that with new analytical methods and lower limits of determination (LODs) the incidence of detections is likely to increase. As contamination is accidental and reflects historical use in the vicinity of the crop, a factor over which a grower has no control, Ausveg is seeking to have ERLs established. This would, in effect, remove the threat of financial penalty from encountering an environmental contaminant.

1.2.1 Information to support the application

Historical background

Dieldrin has not been used in Australia for many years, having been removed from the market in the 1980's. Originally, it was used to protect crops, buildings and households from the damaging effects of insects. It had been approved for use as a residual spray for the protection of wood and structures (buildings, utility poles and fences) against attack by insects and termites, against locusts, as a soil treatment for the control of termites, and as a larvicidal for the control of several insect pests[41].

Dieldrin is persistent in the environment and is not readily biodegradable. Various factors can influence the residues remaining in soil, e.g., retention in soil has been found to be favoured by low moisture content (Harris, 1964[42]; Lichtenstein & Schulz, 1961[43]), an occurrence not atypical in Australian farming.

Further dieldrin residues can result from not only the application of dieldrin but also from previous use of aldrin[44]. Where dieldrin and aldrin have been used, traces of dieldrin are likely to be present in the soil for a number of years. Dieldrin residues in the soil can lead to contamination of plant or animal commodities produced in its vicinity. These residues do not give rise to any systemic uptake but there may be occasional transfer of soil to crop. This is of particular concern for commodities such as cucurbits and root and tuber vegetables grown in contact with the soil surface.

Assessment procedure

The risk associated with dieldrin occurrence in Cucurbit or Root and tuber vegetables is thought to be negligible. It is believed that the likelihood of dieldrin exposure would be minimal due to the extremely low frequency of detections and the impact of other factors, such as washing, peeling or processing.

An important issue in assessing exposure is the frequency of detection, i.e., the extent and likelihood of exposure. In considering possible exposure levels for dieldrin it is apparent, from the monitoring data presented in Section 2.5, that detections are very low. From the FreshTest data for the period of December 2001 to June 2008 dieldrin was detected in cucurbits a total of 30 times and from Root and tuber vegetables twice. From a total of 2587 separate tests in cucurbits, this constitutes a frequency of only 1.2% and in root and tuber vegetables this level was even lower with 2 detections in 1630 tests

[41] http://www.environment.gov.au/settlements/publications/chemicals/scheduled-waste/ocpfactsheet4.html

[42] Harris, C. R. (1964) Influence or soil moisture of the toxicity of insecticidal in a mineral soils to insects, J. Econ. Ent., 57 : 946-950

[43] Lichtenstein, E. P. and K. R. Schulz. (1965) Residues of aldrin and dieldrin and their translocation into various crops, J. Agr. Food Chem., 13 : 57-63

or 0.12%.

The likelihood of exposure would be further reduced through the impact of various household food preparation practices, i.e., most cucurbit vegetables are washed and cooked and non-edible parts such as the peel removed. It has been shown that pesticide losses can be substantial from cooking (Chaudry *et al*., 1978[45], Liska *et al.* 1967[46], Zabik *et al*., 1979[47], Zabik *et al.* 2000[48]) or through food preparation practices such as washing and peeling. For example it has been shown that residue levels of dieldrin are reduced on peeling (Lichtenstein *et al.*, 1965[49], Stewart *et al.*, 1965[50]).

Further when pesticide analyses are performed on the raw agricultural commodity, the peel and (other) non-edible parts are included and the result reported on a whole commodity basis, i.e., not necessarily on the edible portion. Many cucurbits and Root vegetables are not eaten whole and raw, but undergo some form of processing prior to consumption. Therefore, in such instances the resulting dietary exposure would be minimal to nil, e.g., melons are peeled which is where dieldrin residues reside.

Finally, studies reported in the literature from different countries have shown that the actual concentrations of dieldrin in food commodities will decrease over time. For example, in 1966 - 67, the mean level of dieldrin residues in a total diet study was 0.004 mg/kg food, whereas in the period 1975 - 77 it was 0.0015 mg/kg, and in 1981, 0.0005 mg/kg[51], suggesting that in time the levels and frequency of detections will further decrease.

Confidential Commercial Information

None provided

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[44] http://www.inchem.org/documents/ehc/ehc/ehc91.htm#SectionNumber:1.2

[45] Chaudry, M.M., Nelson, A.I., & Perkins, E.G. (1978) Distribution of chlorinated pesticides in soybeans, soybean oil, and its by- products during processing. *J. Am. Oil Chem. Soc.*, 55(12): 851-853.

[46] Liska, B.J., Stemp, A.R., Stadelman, W.J. (1967) Effect of method of cooking on chlorinated insecticide residue content in edible chicken tissues. Food Technol. 21 (3A): 117A-120A.

[47] Zabik, M.E., Hoojjat, P., & Weaver, C.M. (1979) Polychlorinated biphenyls, dieldrin, and DDT in lake trout cooked by broiling, roasting, or microwave. Bull. environ. Contam. Toxicol., 21: 136-143

[48] Zabik MJ, El-Hadidi, MFA, Cash JN, Zabik ME, Jones AL (2000). Reduction of azinphos-methyl, chlorpyrifos, esfenvalerate, and methomyl residues in processed apples. Journal of Agricultural and Food Chemistry 48: 4199-4203.

[49] Lichtenstein, E.P., Myrdal, G., Schulz, K.R. (1965) Translocation of insecticidal residues from contaminated soils into five carrot varieties. J. Agr. Food Chem. 13: 126-131.

[50] Stewart, D.K.R., Chisholm, D., Fox, C.J.S. (1965) Insecticide residues in potatoes and soil after consecutive soil treatments of aldrin and heptachlor. Can. J. Plant Sci. 45: 72-78.

[51] IPCS - Aldrin and Dieldrin (Environmental health criteria; 91) http://www.inchem.org/documents/ehc/ehc/ehc91.htm

International standards

Dieldrin ERLs exists for a range of commodities globally. At Codex an ERL of 0.1 mg/kg has been established for Fruiting vegetables, Cucurbits. In New Zealand a general food ERL of 0.1 mg/kg has been established, while in the US an ERL of 0.1 mg/kg has been established for cucumber, melons and squash.

Table 1: ERLs established for dieldrin

Commodity	Australia	Codex	New Zealand	USA[52]
Asparagus	0.1			0.03
Banana	0.05			0.02
Brassica	0.1			0.03
Bulb vegetables		0.05		0.1
Carrot	0.1			
Cereal grains	0.02	0.02	0.02	
Citrus fruits	0.05		0.05	0.02
Crustaceans	0.1			
Cucumber	0.1			0.1
Diadromous fish	0.1			
Edible offal (mammalian)	0.2			
Egg plant	0.1			
Eggs	0.1	0.1		0.03
Fats (except milk fats)			0.2	
Fats and oils				0.3
Fish				0.3
Freshwater fish	0.1			
Fruits	0.05			
Fruiting vegetables, Cucurbits		0.1		
Horseradish	0.1			0.1
Leafy vegetables		0.05		
Legume vegetables		0.05		0.05
Lettuce, head	0.1			
Lettuce, leaf	0.1			
Meat [mammalian] [in the fat]	0.2	0.2		
Marine fish	0.1			
Melons				0.1
Milks [in the fat]	0.15	0.06		0.3
Milk fats			0.15	
Molluscs, including cephalopods	0.1			
Onion, Bulb	0.1			
Parsnip	0.1			0.1
Peanut	0.05			0.05
Peppers, sweet	0.1			0.05
Pimento fruit	0.1			0.05
Pome fruit		0.05		0.03
Potato	0.1			0.1
Poultry, Edible offal	0.2			

[52] http://www.cfsan.fda.gov/~lrd/fdaact.html#aldr

Commodity	Australia	Codex	New Zealand	USA[52]
Poultry meat [in the fat]	0.2	0.2		
Pulses		0.05		
Radish leaves (including radish tops)	0.1			0.1
Root and tuber vegetables		0.1		
Squash				0.1
Sugar cane	*0.01			
Any other food			0.1	

Part 2 – Chemical Contaminant Maximum Levels (3.4.1)

Analytical detection method

The laboratory used for the FreshTest analyses complies with the requirements of ISO/IEC 17025:2005. Analytical methods are by GC-MS, LC and LC-MS^n techniques with a limit of reporting of 0.05 mg/kg.

Toxicity studies and Toxicokinetics and metabolism information

A number of dieldrin ERLs currently exist for a range of commodities in Australia, i.e., relevant data has previously been assessed. It is assumed that the various agencies involved in establishing these levels would have already addressed issues relevant to toxicology and metabolism through the establishment of the TDI. Therefore, it is not believed necessary to provide additional data on toxicology, metabolism and toxicokinetics as part of this document.

Human studies relevant to safety

None provided

List of foods where maximum level is proposed

As indicated previously ERLs are being sought for 'Fruiting vegetables, Cucurbits and Root and tuber vegetables'. As defined by the Codex Alimentarius[53] Fruiting vegetables, Cucurbits are derived from the immature or mature fruits of various plants, belonging to the botanical family Cucurbitaceae. The edible portion of those fruits of which the inedible peel is discarded before consumption is protected from most pesticides, by the skin or peel. The entire fruiting vegetable or the edible portion after discarding the inedible peel may be consumed in the fresh form or after processing. The entire immature fruit of some of the fruiting vegetables species may be consumed, whereas only the edible portion of the mature fruit of the same species, after discarding the then inedible peel, is consumed.

The Codex Alimentarius defines Root and tuber vegetables the starchy enlarged solid roots, tubers, corms or rhizomes, mostly subterranean, of various species of plants, mostly annuals. The underground location protects the edible portion from pesticides applied to the aerial parts of the crop during the growing season; however the commodities in this group are exposed to pesticide residues from soil treatments.

The entire vegetable may be consumed in the form of fresh or processed foods.

Survey data on contaminant levels in foods

Outlined below are survey results collated from the Victorian government and a private monitoring

program FreshTest. FreshTest is an initiative of the Australian Chamber of Fruit and Vegetable Industries and has been operating since 2001.

From 2002 to 2006 Victoria 561 separate tests for dieldrin were performed on various fruit and vegetables. From these tests dieldrin was detected from three samples. Since 2001 the FreshTest program has performed over 10,000 separate tests for dieldrin with a total of 35 detections.

Table 2: FreshTest results, samples tested for dieldrin, December 2001 to June 2008

Commodity	**No. of Samples**	**Detections**	**Level (mg/kg)**
Asparagus	102	0	
Banana	1220	0	
Brassica	890	0	
Capsicum	571	1	
Carrots	513	0	
Citrus	1760	0	
Cucumber	*822*	*1*	*0.02*
Eggplant	274	0	
Lettuce	843	2	
Melons	*769*	*15*	*0.03-0.11*
Onion	516	0	
Potato	*870*	*1*	*0.05*
Pumpkin	*487*	*4*	*0.05-0.07*
Sweet Potato	*254*	*1*	*0.05*
Zucchini	*509*	*10*	*0.05-0.12*
Total	**10400**	**35**	

Table 3: Results of the Victorian Produce Monitoring Program[54]

Year	**Fruits**	**Vegetables**	**Detections**	**Comment**
2002	30	27	0	
2003	20	49	0	
2004	46	89	0	
2005	30	128	1	*Zucchini @ 0.08 mg/kg*
2006	45	97	2	*Pumpkins – 0.03 and 0.07 mg/kg*

Impact on industry

The establishment of ERLs for dieldrin in Fruiting vegetables, Cucurbits and Root and tuber vegetables would have a positive impact on the vegetable industry as it would ensure compliance

[53] Codex Alimentarius Vol 2 Pesticide Residues in Food. Section 2 Codex Classification of food and animal feeds.

[54] http://www.dpi.vic.gov.au/DPI/nrenfa.nsf/LinkView/DE6E151F47EBBB7ECA256C8E007C9505A99EEDDADACC70F8CA256C38001965CA#targeted

with the Food Standards Code and in so doing assist producers in maintaining their livelihood by retaining their QA accreditation.

Impact on trade

The industry does not anticipate that the establishment of the proposed ERL would constitute a potential risk through international trading of these commodities. In terms of imports, Australia already accepts New Zealand Standards through the TTMRA where an ERL of 0.1 mg/kg currently exists. In addition, Australian authorities have also indicated previously that Codex Standards can be used to inform decisions on domestic compliance. Therefore, the existence of a Codex ERLs (at 0.1 mg/kg) for Fruiting vegetables, Cucurbits and Root and tuber vegetables would suggest that import restrictions would be unlikely.

In terms of Australian exports, as indicated in Section 1.5 ERLs covering a range of commodities exist at Codex and various trading partners such as New Zealand and the USA. In addition, the quantities exported are small[55] and according to the APVMA residue guidelines, the commodities in question are not included in Residue requirements Part 5B "*Overseas trade aspects of residues in food commodities*", and as such are not considered significantly traded commodities for which residue violations if they were to occur would be considered likely to prejudice Australia's trade.

Livestock feeding

The feeding of crop by-products or trash to livestock is considered possible. If feeding were to occur violative residues would not be anticipated as; byproducts from the above crop would be unlikely to form a large part of an animals daily ration, the current animal ERLs accommodate potential exposure of livestock from other crops where their byproducts (or trash) could potentially be fed to livestock such as cereal grains.

[55] The Australian Horticulture Statistics Handbook 2004.

Horticulture Industry response to the DIURON PRELIMINARY Review FINDINGS

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INTRODUCTION:

SUMMARY:

This paper has been prepared in response to the Diuron Preliminary Review Findings, on behalf of a range of horticultural industries potentially affected by the report's recommendations. The information provided addresses such issues as current patterns in land use and herbicide management, which are generally believed to have a significant positive impact on off-farm herbicide transport. The aim of the paper is to provide information to the APVMA that will allow it to refine its risk assessments, and consequently revise its recommendations.

The use of diuron in horticulture is primarily limited to the management of certain weeds, for which there are either few or no alternatives. The potential restrictions proposed on the use of diuron have been identified as problematic by a number of horticultural industries, and so more detailed information has been provided in this report, to enable the APVMA to reassess the herbicide's uses.

As has been previously identified by the APVMA, many older products are subject to 'label drift', i.e., over time use patterns diverge from label recommendations. There are concerns that diuron is also subject to this phenomenon and as a result the APVMA risk assessments may not reflect current industry practice. Consequently, this response seeks to clarify how diuron is actually being used. This has been achieved through seeking input from relevant industry participants on current agricultural practices and industry initiatives.

CROP BACKGROUND INFORMATION:

In the preliminary findings runoff modelling identified potentially unacceptable environmental impacts from diuron use on horticultural crops at the current label application rates. This resulted in a recommendation to limit the maximum annual application rate to no more than 0.9 kg ac/ha. The information provided below addresses the APVMA recommendation from the perspective of current industry usage and land management practices.

The preliminary findings also indicated concerns over spray drift. However, the report is unclear, and even perhaps contradictory as to which crops this proposed risk mitigation measures should apply:

- in section *5.2.1.10 Proposed Buffer Zones*, it is recommended that a 100 m buffer be applied for all crops treated by ground rig.
- however, in section *4.2.2 Spraydrift (aquatic risk)* it is stated that a spraydrift buffer of 100 metres would be required for orchard application.
- yet under the *Proposed final review recommendations* it was indicated that product labels be varied to contain buffer zones for application of diuron to winter cereals and cotton only.

On the assumption that spraydrift mitigation recommendations for horticultural crops were deemed unnecessary due to the 0.9 kg ac/ha cap, those industries seeking to maintain a higher label rate have provided comment.

A summary of industry responses is outlined below. Please contact the author should the APVMA wish to obtain further clarification on any issues raised in the industries responses.

APPLES AND PEARS

Preliminary Findings: "*reduce maximum application rate to 0.9 kg ac/ha per annum. Alternatively, a combination of changes in industry practices with a reduction in the maximum application could similarly result in the required reduction.*"

Industry response: Diuron currently has only limited use in pome fruit production, and when used it is commonly applied in combination with a knockdown herbicide, i.e., as a 'spike' to improve efficacy against a specific weed. As a result the application rates used can be accommodated under the proposed maximum rate 0.9 kg ac/ha per annum. Consequently the pome fruit industry is comfortable with the APVMA proposal to limit the maximum amount applied per annum to 0.9 kg ac/ha.

ASPARAGUS

Preliminary Findings: "*reduce maximum application rate to 0.9 kg ac/ha per annum. Alternatively, a combination of changes in industry practices with a reduction in the maximum application could similarly result in the required reduction.*"

Industry response: It has been determined that diuron is used in asparagus production but not extensively.

When used it is usually applied only once per year at rates of 1.0 kg ac/ha generally at the finish of cropping. It is estimated that 2000 ha of asparagus are grown nationally with approximately 80% of this grown in Victoria. Given the relatively small scale of production and limited use of diuron the industry believes that the risk associated with environmental contamination is minimal and therefore the imposition of a rate cap of 0.9 kg ac/ha per annum is unnecessary. Consequently the asparagus industry asks that the APVMA reconsider its proposal to limit the maximum amount applied per annum to 0.9 kg ac/ha.

BANANAS

Preliminary Findings: "*reduce maximum application rate to 0.9 kg ac/ha per annum. Alternatively, a combination of changes in industry practices with a reduction in the maximum application could similarly result in the required reduction.*"

Industry response: Diuron is primarily used in herbicide mixtures in banana production, usually in combination with a knockdown herbicide as a 'spike', i.e., to improve efficacy against a specific weed or weed spectrum. It would appear that its residual activity is not generally relied upon, with application rates usually in the range of 300-450 g ac/ha. Consequently the banana industry is comfortable with the APVMA proposal to limit the maximum amount applied per annum to 0.9 kg ac/ha.

CITRUS

Preliminary Findings: "*reduce maximum application rate to 0.9 kg ac/ha per annum. Alternatively, a combination of changes in industry practices with a reduction in the maximum application could similarly result in the required reduction.*"

As per section *4.2.2 Spraydrift (aquatic risk)* where it is stated that a spraydrift buffer of 100 metres would be required for orchard application.

Industry response: The industry believes that the APVMA recommendation for proposed maximum rate restriction, and the need for a buffer zone when viewed in the context of industry structure, current agronomic practices and herbicide use, will be seen as unnecessary.

i) Industry structure

The citrus industry believes that the proposed rate restriction would unfairly penalise the entire industry based upon problems experienced in only one growing region. Citrus is grown throughout Australia with NSW accounting for approximately 36% of total production. Of this the Murrumbidgee Irrigation Area (MIA) accounts for some 70% of the state's production, i.e., 25% of national production[56]. The MIA is the only citrus region that relies upon a managed channel based irrigation system. Essentially, the problems attributable to the

[56] The Australian Horticulture Statistics Handbook 2004.

MIA are unique to the MIA. As a result a possible capping of the maximum use rate of diuron would unduly penalise 75% of the industry where to our knowledge no problems exist.

ii) Surface water detections

The preliminary review findings on citrus stem from risk assessments based upon detection levels in surface water and drains. The industry acknowledges that these detections occur but believes they are largely due to the current use of diuron on channels and drains. It is understood that diuron in the MIA currently includes its application to dry channels prior to the commencement of irrigation as well as the direct application to drainage channels for the control of aquatic weeds. Therefore, the removal of this use, the industry believes, would significantly reduce the extent and level of down stream detections.

iii) Spray drift

As indicated in Section 4.2.2 in the preliminary findings it is indicated that a 100m buffer would be required as a drift mitigation measure. The citrus industry believes that this recommendation requires further consideration. Reference is made to the use of two models: that of Ganzelmeier and Agdrift. Both models are viewed by the industry as having limited value in this context. Specifically, the industry believes that the parameters used in undertaking the drift risk assessment were overly conservative. The widely held view is that parameters more reflective of current industry practice should be used in a reconsideration of the drift risk, i.e., high water volumes, low pressure resulting in a coarse spray droplet spectrum.

It is indicated in the preliminary review findings that the Ganzelmeier tables were based on European usage under ideal conditions that sought to minimize spray drift whereas the Agdrift model was based upon typical US usage patterns for broadacre application of pesticides. Neither of these models mirrors the Australian citrus experience.

It is unclear from the preliminary review findings which element of the Ganzelmeier tables was utilized in the drift risk assessment. Assuming that the field crop component of the Ganzelmeier tables were used, the industry does not believe that these are directly relevant to the application of a soil active herbicide. The Ganzelmeier drift values were derived from application volumes of 300 L/ha at pressures of 240-250 kpa at a speed of 6 km/h[57]. This would produce a fine to medium spray droplet spectrum at a relatively fast travelling speed, parameters that would not be applicable to the application of a soil active herbicide in an orchard situation.

In an orchard a slower speed and coarser droplet spectrum would be used, particularly as current diuron labels all indicate that high water volumes are needed for application in citrus with a minimum water volume of 300-

[57] Ganzelmeier et al. 1995.

500 L/ha and a maximum of 4000L/ha specified. To achieve this applications would have to be at much slower speeds while using a significantly coarser droplet spectrum.

Regarding the use of the AgDrift model it is understood that for ground application the model can only provide Tier I assessments and has relatively few risk assessment options available, i.e., low or high boom, fine to medium/coarse spray spectrum. This is due to the relatively limited data set upon which the model was developed. As indicated in the report, the data was collated from a number of trials reflecting typical US usage patterns, which unfortunately did not encompass a complete cross section of droplet spectra. The largest droplet spectrum was achieved using 8004 nozzles applying 27 gallons/A (250 L/ha) at a speed of 5 mph (8 kph), which would produce an ASAE medium droplet spectrum, i.e., a $D_{v0.5}$ of 294.15µm, whereas the industry believes that orchard herbicide applications would use a coarse droplet spectrum, i.e., $D_{v0.5}$ of 385.22µm. This would significantly affect the amount and extent of any off-target drift that could occur.

The preliminary review findings also noted differences in estimated drift risk as calculated by the two models, with AgDrift showing a higher potential risk to algae (and duckweed) than the Ganzelmeier tables. This difference was also commented upon by the FIFRA Scientific Advisory Panel[58], which noted that the difference could be the result of higher drift conditions experienced in some of the SDTF[59] studies. The industry therefore believes that use of the AgDrift model is not ideal and limited in its scope when considering soil active herbicide applications in orchards, as it does not allow for the impacts of potential risk minimisation practices or current best agricultural practice to be assessed. .

In summary, the industry believes that due to limitations neither of the models is directly applicable to herbicide applications in citrus orchards. As a result, the recommendation for a 100-metre buffer with regard to spray drift is believed to be extremely conservative and unnecessary. The industry believes that explicit spray drift warnings, e.g., DO NOT spray if winds are blowing towards sensitive areas, and the inclusion of specific recommendations on drift minimization should suffice. It is envisaged that this could be achieved through the specification of a coarse to very coarse spray spectrum, i.e., $D_{v0.5}$ of 385.22µm to $D_{v0.5}$ of 439.39µm as per the ASAE S572 definition for standard nozzles, coupled with recommendations for low boom height and operating pressures.

[58]The FIFRA, Scientific Advisory Panel. 1999. Spray Drift - Review of Proposed Pesticide Deposition Curves to Adjacent Areas.

[59] Spray Drift Task Force

iv) Land management

There are also a range of management practices and initiatives underway in the MIA that have the potential to impact positively on off-farm movement of diuron. These include the use of sod-culture, a move towards more efficient use of irrigation water and environmental education programs. Sod-culture involves the establishment of permanent strips of vegetation in the inter-row spacing. It is being promoted as a means of improving soil structure, increasing soil organic content and reducing soil compaction (see Figure 1 below). It provides the potential benefit of slowing water movement on-farm and reducing erosion and off-farm contamination as pesticide concentrations are thought to be greater in eroded sediment than in original soil because of uneven distribution of organic matter and sorption within soil aggregates.

Figure 1: Example of sod culture being used in citrus production.

To achieve more efficient irrigation, there is a growing move away from the use of flood irrigation. The Riverina Citrus Committee estimate that approximately 40% of the citrus producing area is now under flood irrigation, whereas 10 years ago this figure would have been closer to 90%. This has been necessitated by the increasing cost of water, issues associated with salinity (salt moved into the tree root zone) and the negative impacts of too much water, i.e., waterlogging inhibiting growth. In addition, there is a major emphasis on the implementation of water drainage recycling systems in the MIA. To further promote environmental awareness Murrumbidgee Irrigation Ltd has begun a community based environmental awareness program called Envirowise[60].

PINEAPPLES

Preliminary Findings: "*reduce maximum application rate to 0.9 kg ac/ha per annum. Alternatively, a combination of changes in industry practices with a reduction in the maximum application could similarly result in the required reduction."*

Industry response: The industry's experience of the herbicide's use combined with current pineapple farming practices lead us to advise that the proposed maximum rate restriction is unnecessary.

The pineapple industry acknowledges that the preliminary review findings are prompted by concerns about the potential environmental impacts from diuron use. However, when factors such as land use practices, herbicide use intensity and area under cultivation are considered it will be recognized that the recommendations are unwarranted.

i) Industry structure

Pineapples are currently produced from approximately 4,500 ha situated almost exclusively in Queensland[61]. There are an estimated 130 growers with approximately 70% of production occurring in southeast Queensland. The typical cropping cycle consists of four phases, which generally extend over a four-year period. These phases are crop establishment, plant crop, ratoon crop and fallow. Each phase takes approximately 12 months. In terms of area at any given time 25% of the crop will be in the establishment phase, i.e., new plantings to canopy closure, another 25% will be in the plant crop phase, 25% under a ratoon crop and finally the remaining 25% of the area will be under fallow management during which no herbicides are applied[62].

ii) Herbicide use

Diuron can be applied between two and four times, depending on weed pressure and spectrum, during the crop establishment phase, roughly during the first nine to ten months of crop growth. Thereafter, canopy closure effectively removes the need for weed management measures. Consequently diuron is only applied to an estimated 1200 ha annually. Therefore, the capacity for

[60] http://www.mia-envirowise.com/
[61] The Australian Horticulture Statistics Handbook 2004.
[62] Pineapple Best Practice Manual ed. Newett et al. 2005

pineapple production to contribute to diuron environmental loads is small. Although multiple applications can occur, the typical application rates used are generally lower than those labelled, as full label rates are not required in all situations, i.e., diuron can be mixed with other herbicides depending upon the anticipated weed spectrum[63], further reducing the volume of diuron applied per unit area of pineapple production. Resulting in relatively low use intensity over the entire life of the crop.

iii) Spray drift

As with citrus the pineapple industry believes that a 100m buffer, as a drift mitigation measure, requires further consideration. Specifically, the industry believes that current industry practices with regard to diuron application, i.e., high water volumes and low pressure makes this recommendation unnecessary. Current diuron labels carry the requirement that water volumes should be a minimum of 2000 L/ha up to 4000 L/ha. To achieve these volumes a very coarse spray droplet spectrum is used. As a result the industry believes that as with citrus the imposition of buffer zones is unnecessary and that sufficient risk mitigation can be achieved through explicit spray drift warnings, e.g., DO NOT spray if winds are blowing towards sensitive areas, and the inclusion of recommendations on achieving desirable droplet spectra should suffice.

iv) Land management

In terms of land management practices the pineapple industry has also implemented a number of erosion and nutrient management initiatives that further reduce the potential for off-farm movement of diuron. Almost all production is now on slopes of less than 6º with all farms using surface drains and approximately 75% using sub-surface drains with the drains linked to the silt traps (see Figure 2 below). Approximately 80% of pineapple farms have installed silt traps[64]. These silt traps act as effective water capture systems, limiting the off-farm movement of surface water. The silt traps are regularly excavated, with the soil collected redistributed over the farm. While developed primarily as tools in erosion management these control measures will reduce pineapple production's contribution to any surface water contamination. Consequently the amount of diuron movement off-farm either in surface water, carried on soil or through sub-surface drainage, would be negligible.

[63] ibid.

Figure 2: Example of a silt trap on a pineapple farm, SE Qld.

PAWPAW/PAPAYA

Preliminary Findings: "*reduce maximum application rate to 0.9 kg ac/ha per annum. Alternatively, a combination of changes in industry practices with a reduction in the maximum application could similarly result in the required reduction.*"

Industry response: Diuron use is limited in pawpaw or papaya production. iIt is unlikely to be applied alone at full label rates due to concerns over crop safety, so the application rates would be significantly lower than current label approvals. Consequently the pawpaw/papaya industry sees no difficulty in complying with the APVMA proposal to limit the maximum amount applied per annum to 0.9 kg ac/ha.

[64] T Wolens pers comm. – Golden Circle Pty Ltd.

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Horticulture Industry response to the FIPRONIL Review Scope Document

K Bodnaruk

AKC Consulting Pty Ltd

26/12 Phillip Mall, West Pymble NSW 2073.

INTRODUCTION:

In response to the Review Scope Document input was sought from peak industry body representatives, growers, advisers and researchers associated with those crops in which Fipronil is currently either registered or approved for use, e.g., bananas, brassica vegetables, potatoes, mushrooms and the nursery industry. Information outlined below provides general background information and specific information relating to the use of the product in main industries.

From comments received it is apparent that Fipronil has a significant role in crop production in all crops for the management of a range of pests, e.g., Banana weevil borer, (*Cosmopolites sordidus*), Banana rust thrips (*Chaetanaphothrips signipennis*), Diamond back moth (*Plutella xylostella*), Cabbage white butterfly (*Pieris rapae*), Cabbage cluster caterpillar (*Crocidolomia pavonona*), Mushroom flies, Whitefringed weevil (*Naupactus leucoloma*), wireworm and Western flower thrips (*Frankliniella orientalis*) as per PER4415.

It was indicated that the use of fipronil is an important part of pest management strategies in all crops. In particular, is its use as a rotational option for the management of pests prone to the development of resistance, e.g., Diamond back moth and Western flower thrips. In general Fipronil is used no more than 1-2 applications per crop with uses governed by Avcare resistance management strategies. Commodity specific comments are indicated below.

CROP BACKGROUND INFORMATION:

BRASSICA VEGETABLES

Fipronil is a key chemical for the control of Diamond back moth as it forms part of grower's resistance management strategy. The use of fipronil is limited by the Avcare Diamond back moth resistance strategy to a specific 'window' during the year, i.e., it cannot be applied to all crops. Its use is further limited by a maximum number of four applications per year. It can also be occasionally used for the control of incidental caterpillar infestations, e.g., Cabbage cluster caterpillar and Cabbage white butterfly.

NURSERY INDUSTRY

It is used for the control of Western flower thrips a significant pest of seedlings and ornamental plants. In the nursery industry it is used as part of rotational pest management programs. The application of fipronil is done on as need basis with only one application per crop.

BANANAS

Fipronil can be used for the control of Banana weevil borer and Banana rust thrips in bananas. As with other uses it is applied as part of resistance management programs, i.e., due to its use as a rotational option. Applications are limited by need and would only occur 1-2 times per year.

MUSHROOMS

Fipronil is used to control can be used for the control of Banana weevil borer and Banana rust thrips in bananas. As with other uses it is applied as part of management programs, i.e., due to its use as a rotational option for resistance management. Further information regarding the use of Fipronil in mushrooms is contained in the response from the AMGA[65].

POTATOES

Fipronil is approved to control whitefringed weevil and wireworm in potatoes. Applications, when used, are made prior to crop planting once per season. The use of Fipronil is not great in potatoes.

[65] Australian Mushroom Growers Association

CROP OH&S INFORMATION

Background:

Crop group/crop:	Nursery crops	**No. App/crop:**	One
State/region:	National	**No. Crop/year:**	Variable
Product:	Regent (Fipronil)		
Pest group/pest:	Western Flower Thrips		
Field or greenhouse:	Greenhouse & Field		
Crop growth stage:	Seedling/tube stock	**Date:**	March 2004

Use Pattern:

Application	App. Method:	High & low volume
	Equipment type:	Hand gun on retractable hose/knapsack/drenching
	Equipment:	Single Nozzle
	Treatment zone:	Pot/tray
	Water volume:	100 – 500
	Nozzle type:	Even Fan/Flood jets/Cone nozzles
	Nozzle size:	5 - 150 L/min
	Nozzle spacing:	N/A
	Pressure:	1-3 bar
	Tank capacity (L):	15/200

Operator safety	No. of operators:	One mixer/loader/applicator or one mixer/loader + one applicator
	Enclosed cab:	No
	PPE during mix/loading:	Yes
	PPE during application:	Yes
	Treated area/volume (ha or L/day):	Under 500 L/day (250L/ha)
	Work rate (hours/day):	2-3
	No. of operations/day for M/L:	1-2
	Operation duration M/L	5-10 minutes
	Operation duration App.	1-1.5 hours

Re-entry activity	Type of activity:	Stock movement/despatch/weeding/fertilising
	Date (days after App.):	2 days after App
	Duration (hours/day):	30 minutes – 6 hours
	Crop height:	Low 0.10-0.25 m
	Remarks:	PPE in use includes hat, mask/respirator, goggles, gloves, long sleeves, long pants and boots.

Background:

Crop group/crop:	Brassica crops	**No. App/crop:**	1-2[66]
State/region:	National	**No. Crop/year:**	3-4
Product:	Regent (Fipronil)		
Pest group/pest:	Diamond Backed Moth		
Field or greenhouse:	Field		
Crop growth stage:	variable	**Date:**	March 2004

Use Pattern:

Application	App. Method:	High volume
	Equipment type:	Tractor mounted
	Equipment:	Boom spray
	Treatment zone:	Row
	Water volume:	100 – 500
	Nozzle type:	Hollow cone
	Nozzle size:	1 L/min
	Nozzle spacing:	50 cm
	Pressure:	1-3 bar
	Tank capacity (L):	2000

Operator safety	No. of operators:	One mixer/loader/applicator or one mixer/loader + one applicator
	Enclosed cab:	Yes
	PPE during mix/loading:	Yes
	PPE during application:	No
	Treated area (ha/day):	4-5
	Work rate (hours/day):	6
	No. of operations/day for M/L:	1-2

Re-entry activity	Type of activity:	Scouting, harvesting
	Date (days after App.):	Scouting – 2 to 3 days Harvesting – 7 days
	Duration (hours/day):	2-4
	Crop height:	Low 0.5-0.75 m
	Remarks:	

[66] No more than 4 applications per year.

Background:

Crop group/crop:	Banana crops	**No. App/crop:**	1-2
State/region:	National	**No. Crop/year:**	1
Product:	Regent (Fipronil)		
Pest group/pest:	Banana rust thrips & Banana weevil borer		
Field or greenhouse:	Field		
Crop growth stage:		**Date:**	March 2004

Use Pattern:

Application	App. Method:	High volume
	Equipment type:	Tractor mounted
	Equipment:	Boom or band spray
	Treatment zone:	Row (plant row & butts)
	Water volume:	40 – 80 L/100m
	Nozzle type:	Hollow cone
	Nozzle size:	1 L/min
	Nozzle spacing:	50 cm
	Pressure:	1-3 bar
	Tank capacity (L):	2000

Operator safety	No. of operators:	One mixer/loader/applicator or one mixer/loader + one applicator
	Enclosed cab:	Yes
	PPE during mix/loading:	Yes
	PPE during application:	No
	Treated area (ha/day):	4-5
	Work rate (hours/day):	6
	No. of operations/day for M/L:	1-2

Re-entry activity	Type of activity:	Scouting, harvesting & deleafing
	Date (days after App.):	Scouting – 7 days at the earliest Harvesting – 1-2 months Deleafing – 7-14 days at the earliest
	Duration (hours/day):	2-4
	Crop height:	High 2.5-3.0 m
	Remarks:	

Horticulture Industry response to the Methamidophos Review Scope Document

INTRODUCTION:

In response to the Review Scope Document input was sought from peak industry body representatives, growers, advisers and researchers associated with those crops in which methamidophos is currently either registered or approved for use, e.g., cabbages, cauliflower, lettuce, peaches, peppers, potatoes and tomatoes.

From comments it appears that methamidophos still has a significant role in vegetable crop production for the management of Budworm, (*Helicoverpa* spp.), Green peach aphid (*Myzus persicae*), Potato moth (*Phthorimea operculella*) and Wester flower thrips (*Frankliniella orientalis*) as per PER4410. There appears to be little support for its continued availability in peaches. It was indicated that while the use of methamidophos is declining it remains an important part of pest management strategies in vegetables. In particular, as a rotational option for the management of Green peach aphid, Western flower thrips and budworm. In potatoes it is primarily used as a fall back product for when pest pressures are too great for bio-control agents and softer options to control Potato moth. In general where methamidophos is used no more than 1-2 applications are made per crop. Commodity specific comments are indicated below.

POTATOES

The use of methamidophos appears to have declined appreciably in potatoes. As a result of IPM growers tend to prefer other options for controlling Potato moth and Green peach aphid. It is still used, however, in the Atherton Tablelands and Lockyer Valley of Qld for Green peach aphid and Potato moth control. Where it is seen as having a fit as a rotational option in Green peach aphid resistance management and when biological controls fail, i.e., beneficial insects fail to establish.

CABBAGES & CAULIFLOWER

Methamidophos is still a key chemical in some areas for the control of Green peach aphid. While newer chemistry is used methamidophos still forms part of growers resistance management strategies. It can also be occasionally used for the control of incidental caterpillar infestations, e.g., Budworm, Cluster caterpillar and Cabbage white butterfly. In general, use is not great due to IPM implementation.

TOMATOES

It is primarily used for Western flower thrips, Budworm and Potato moth control. In the major fresh tomato production areas, i.e., Qld, it tends to be used when beneficial insects or softer option chemicals prove unsuccessful for the control of both Potato moth and Budworm. Its continued availability in tomatoes is viewed as important as it is known to be still effective against Budworm, i.e., it is seen as a useful rotational option for resistance management purposes. In the processing tomato areas use is limited. However, it can be used for the control of Western flower thrips.

CAPSICUMS

Methamidophos can be used for the control of Green peach aphid, Budworm and Western flower thrips in capsicums. As with other vegetable crops its use appears to have declined due to the greater uptake of IPM. In the Burdekin region it tends not to be used due to its lack of activity against Silver leaf whitefly (*Bemisia tabaci*). In other areas due to its Green peach aphid and Budworm activity it is seen as an important rotational option. Its Budworm activity is seen as important as it is still effective and is one of the few options registered in capsicums.

PEACHES

There appears to be limited if any use of methamidophos in peaches primarily due to the availability of 'softer' options. As a consequence there is little support for its retention.

METHIOCARB PRELIMINARY REVIEW FINDINGS:

Horticulture Industry response

K Bodnaruk
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SUMMARY

Snails and slugs are significant pests in a range of horticultural crops in Australia. Currently management options are limited and affected industries have indicated that maintaining access to methiocarb would be beneficial to continued crop productivity.

On the basis of the available information industry believes that amending the withholding period for Mesurol® based products would be a more suitable risk minimisation action than the deletion of all food uses. Horticultural industries believe that this is appropriate on the basis of the compounds physical characteristics and the way that methiocarb-based products are applied. It is believed such changes would adequately address the dietary intake concerns requests that such an approach be considered by the APVMA.

INTRODUCTION:

In order to respond to the Preliminary Review findings input was sought from peak industry body representatives, growers, advisers and researchers associated with those crops in which methiocarb is currently either registered or approved for use. The information gathered is outlined below and is meant to provide the APVMA with a general background on the current use of the product and specific information relating to reasons why industry believes that the uses in horticulture should be preserved.

It is understood that snail and slug pests have been increasing in significance. It is believed that this is in part due to the increasing spread of the pest species but also with the introduction of new agronomic practices resulting in increased organic matter in the soil, i.e., enhancing the available food source. Under optimal conditions these pests have the capacity for rapid population increase with a resultant increase in crop damage if left unchecked. At present there are few management options available to growers of horticultural crops.

PEST SPECIES

From comments received it is apparent that methiocarb has a significant role in the protection of a number of horticultural crops from a range of snail and slug pests, e.g., Common garden snail (*Helix aspersa*), Common white snail (*Cernuella virgata*), White Italian snail (*Theba pisana*), Green snail (*Helix aperta*), Oriental snail (*Bradybaena similaris*), Pointed snail (*Cochlicella acute*), Common garden slug (*Laevicaulis alte*), Gray field slug (*Deroceras reticulatum*), Small brown snail (*Microxeromagna vestita)* and the Gray striped garden slug (*Limax maximus*). These pest species are typified by a wide host range resulting in many crop species being attacked across Australia, such crops as leafy and brassica vegetables, vines, citrus and stonefruit.

Pest snails and slugs damage plant seeds, seedlings and plants through the feeding on leaves and fruit, impairing quality by either fouling the harvested commodity with faeces or mucous trails, or being present on the harvested commodity as a contaminant. In annual crops such as vegetable snails and slugs can be significant pests during crop establishment with the damage they cause often resulting in plant death and significant production losses.

These mollusc pests are primarily a problem in areas with ample soil moisture and organic matter. In general they hatch in winter/spring and feed until the onset of summer when they aestivate. Aestivation usually occurs as a response in areas prone to hot dry summers, e.g., those with Mediterranean climates. In more temperate areas the populations can continue to cycle through a number of generations.

USE PATTERN

It was indicated that the bait pellets are generally applied as a broadcast application to crop inter-rows or as field borders to restrict mollusc incursion. In perennial crops, e.g., citrus and vines, the wettable powder is often used. In these instances it is applied primarily as a trunk or butt treatment and to the surrounding soil.

When using the bait pellets the aim of the farmers is to deposit the methiocarb pellets onto the soil surface so as to be readily accessible to the foraging molluscs. Direct contact with the crop is unintended and would be minimal. Where the wettable powder is applied the aim is to repel the molluscs by restricting their access to the tree or vine crop canopy.

Industry stakeholders indicated that methiocarb is used as an important part of mollusc pest management. When used in annual crops it is applied during crop establishment, i.e., early in the crop cycle, to prevent damage to young seedlings or emerging plants. It was advised that when used in this manner methiocarb is primarily applied once per crop at the rate of 5.5 kg/ha, i.e., 110 g ai/ha. There was no indication provided that the highest label rate of 22 kg/ha was used. As indicated above the wettable powder formulation was used primarily as butt treatment in citrus and vines. In these instances the rate of 100 g/100L would result in maximum rates of no more than 20 to 40 g ai/ha being applied.

RESIDUES

It is recognized that in the use of the bait, while directed towards the inter-row some pellets could impact upon the leaves and stems of crop plants and could become lodged on the crop plant, particularly in such crops as leafy vegetables. However, as the usage is during crop establishment it is believed that such adventitious contamination would be unlikely to contribute significantly to any methiocarb crop residues, i.e., the small size of the plants would limit their capacity to retain significant amounts.

In the use of the wettable powder formulation there was no indication provided of the compound being applied as a foliar treatment. In both citrus and vines management strategies have been developed based upon sampling and either butt treatments or baiting. Further limiting the possibility of direct contact onto the harvested commodities resulting in methiocarb residues.

As methiocarb is primarily applied to the soil the likelihood of residues is further diminished. It is believed that this form of application is unlikely to contribute to crop residues, as there would minimal plant uptake. This is due, in part, to the rates applied and the physical properties of the compound. It is understood that as methiocarb is non-systemic, with low soil mobility, is readily absorbed by soil but not desorbed and undergoes rapid degradation in the soil[67], crop residues resulting from uptake from soil treatment would be negligible.

In addition, data reported in the 1981 and 1983 JMPR Monographs indicated that the rate of methiocarb breakdown was rapid. This suggests that an adjustment of the withholding period, to address the stated dietary intake concerns, could be viable. For example, in trials reported from Germany where methiocarb bait was applied one to two times at 0.12 kg ai/ha, comparable to the current Australian label rate of 5.5 kg/ha, residues in harvested cabbages, cauliflower, lettuce and spinach were found to be non-detectable after 14- 28 days.

While no date was reported that directly supported the higher rate of 22 kg/ha (0.44 kg ai/ha) trials from Canada and the USA were discussed where methiocarb was applied at significantly higher rates and application frequencies, i.e., 5 to 6 applications at 1.1 kg ai/ha. These also showed a similar pattern of rapid breakdown.

CONCLUSION

On the basis of the above information the horticultural industries believe that the APVMA should give consideration to extending the withholding periods for the currently available methiocarb formulations as an alternative suitable risk mitigation measure. Industry believes that based upon the available data a withholding period of 28 days should be adequate for the use of the bait pellets in annual and perennial crops. For the use of the wettable powder in vines it is believed that the current recommendations and restrictions are adequate, e.g., only spray pre-flowering or make butt treatments. It is suggested that amending the citrus recommendations to read similarly would also address any concerns. If required industry may be amenable to conducting monitoring of crops as part of any risk mitigation process.

[67] BCPC Pesticide Manual 13th Edition.

Horticulture Industry response to the

Procymidone Review Scope Document

K Bodnaruk

AKC Consulting Pty Ltd

February 25, 2005

1. INTRODUCTION:

In response to the Review Scope Document input was sought from peak industry body representatives, growers, advisers and researchers associated with those crops in which procymidone is currently either registered or approved for use, e.g., potatoes, onions, turf and carrots, or was previously approved but where uses have been suspended, e.g., stonefruit, tomatoes, brassicas and strawberries.

From comments it appears that procymidone has a significant role in the production of many horticultural crops for disease management. In particular, it's importance for the management of Sclerotinia spp., (*Sclerotinia sclerotiorum, S. minor, S. homeocarpa* and *S. cepivorum*), Monilinia spp. (*Monilinia fructicola* and *M. laxa*) and Botrytis spp. (*Botrytis cinerea* and *B. fabae*) was stressed. For a number of crops procymidone was one of only two options available. It was also indicated that where multiple disease control options exist the use of procymidone while limited, remains an important part of pest and resistance management strategies. The primary role it fulfils is as a rotational option for the management of Botrytis and Sclerotinia due to a different mode of action. In general, where procymidone is used no more than 1-2 applications are made per crop. Commodity specific comments are indicated below.

2. COMMODITY COMMENTS

2.1 BEANS

Maintaining access to procymidone is important to the bean industry. The crop is grown in all states with Qld and Tasmania being the largest producers accounting for approximately 85% of production. Sclerotinia is a significant disease for the industry in most production regions with the exception of north Qld, where approximately 40% of bean production occurs. Until recently procymidone was the only available control option. The recent approvals of boscalid PER8113 and azoxystrobin PER8182 have helped alleviate this situation to a degree.

The crop is generally grown over a 10 to 12 week period with Sclerotinia primarily a problem over flowering, at which time fungicide applications would be needed. When used procymidone was applied no more than two or three times to the crop, dependant upon Sclerotinia pressure. The first application would generally occur at 10-20% flowering. A second application could be made 7-10 days later. If required a third application could be made a further 7-10 days later occurring approximately 14 days before harvest. The second application is therefore about 3-4 weeks before harvest. Importantly there is virtually no bean pod (the consumed part of the plant) present at this time.

Beans for the fresh market can be both mechanically and hand harvested though mechanical harvesting predominates. In Tasmania where production is almost exclusively for processing, beans are harvested mechanically. Bean processing involves the harvested commodity being washed and blanched, reducing significantly the likelihood of detectable residues. The current restraints on the use of the fungicide and its use pattern would indicate that exposure from pre-harvest uses would be minimal.

Post-harvest treatment is uncommon in Qld and Tasmania, though it has been used in NSW and Victoria, i.e., a small part of the industry.

2.3 BRASSICAS

Sclerotinia is primarily a problem in head brassica where the wrapper leaves can be in close contact with soil providing an environment conducive to disease development. The incidence

of the disease in flower head brassica (broccoli, cauliflower etc) is generally low with little use of the fungicide required. Growers primarily rely on cultural management techniques, e.g., crop rotation, to manage the disease. However, on occasion fungicidal treatments are necessary. A permit (PER6380) had previously existed for the use of procymidone in Brassica vegetables for the control of Sclerotinia rot. No other chemical management option is currently available to the industry. The industry maintains that access to procymidone is important particularly for head cabbage (*Brassica oleracea convar. capitata*). As a result the industry requests that the permit be reissued but with an amended use pattern extending the withholding period to minimise potential residues in the harvested commodity.

2.4 CARROTS

Sclerotinia rot of carrots is a disease of growing importance in Australia. At present procymidone is the only fungicide available for the control of the disease (PER8054). The use of procymidone is generally early in the crop life cycle as Sclerotinia rot is primarily a problem of early plant development. When used only 1-2 applications are generally needed, commencing from the 3-4 leaf stage of the crop. Only in severely diseased crops would further applications be required. Carrots are harvested mechanically and with the current harvesting restraints, i.e., 9 days for domestic and 35 days for export, it is believed that residue levels would be minimal.

2.5 CUCURBITS

Sclerotinia rot of cucurbits can be a problem on occasion. While it is not a significant disease the industry has no management options available. Previously, a permit for procymidone (PER5434) existed however this was recently cancelled. As no management option currently exists the industry requests that the permit be reissued but with an amended use pattern extending the withholding period to minimise potential residues in the harvested commodity.

2.6 GRAPES

Botrytis is a significant disease in table grape production; however, the industry has indicated that there are many alternative control options available with limited use of procymidone. As a result the industry does not wish to retain access to procymidone.

2.7 LETTUCE

Sclerotinia rot can be devastating for lettuce growers. The disease causes leaf drop adversely affecting yield and quality and if left unchecked can result in plant death. Two Sclerotinia

diseases can be found on lettuce, *Sclerotinia minor* and *S. sclerotiorum*. *S. minor* is the most common of the two diseases. Lettuce production occurs in all states with Qld, NSW and Victoria accounting for over 80% of national production with the disease considered a significant problem in all areas other than north Qld.

To date procymidone has been a major element of Sclerotinia management strategies with few control options available, i.e., previously only procymidone and iprodione were approved. Control options have recently been increased with approvals given for boscalid (PER8141), azoxystrobin (PER8182) and tebuconazole (PER8207). However, the industry wishes to maintain access as the compound has been found to be very effective and would prove a good rotational tool for these new compounds, assuming they remain available in the long-term. On this basis, a single application of the fungicide per crop would be beneficial and ensure that dietary and occupational exposure would be negligible.

2.8 ONIONS & GARLIC

Onion white rot (OWR), a disease caused by the fungus *Sclerotium cepivorum* is a major constraint to onion production. It has become so widespread that some producers have ceased growing onions or have had to relocate to find 'clean' land. The pathogen produces resting bodies (sclerotes) that can survive in the soil in the absence of a host plant for up to 20 years, making rotations an impractical control option. Consequently, fungicides have been the main control option used.

Maintaining access to procymidone in Allium crops therefore, is seen as important by the industry. There are approximately 5000 ha of onions grown in Australia with White rot being endemic in all major producing regions. The disease, if left unchecked can result in significant crop losses. At present there are only two fungicides approved for use in onions against the disease, procymidone and tebuconazole.

The crop is generally grown over a 6 month period with White rot applications occurring primarily during crop establishment, leaf and early bulb development. When used procymidone can be applied up to the soil up to 4 times per season, depending upon disease pressure. Onions harvest is mechanical. Given the use pattern, i.e., soil application and the timings, the potential for exposure, either dietary or occupational, would be anticipated to be negligible.

2.9 POTATOES

The use of procymidone in potatoes while limited is still seen as important. Procymidone is used in Target spot (Alternaria) control programs as a rotational option for resistance management. For Sclerotinia control procymidone is one of only two fungicides approved. Consequently maintaining access to procymidone is seen as important to the potato industry.

As indicated previously procymidone use in potatoes is limited. When applied no more than 1-2 applications are made per crop. When used the fungicide is generally applied early in the crop cycle well before harvest, i.e., in excess of 8 weeks prior to harvest.

2.10 TOMATOES

It is primarily used as a rotational option in the control of Botrytis (Grey mould) and Sclerotinia. It has been used in both fresh tomato (southeast Qld) and processing tomato production (NSW). When used it generally applied from mid-flowering with no more than 1-2 applications made. Its continued availability in tomatoes is viewed as important as it is known to be still effective against Sclerotinia and Botrytis, i.e., it is seen as a useful rotational option for resistance management purposes.

2.11 TURF

The main use of procymidone in turf is on couch grass (*Cynodon dactylon*) putting and bowling greens for the control of Spring dead spot. When used the fungicide is applied 2-3 times at monthly intervals usually starting in late summer, i.e., February. It is used on a preventative program in which applications are made to reduce disease inoculum levels prior to the onset of dormancy in the grass.

Spring dead spot is a root borne disease and as a result after application the fungicide is 'watered in' immediately to move the fungicide through the thatch layer of the grass and into the root zone. The watering consists of 5-10 mm of irrigation, i.e., 50,000-100,000 L/ha with the areas treated being relatively small. As a result potential exposure to spray deposits would be minimal to nil.

2.12 STONEFRUIT

The use of procymidone is not extensive within the industry. When used it is applied mainly for the control of blossom blight over flowering. It is occasionally used for brown rot control during early fruit development. Maintaining access to the fungicide during this period would be of benefit to the industry. Residues resulting from such timings are anticipated to be negligible. In addition, there is no support for the retention of the post-harvest dip treatment.

2.13 STRAWBERRIES

Botrytis is a significant disease in strawberry production, while the industry has indicated that there are a number control options available with limited use of procymidone.

3.0 Residues in Trade

Outlined below are monitoring results from the FreshTest residue monitoring program. The data provides an indication of the incidence of procymidone detections from the period of 01/01/02 to 19/11/04.

Commodity	Number of analyses	Number with residues	Percentage detected
Beans	106	20	18.9
Broccoli	95	0	0
Cabbages	73	4	5.5
Carrots	200	6	3.0
Cherries	87	19	21.8
Cucumber	280	7	2.5
Garlic	21	1	4.8
Grapes	245	21	8.6
Lettuce	258	59	22.9
Onions	174	1	0.6
Nectarine	203	36	17.7
Peaches	168	23	13.7
Plums	131	4	3.1
Potatoes	248	1	0.4
Pumpkin	170	-	0
Squash	74	-	0
Strawberries	348	18	5.2
Tomatoes	587	33	5.6
Zucchini	203	1	0.5

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9 May, 2008

Les Davies, Chemical Review
Australian Pesticides and Veterinary Medicines Authority
PO Box 6182
KINGSTON ACT 2604

RE: APVMA preliminary assessment of propiconazole

Dear Les,

AKC Consulting would like to submit the following comments regarding the use of propiconazole in horticultural and ornamental crops. This response is made on behalf of horticultural industry associations and has been collated from comments received from various industry participants including researchers, consultants and industry representatives.

It has been indicated that propiconazole forms an important element in disease control strategies employed in all crops for which it is currently approved. The use of propiconazole is viewed as particularly important in stonefruit and bananas. When used it is targeted against the specific pest as part of a resistance management strategy, i.e., a rotational option with a differing mode of action to current standards.

Should you have any questions regarding the information provided please don't hesitate to contact me either on 02 9499 3833 or akc_con@zip.com.au.

Yours sincerely,

Kevin Bodnaruk

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Introduction

Propiconazole is approved for use as a foliar treatment in a number of horticultural crops. Industry feedback indicates that propiconazole is being used. Its usage is due, in part, to its mode of action and physical characteristics, i.e., curative and systemic, providing a high level of disease control. In general the frequency of use is dependant upon seasonal conditions, i.e., whether climatic conditions are conducive to disease outbreak, and resistance management strategies.

While a number of fungicide alternatives are available in some crops, ant-resistance strategies[68] serve to limit the level of use, i.e., maximum number of applications coupled with the requirement for alternation with chemicals with different modes of action.

No areas of concern or problems with label clarity of efficacy were highlighted by industry respondents.

Vegetable crops

Propiconazole is approved for use in beetroot, celery, spinach and sweet corn for a range of plant pathogens, e.g., Cercospora spp. and Septoria spp. Estimated areas under production for each of these crops are; beetroot – 1500 ha, celery -1100 ha, sweet corn – 5,500 ha[69] and spinach – 200 to 400 ha, all of which are grown across Australia[70].

Beetroot

Propiconazole is used in beetroot production for the control of Cercospora leaf spot, its use is understood that it is only applied on an as need basis, i.e., dependant upon disease incidence. Also, beetroot has a crop cycle that generally lasts about 10-12 weeks and as it is subject to a rotational strategy the level of use is not high. Nevertheless, it is deemed to be a valuable and important tool in the management of Cercospora leaf spot.

Celery

Propiconazole is used to control two significant diseases in celery production Septoria spot (*Septoria apiicola*), Early blight (*Cercospora apii)*. While a number of options are available propiconazole has been found to be particularly useful due to its high level of systemicity. It is understood that where a triazole is applied propiconazole is used preferentially.

[68] http://www.croplifeaustralia.org.au/files/managingresistance/2007%20Fungicide%20Resistance%20Management%20Strategies.pdf

[69] ABS Ag Stats 7111.0 2005-06 Principal agricultural commodities, Australia.

[70] The Australian Horticulture Statistics Handbook 2004.

Spinach

Propiconazole is one of two options available for the control of Leaf spot in spinach. It is used on an as need basis, i.e., dependant upon disease incidence, to supplement the use of the protectant fungicide mancozeb. As spinach has a crop cycle of approximately 6-10 weeks the number of applications made is generally limited. Due to the limited number of options available propiconazole is seen as a valuable tool in the management of Leaf spot in spinach.

Sweet corn

Propiconazole is one of two options available for the control of Northern corn leaf blight in sweet corn. It is limited to a maximum of two applications per season. As sweet corn has a crop cycle of approximately 10-14 weeks the level of usage limited. Continued access to propiconazole is seen as important due to the limited number of options available for the management of Northern corn leaf blight.

Application

For spinach, celery and beetroot propiconazole based products can be applied using mechanized sprayers, i.e., air blast or boom sprays. In sweet corn, due to crop phenology applications to established crops require either specialist ground equipment, i.e., a 'Tall-boy' boom sprayer, or the use of aircraft. It is believed that the extent to which workers may be exposed to propiconazole during mixing, loading, and application, or to foliar residues during harvesting are limited.

For ground based applications water volumes in the range of 500 to 750 L/ha are generally used. Other than for sweet corn where aerial application can occur at water volumes of 20-30 L/ha. In ground application areas covered and work rates would not exceed five hectares per working day due to farm size, with the maximum amount of active ingredient handled in the order of 0.5 – 0.625 kg ai/day when spraying occurs. Where aerial application is used work the maximum amount of active ingredient handled would be of the order of 1.25 – 2.5 kg ai/day of spraying.

In terms of PPE, applicators, with engineering controls, such as enclosed tractor cabs or in aircraft, would dispense with goggles and elbow length gloves.

Mixing and loading

Current labels specify PPE of cotton overalls, buttoned to the neck and wrist, a washable hat, elbow length PVC gloves, goggles and disposable fume mask. It is believed that these requirements are followed in the preparation of spray mixtures.

Re-entry

Activities post-treatment are limited and would in most cases be associated either with crop scouting or harvesting. Scouting would normally be done 1 – 2 days post treatment and be of limited duration. Harvesting could be done as early as 1 day post-treatment depending upon the crop. Due to the compounds systemic activity it is believed potential exposure to propiconazole from handling treated fruit would be minimal.

Mushrooms

Australian mushroom production involves about 100 growers involving an area of approximately 200 ha. In mushroom production propiconazole can be used as a sanitation treatment of used mushroom trays, i.e., non-crop use. The operation involves removal of spent mushroom compost from the trays and either dipping or flood spraying with propiconazole. This process involves moving of trays from the production room, with a forklift, placing them on a detacker-line for removal of the spent compost. The empty trays are then dipped or flood sprayed then restacked preparatory to refilling with compost. Where spraying is practiced the empty trays move through an enclosed chamber to be sprayed. In general there would be two people involved in tipping and dipping operation which would take approximately 7 hours per week.

Pineapples

There are approximately 4,600 ha of pineapples grown by over 280 farmers in Queensland (ABS Census). Planting material is usually undergoes extensive air drying prior to planting, which greatly reduces the incidence of Base rot (*Thielaviopsis paradoxa*). However, where drying of planting material is either not undertaken, i.e., planting is immediate after removal, or where extended wet weather limits drying, propiconazole is used as a dip.

Planting density ranges between 45 - 75 000/ha, this equate to 2,250 – 3,750 L of dip mixture, i.e., allowing 50 mL of the dip solution per plant, or a maximum of 187.5 g ai/ha. After planting all in-crop operations are mechanical, e.g., the application of other pesticides is from tractor mounted boom sprays. The crop can take from 18 to 24 months from planting to harvest.

Blueberries

Blueberry rust (*Pucciniastrum vaccinii*) is a significant quarantine concern and at present is restricted in its distribution in Australia. Propiconazole is currently the only fungicide approved for use in blueberries for the control of this disease. The use of propiconazole is therefore seen as critical. When used, it can be applied fortnightly.

Application
Propiconazole based products are applied using mechanized sprayers, i.e., air blast or boom sprays, applying relatively high water volumes, e.g., 700-1000 L/ha. It is believed that the extent to which workers may be exposed to propiconazole during mixing, loading, and application, or to foliar residues during harvesting are limited.

Tree crops
Propiconazole is used in banana, stonefruit and almond production for the control of a range of diseases. Information received indicates that it is seen as a valuable tool in disease management in all of these crops.

Almonds
Propiconazole is used in almonds for the control of Blossom blight (*Monilinia laxa*) and Anthracnose (*Colletotrichum acutatum*). The number of applications is set at a maximum of four with a number of alternative fungicides currently available, e.g., Blossom blight – iprodione and Anthracnose - azoxystrobin and captan. Propiconazole has been used due to its systemicity and potential curative activity.

Application
Applications are done using air-blast or mister sprayers applying water volumes equivalent to 2000 L/ha. Frequency of use varies depending upon seasonal conditions however, it has been indicated that between one and two applications could be made in a season. Areas covered and work rates would not 10 – 12 hectares per working day, i.e., 4 – 6 h in a day, due to farm size, with the maximum amount of active ingredient handled in the order of 3.0 kg ai/day when spraying occurs.

Bananas
Propiconazole is primarily used in bananas for the control of Yellow leaf spot (*Mycosphaerella musicola*). The number of applications is set at a maximum of five or six depending upon growing region. A number of alternative fungicides are available, e.g., chlorothalonil, copper, difenoconazole, epoxiconazole, fenbuconazole, mancozeb, paraffinic oil, pyraclostrobin, pyrimethanil, tebuconazole, trifloxystrobin and zineb. Due to resistance concerns the use of fungicides in bananas is subject to an anti-resistance strategy where growers follow rotational programs. Propiconazole has been used due to its systemicity and potential curative activity.

Application
In the banana industry, spraying can be done either by air or ground. Aerial application is used over the greater part of the industry, i.e., north Qld, with ground based spraying practiced in NSW. In NSW ground based sprays are applied approximately three times per season in the Coffs Harbour

region and five times in Murwillumbah. These applications are made at 3-4 week intervals. In north Qld treatments are usually applied on 2-3 week intervals depending upon climatic conditions.

Ground application can be carried out either by the grower or a contractor. The area treated can vary due to terrain, e.g., 0.5 – 5 ha per day. Consequently, the approximate work rate (number of work hours/day) could vary from 1 to a maximum of 5 – 6 hours.

Re-entry
Re-entry activities post-treatment are limited and could include harvesting, crop scouting and de-leafing. Post-treatment, scouting would be done no more than weekly and aimed primarily at disease management, i.e., leaf inspection; it would also be on a whole farm basis. De-leafing, where required, could occur 7 – 14 days post-treatment. In terms of harvesting, in a ratoon crop bunch development is not uniform resulting in a staggered harvesting period. As a result in ratoon crops harvesting can occur every few days.

Stone fruit

Propiconazole is extensively used in stonefruit for the control of Blossom blight (*Monilinia laxa*) and Brown rot (*Monilinia fructicola*). Its use is subject to an anti-resistance strategy limiting the number of consecutive applications that can be made. There are also a number of alternative fungicides currently available, e.g., captan, carbendazim, chlorothalonil, copper, cyprodinil, dithianon, dodine, fenbuconazole, iprodione, mancozeb, procymidone, sulfur, thiram and ziram.

In general disease control in stonefruit is based upon a preventative approach with protectant fungicide used during the main part of the season with propiconazole primarily used during periods high disease pressure. It's availability is particularly important in the high rainfall areas of south east Qld and northern NSW, i.e., low-chill production zones.

Application
When applied it is usually applied as a dilute spray of approximately 2000 L/ha of water. Applications are made using airblast sprayers. The spraying and mixing is generally done by the same person and the maximum work rate would be 4 – 6 h in a day. Re-entry activities would be limited to mowing of the inter-row, scouting and late harvest. Generally, crop scouts would not enter a sprayed site until 7 – 14 days post treatment.

APPENDIX III: Dimethoate and Buprofezin Submissions to the Joint Meeting on Pesticide Residues of the FAO.

TITLE: **DIMETHOATE - HORTICULTURE AUSTRALIA LIMITED SUBMISSION FOR JMPR 2008.**

PURPOSE:

1. To provide information on dimethoate to the FAO Secretary of JMPR for evaluation by JMPR at the 2008 meeting. Dimethoate is on the FAO Panel schedule for 2008 for alternative GAP.
2. To provide Australian data to support the establishment of Codex MRLs for dimethoate on sweet peppers.

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ATTACHMENT 1.	labels,	Labels of dimethoate products sold in Australia.
ATTACHMENT 2.	Report	Griffin, D. 2008. Determination of dimethoate residues of the active constituents: dimethoate and omethoate in various fruit and vegetables following pre-harvest spray applications containing the formulated products Danadim. Horticulture Australia Ltd, NSW, Australia. Unpublished.
ATTACHMENT 3.	Submission	Dimethoate – HORTICULTURE AUSTRALIA LIMITED submission for JMPR 2003 (AH01014-DIMETHOATE.03.02).
ATTACHMENT 4	Submission	Dimethoate - Queensland Department of Primary Industries submission for JMPR 1998 (QDPI.DIMETHOATE.98.01).

1. BACKGROUND INFORMATION

This report has been compiled for submission to JMPR for review. It contains information on registered uses, methods of residue analysis, supervised residue trials and national residue limits. It is provided to supplement information made available previously to JMPR in 1998 and 2003.

1.1 Pre-harvest insect control on plants.

Dimethoate is approved in Australia for use in vegetables, and capsicums (Sweet peppers) for the control of aphids, thrips, leafhoppers, mites, bugs, wingless grasshoppers and fruit fly. Rates of application are 750 mL/ha or 75 mL/hL. The pre-harvest interval is either 7 days or 3 days.

1.3 Chemical properties of dimethoate - hydrolysis.

No information is provided in this report. Previously reported in Dimethoate -Queensland Department of Primary Industries submission for JMPR 1998 (QDPI.DIMETHOATE.98.01).

2. METABOLISM AND ENVIRONMENTAL FATE

No information is provided in this report.

3. METHODS OF RESIDUE ANALYSIS

Capsicum (sweet peppers) samples were analysed using Method "GCMS Determination of Dimethoate Residues in Vegetative Specimen extracts" with the reference code "Dimethoate MSMS-07-01". The method involves two-stage sample preparation using a primary mill to size reduce and homogenise specimens, followed by a secondary high speed cutting mill to pulverise a sub-sample of the size reduced homogenate. Sub-samples were extracted into an organic solvent via high-power ultrasonication and mechanical shaking. The solvent extract was evaporated under vacuum to aqueous residue and partitioned against dichloromethane. The dichloromethane extracts were combined and evaporated under vacuum to dryness then reconstituted in acetone. An aliquot was filtered through a 0.45um PTFE filter in preparation for instrumental analysis. Final extracts with high resides were diluted, as required, so that the peak areas fell within the working range of the target analyte calibration curve(s). Final Quantitation was performed via multi-point external calibration against reference standard solutions with residue levels determined from the final extracts via GC/MS/MS.

Recovery tests at or about the limit of quantitation (LOQ) demonstrated that the LOQs were 0.01 and 0.01 mg/kg for dimethoate and omethoate in capsicums, respectively. Mean analytical recoveries for dimethoate and omethoate in capsicums were in the 91.0% for dimethoate and 87% for omethoate.

4. USE PATTERN

Table 1: Registered and approved pre-harvest uses of dimethoate in capsicums in Australia.

Crop	Pest	State	Rate	Pre harvest interval
Vegetables (General)	Aphids, thrips, leafhoppers (including Jassids), mites, bugs (including Green vegetable bug)	All States	750 mL/ha or 75 mL/100 L water	7 days
	wingless grasshoppers			
Capsicums	Aphids, thrips, Jassids, Green vegetable bug	All States	75 mL/100 Litres of water	7 days
Capsicums	Fruit fly	Qld, NSW, WA only	750 mL/ha or 75 mL/100 L water	3 days[71]
Capsicums	Cucumber fly	NSW, WA only	750 mL/ha or 75 mL/100 L water	7 days

[71] Three day harvest interval appears on two labels only – Labels 4 & 5 in Attachment 1

5. RESIDUES RESULTING FROM SUPERVISED TRIALS

Peppers, sweet

Capsicums (sweet peppers) were subjected to three pre-harvest applications of dimethoate at 7 day intervals at an application rate of 30 g ai/hL. After treatment, sampled capsicums were frozen and then analysed for dimethoate and omethoate residues. Residue data are summarised below. This data is to supplement information previously provided by Horticulture Australia for JMPR in 2003 (AH01014-DIMETHOATE.03.02).

Project – 07-HAL -005(a) - Site 65

Capsicums (sweet peppers) were grown in a protected cropping situation utilising a hydroponic nutrient system. Plants were treated at BBCH growth stages 71 – 72. As indicated above treatment rates were 75 mL/hL (30 g ai/hL). After treatment, the capsicum fruit were harvested at specified intervals, frozen and analysed for dimethoate and omethoate residues. Residue data are summarised in Table 2.

Table 2: Residues of dimethoate and omethoate in capsicums (cv Inspiration) following treatment with dimethoate.

Product rate	Sampling After 3rd spray	Omethoate (mg/kg)	Dimethoate (mg/kg)	Dimethoate Whole fruit residue (mg/kg)
Foliar Spray (75 mL/hL)	3 Days	0.15	0.42	0.58
	7 Days	0.10	0.26	0.37
Control		< 0.01	< 0.01	< LOQ

Project – 07-HAL -005(a) - Site 66

Field grown capsicums (sweet peppers) were treated at BBCH growth stages 83 – 85 at an application rate of 750 mL/ha (300 g ai/ha). After treatment, the capsicum fruit were harvested at specified intervals, frozen and analysed for dimethoate and omethoate residues. Residue data are summarised in Table 3.

Table 3: Residues of dimethoate and omethoate in capsicums (cv Warlock) following treatment with dimethoate.

Product rate	Sampling After 3rd spray	Omethoate (mg/kg)	Dimethoate (mg/kg)	Dimethoate Whole fruit residue (mg/kg)
Foliar Spray (750 mL/ha)	3 Days	0.06	0.19	0.25
	7 Days	0.02	0.06	0.08
Control		< 0.01	< 0.01	< LOQ

6. FATE OF RESIDUES IN STORAGE AND PROCESSING

No information is provided in this report.

7. RESIDUES IN FOOD IN COMMERCE OR AT CONSUMPTION

Residues in food commodities in trade

No information is provided in this report.

Residues in food as consumed

The 20th Australian Total Diet Survey (2003) estimated the total dietary intake of selected pesticides and contaminants for six age-gender groups of people in the population: adult males aged 25-34 years, adult females aged 25-34 years, boys aged 12 years, girls aged 12 years, toddlers aged 2 years, infants aged 9 months. These groups were taken to represent the population as a whole.

Sixty-nine types of foods were analysed. 'Model' diets for these groups of people were developed based on these foods and food consumption data from the 1995 National Nutrition Survey. All foods were analysed to determine the levels of pesticides and contaminants. The foods were subjected to prescribed preparation and processing steps so that the samples for analysis were table-ready. For information on the average weight of different food commodities see Attachment 9.

For the purposes of intake calculation a 'not detected' analytical result was assumed to have a zero value. The limit of reporting was 0.01 mg/kg.

Table 4**.** Estimated daily intakes for dimethoate for 6 categories of the Australian population based on The 20th Australian Total Diet Survey (2001). ADI for dimethoate is 0.02 mg/kg bw/day.

Population	Estimated daily intake µg/kg bw/day	Estimated intake as % ADI
Adult males	0.0006	< 0.01
Adult females	0.001	< 0.01
Boys aged 12 years	0.0006	< 0.01
Girls aged 12 years	0.0008	< 0.01
Toddlers aged 2 years	0.0033	0.02
Infants aged 9 months	0.0024	0.01

8. NATIONAL RESIDUE LIMITS

Table 16**.** Australian MRLs for dimethoate and omethoate (MRL Standard, 2002, and subsequent amendments).

	Food Commodity	MRL (mg/kg)
Dimethoate residue definition: Sum of dimethoate and omethoate, expressed as dimethoate		
GC 0080	Cereal grains	*0.05
VL 0465	Chervil	T2
MO 0105	Edible offal (mammalian)	*0.05
PE 0112	Eggs	*0.05
VC 0045	Fruiting vegetables, Cucurbits	5
	Fruits [except strawberry, litchi, peach, quandong and mango]	5
HS 0783	Galangal, rhizomes	T2
HH 0092	Herbs	T2
	Kaffir lime leaves	T2
	Lemon grass	T2

	Food Commodity	MRL (mg/kg)
DT 1111	Lemon verbena	T2
FI 0343	Litchi	5
VD 0545	Lupin (dry)	0.5
FI 0345	Mango	1
MM 0095	Meat [mammalian]	*0.05
ML 0106	Milks	*0.05
	Mizuna	T2
SO 0088	Oilseed (except peanut)	0.1
FS 0247	Peaches	3
SO 0697	Peanut	*0.05
VO 0445	Peppers, Sweet [capsicums]	2
PO 0111	Poultry, Edible offal of	*0.05
PM 0110	Poultry meat	*0.05
	Quandong	T5
FB 0275	Strawberry	5
VL 0496	Rucola (Rocket)	T2
FB 0275	Strawberry	5
VO 0448	Tomato	2
HS 0794	Tumeric, root	T2
	Vegetables [except lupin (dry); peppers, sweet; tomato]	2
Omethoate residue definition: Omethoate		
GC 0080	Cereal grains	*0.05
MO 0105	Edible offal (mammalian)	*0.05
PE 0112	Eggs	*0.05
	Fruits	2
VD 0545	Lupin (dry)	0.1
MM 0095	Meat [mammalian]	*0.05
ML 0106	Milks	*0.05
SO 0088	Oilseed	*0.05
VO 0445	Peppers, Sweet [capsicums]	1
PO 0111	Poultry, Edible offal of	*0.05
PM 0110	Poultry meat	*0.05
VO 0448	Tomato	1
	Vegetables [except lupin; peppers, sweet; tomato]	2

*MRL set at or about the limit of analytical quantitation

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MRL Standard. 2008 (and subsequent amendments). Maximum residue limits in food and animal feedstuffs of agricultural and veterinary chemicals and associated substances. National Registration Authority. Australian Government Publishing Service, Canberra.

TITLE:	BUPROFEZIN - HORTICULTURE AUSTRALIA LIMITED SUBMISSION FOR JMPR 2008.
PURPOSE:	1. To provide information on buprofezin to the FAO Secretary of JMPR for evaluation by JMPR at the 2008 meeting. Buprofezin is on the FAO Panel schedule for 2008. 2. To provide data to support the establishment of Codex MRLs for buprofezin on citrus fruit, custard apple, grapes, pear, apple, passion fruit, persimmon, mango, eggplant, cucumber and tomato.
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ATTACHMENT	**1**	labels, permits	Labels of buprofezin products sold in Australia. Off-label permits authorised by the Australian Pesticides & Veterinary Medicines Authority.
ATTACHMENT	**2**	method	Dow AgroSciences Method of Analysis GRM 99.19. 'Determination of Residues of Buprofezin in Citrus, Mangoes and Custard Apples by High Performance Liquid Chromatography with +APCI Tandem Mass Spectroscopy Detection': M Hastings: 23rd February 2000.
ATTACHMENT	**3**	method	Dow AgroSciences Method of Analysis RM 89003. 'Determination of Residues of Buprofezin and its p-Hydroxy metabolite in apple"
ATTACHMENT	**4**	method	AGAL Method NR36
ATTACHMENT	**5**	method	AgriSolutions Analytical Method ALM-046
ATTACHMENT	**6**	Citrus	Wilson, B.I., Lobb, P. and McMillan V. 1993. Residues of buprofezin and its major metabolite in citrus after application of Applaud 25W insecticide in New Zealand. Report No. GHF-P 1285. DowElanco. Unpublished.
ATTACHMENT	**7**	Citrus	Wilson, B.I., Webb, K. and Murphy, A. 1995. Residues of buprofezin in citrus after application of Applaud 25W or 40SC insecticide in Australia. Report No. GHF-P 1452. DowElanco. Unpublished.
ATTACHMENT	**8**	Citrus	Cowles, J. 1999. Magnitude of residues of buprofezin in citrus (oranges and mandarins) after two applications of Applaud insecticide in the 1999 season. Report No. GHF-P 1946. Dow AgroSciences. Unpublished.
ATTACHMENT	**9**	Mango	Wilson, B.I., Fossett, G. and Wells, G. 1995. Residues of buprofezin in mango after application of Applaud 25W or 40SC insecticide in Australia. Report No. GHF-P1461. DowElanco. Unpublished.
ATTACHMENT	**10**	Mango	Cowles, J. 1999. Magnitude of residues of buprofezin in mangoes after the application of Applaud insecticide in the 1998 – 1999 season. Report No. GHF-P 1945. Dow AgroSciences. Unpublished.
ATTACHMENT	**11**	Custard apple	Cowles, J. 1999. Magnitude of residues of buprofezin in custard apples after two applications of Applaud insecticide in the 1998 – 1999 season. Report No. GHF-P 1944. Dow AgroSciences. Unpublished.
ATTACHMENT	**12**	Grape	Cowles, J. 2002. Residues of buprofezin in Australian grapes after two applications of Applaud insecticide at three vine stages in the 2001 – 2002 season. Report No. GHF-P 2792. Dow AgroSciences. Unpublished.
ATTACHMENT	**13**	Grape	Cowles, J. 2003. Residues of buprofezin in Australian grapes after three applications of Applaud insecticide at two vine stages in the 2002 – 2003 season. Report No. GHF-P 2842. Dow AgroSciences. Unpublished.
ATTACHMENT	**14**	Grape	James, R. 2004. Buprofezin residues in grapes after two applications of Applaud insecticide between budburst and 80% capfall in the 2004 – 2005 season. Report No. GHF-P 2881. Dow AgroSciences. Unpublished.

ATTACHMENT	**15**	Pear	Cowles, J. 2002. Residues of buprofezin in Australian pears at harvest after two applications of Applaud 40SC insecticide in the 2001 – 2002 season. Report No. GHF-P 2795. Dow AgroSciences. Unpublished.
ATTACHMENT	**16**	Pear	Cowles, J. 2003. Buprofezin residues in Australian pears at harvest after three applications of Applaud insecticide in the 2002 – 2003 season. Report No. GHF-P 22839. Dow AgroSciences. Unpublished.
ATTACHMENT	**17**	Apple	Harris, B. 1996. Residues from post-flower applications of buprofezin to apples in New Zealand, 1995/96. Report No. GHF-P-15191. DowElanco. Unpublished.
ATTACHMENT	**18**	Persimmon	Drew, H. and Drew J. 2003. Insecticide residue trials in persimmons for off-label permit extensions and approvals. Project No. FR02020.
ATTACHMENT	**19**	Cucumber	Anon. 2005. Determination of the level of buprofezin residues in greenhouse cucumber following two applications of Applaud 440EC applied as a foliar spray before harvest. Study No. AVG270.
ATTACHMENT	**20**	Eggplant	Valverde-Garcia, A, Gonzalez-Pradas, E and Aguilera-del Real, A. 1993. Analysis of buprofezin residues in vegetables. Application to the degradation study on eggplant grown in a greenhouse. *J. Agric. Food Chem*. 41, 2319-2323
ATTACHMENT	**21**	Tomato	Wilson, B.I. 1990. Residues of buprofezin and its major metabolite in tomatoes after application of Applaud 25W insecticide in New Zealand. Report No. GHF-P 998. DowElanco. Unpublished.

Abbreviations

APVMA	Australian Pesticides and Veterinary Medicines Authority
DAT	days after last treatment
d	days
EC	emulsifiable concentrate
g ai	grams active ingredient
GC	gas chromatography
hL	hectolitre
HPLC	high-performance liquid chromatography
LOD	Limit of detection
LOQ	limit of quantitation
MRL	maximum residue limit
MS	mass spectrometry
MS/MS	tandem mass spectrometry
ndr	no detectable residue
nop	no observed peak
PHI	Pre-harvest interval
SC	suspension concentrate
UTC	untreated control
var	variety
WP	Wettable powder

1. BACKGROUND INFORMATION

This report has been compiled for submission to JMPR for review in 2008. It contains information on methods of residue analysis, registered and approved uses, supervised residue trials and national residue limits. This report is an output of the Pesticide Regulation Coordinator project funded by Horticulture Australia Limited as part of the across industry program.

1.1 Pre-harvest insect control on plants.

Buprofezin is a thiadiazine insect growth regulator which acts primarily by inhibiting cuticle deposition. It is registered for use in Australia for the control of Red scale and White louse scale, Jassids (leafhoppers) and Mealybugs in citrus, custard apple, grapes, mango, pear, passion fruit and persimmons. There are also APVMA minor use (off-label) approvals in place for its use in cucumber and tomato (glasshouse and field), eggplant and zucchini for the control of Whitefly.
Buprofezin is also approved for use in New Zealand for the control of Scale insects, Mealybug and Whitefly in citrus, grapes, kiwifruit, persimmon, pipfruit, tamarillo and various fruiting vegetables.

1.2 Chemical properties of buprofezin.

No information is provided in this report.

2. METABOLISM AND ENVIRONMENTAL FATE

No information is provided in this report.

3. METHODS OF RESIDUE ANALYSIS

In citrus and mango, pulp and peel residues of buprofezin were determined using a liquid chromatography method based Nihon Nohyaku Report No.: A-100772. Extraction of buprofezin involved concentrating in acetone followed by the addition of hexane and partitioning with aqueous hydrochloric acid. The aqueous phase was neutralised, either buffer or sodium chloride was added and the buprofezin extracted into hexane. The eluate is evaporated to dryness and then dissolved in water/methanol prior to quantification by HPLC with UV detection.
Grapes, pears and custard apples were analysed following Dow AgroSciences Method of Analysis GRM 99.19. Extraction of buprofezin involved concentrating in acetone. From the subsequent acetone solution an aliquot of the extract was then applied to a Strong Cation Exchange solid phase extraction cartridge. The eluate was evaporated to dryness and reconstituted in acetonitrile:water (1:1 v/v) + formic acid. Quantitation was performed using High performance Liquid Chromatography using +ve APCI Tandem Mass Spectrometric Detection (LC-MS/MS). The Limit of Quantification (LOQ) was 0.01 mg/kg.
Pear, grape specimens were analysed for residues of buprofezin following Dow AgroSciences Method of Analysis RM 89003. Buprofezin is extracted using acetone containing sodium hydroxide. The extract was concentrated, acidified and washed with n-hexane. After the addition of phosphate buffer and pH adjustment, the extract was partitioned into n-hexane. Pyridine and acetic anhydride are added to acetylate and the p-hydroxy metabolite. After washing with water the n-hexane layer was evaporated and the residue dissolved in ethyl acetate and quantified by gas chromatographic using a Nitrogen-Phosphorus Detector (NPD). The Limit of Quantification (LOQ) was 0.01 mg/kg and the Limit of Detection (LOD) was 0.005 mg/kg for whole pears. Residues <LOD were defined as Not Detected (ND).
For Cucumbers method ALM-044 was used. Method ALM-044 was adapted from methods BF/02/96[73] (GC-NPD method) and BF/11/9774 (GC/MS method), developed by AgrEvo Residue Chemistry Division. This method involves residues of buprofezin being extracted from cucumber

72 Analytical method of buprofezin and p-hydroxy metabolite in mango. A-1007. Report of Nihon Nohyaku Co. Ltd.
73 AgrEvo Analytical Method, RAM Number: BF/02/96: "Analytical Method For the Determination of Residues of Buprofezin at Estimated Tolerance Levels in Vegetable Crops (Lettuce and Tomatoes) by Gas Chromatography Using NP Detection". Authored by J. L. Neal and M. F. Tymoschenko. Dated: May 28, 1996.
74 AgrEvo Analytical Method, RAM Number: BF/11/97: "The Determination of Residues of Buprofezin in Beef Tissues and Milk via Solid-Phase Extraction and Gas Chromatography with MS and Nitrogen Phosphorus Detection". Authored by L. E. Williams. Ph.D. Dated: August 11, 1997.

samples with acetone and rotary evaporated to an aqueous extract. The aqueous extract is liquid-liquid partitioned with hydrochloric acid/hexane, neutralised to pH 7, then given a second liquid-liquid partition cleanup with hexane/ethyl acetate, dried with anhydrous sodium sulphate, evaporated to near dryness, and re-dissolved in toluene for analysis. The residues are measured by GC/MS. AGAL Method NR36 was used to analyse persimmon fruit for buprofezin. The buprofezin was extracted by blending samples with acetone or hexane or acetone/hexane and extracting into DCM/hexane. The extracts were concentrated then cleaned using GPC. Internal standards were added to every sample for calculation of recovery. The prepared extracts are analysed by GC/ECD, GC/NPD and/or GC/MS in either/or or both EI and NCI mode. Confirmation of results obtained by either GC/ECD or GC/NPD was achieved either by chromatography on a second column or by Mass spectrometry.

4. USE PATTERN

Table 1 Registered and approved uses of buprofezin on horticultural commodities in Australia and New Zealand. See Attachment I for a comprehensive list of approved labels and permits.

Crop	form	conc g/L	product application rate or spray conc	Applic rate kg ai/ha	Spray conc g ai/hL	PHI, days
Australia						
Citrus	SC	440	30-60 mL/hL		13.2-26.4	28
Custard apples	SC	440	30-60 mL/hL		13.2-26.4	14
Grapes	SC	440	30-60 mL/hL		13.2-26.4	56
Mango	SC	440	60 mL/hL		26.4	28
Pears	SC	440	30-60 mL/hL		13.2-26.4	56
Passion fruit	SC	440	30-60 mL/hL		13.2-26.4	1
Persimmon	SC	440	60 mL/hL		26.4	28
Minor Use Permit[75]						
Cucumber	SC	440	600 mL/ha	0.264		3
Cucumber (GH)	SC	440	30 mL/hL		13.2	3
Eggplant	SC	440	600 mL/ha	0.264		3
Tomatoes	SC	440	600 mL/ha	0.264		
Tomatoes (GH)	SC	440	30 mL/hL		13.2	3
Zucchini	SC	440	600 mL/ha	0.264		3
New Zealand						
Citrus	SC	440	30 mL/hL		13.2	14
Grapes	SC	440	30 mL/hL		13.2	PF
Kiwi fruit	SC	440	30 mL/hL		13.2	PF
Peaches	SC	440	30 mL/hL		13.2	PF
Persimmon	SC	440	30 mL/hL		13.2	PF
Pipfruit	SC	440	30 mL/hL		13.2	56
Tamarillo	SC	440	30 mL/hL		13.2	7
Cucumber (GH)	SC	440	30 mL/hL		13.2	3
Eggplant (GH)	SC	440	30 mL/hL		13.2	3
Melons (GH)	SC	440	30 mL/hL		13.2	3
Peppers (GH)	SC	440	30 mL/hL		13.2	3
Pepino (GH)	SC	440	30 mL/hL		13.2	3
Tomatoes (GH)	SC	440	30 mL/hL		13.2	3
Zucchini (GH)	SC	440	30 mL/hL		13.2	3

GH – Glasshouse

PF – Do not apply after first flowerbuds have opened.

75 Approved use via an APVMA Minor Use Permit

5. RESIDUES RESULTING FROM SUPERVISED TRIALS

5.1 Citrus fruits (FC0001)

Seven trials were carried out in Australia and one trial in New Zealand where buprofezin (Applaud 25W or 40 SC Insecticide) was applied to citrus trees (oranges, mandarin and lemon) with mature size fruit. Rates applied ranged from 12.5 g ai/hL to 50 g ai/hL, with samples collected from 0 to 56 days after treatment.

After 2 applications of 12.5 and 13.2 g ai/hL, at 14 day intervals, whole fruit residues found in oranges at 28/29 days after application were 0.083, 0.011 and 0.01 mg/kg. Residues found at 25 and 26.4 g ai/hL, 28/29 days after the final application were 0.119, 0.067 and 0.05 mg/kg respectively.

In mandarins, following two applications at 13.2 g ai/hL, the highest residues found 28 days after the final application was 0.05 mg/kg. Residues found following one or two applications of buprofezin at 24 and 26.4 g ai/hL, 28/29 days after the final application were 0.69, 0.24, 0.02 and 0.33 mg/kg respectively.

In one trial from New Zealand in lemons Applaud 25W Insecticide was applied twice with a 17 day interval at 12.5, 25 and 50 g ai/hL. Residues found 28 days after the final application of 12.5 g ai/hL and 25 g ai/hL were 0.127 and 0.395 mg/kg respectively.

The results are summarised in Tables 2, 3, 4, 5, 6 and 7.

Table 2 Buprofezin residues in oranges (var. Valencia) following treatment with Applaud insecticide[76]

Trial Ref.	Location	Rate g ai/hL	Applications (Interval)	DAT	Peel	Pulp	Whole fruit mg/kg
GHE-P-1452	Yarroweyah, Victoria	12.5	2 (14 d)	0	0.83	0.027	0.374
				4	0.24	0.012	0.114
				7	0.41	0.014	0.178
				14	0.22	0.030	0.110
				21	0.17	0.007	0.071
				29	0.20	0.005	0.083
		25	2 (14 d)	0	1.4	0.059	0.664
				4	0.55	0.026	0.258
				7	0.61	0.014	0.268
				14	0.32	0.029	0.153
				21	0.33	0.011	0.143
				29	0.27	0.021	0.119
		50	2 (14 d)	0	3.1	0.109	1.48
				4	2.3	0.080	1.04
				7	2.8	0.085	1.21
				14	1.1	0.130	0.560
				21	0.91	0.033	0.414
				29	0.87	0.080	0.397

Table 3 Buprofezin residues in oranges (var. Valencia) following treatment with Applaud insecticide[77]

Trial Ref.	Location	Rate g ai/hL	Applications (Interval)	DAT	Peel	Pulp	Whole fruit mg/kg

76 Calculated from residue detected in whole fruit and pulp and weight of peel and pulp

77 Calculated from residue detected in whole fruit and pulp and weight of peel and pulp

Trial Ref.	Location	Rate g ai/hL	Applications (Interval)	DAT	Peel	Pulp	Whole fruit mg/kg
GHE-P-1452	Somersby, NSW	12.5	2 (14 d)	0	0.35	0.027	0.145
				4	0.21	0.023	0.137
				7	0.38	0.017	0.135
				14	0.13	0.011	0.051
				21	0.12	0.07	0.045
				28	0.03	0.004	0.011
		25	2 (14 d)	0	1.2	0.082	0.537
				4	0.61	0.063	0.391
				7	0.79	0.041	0.314
				14	0.36	0.039	0.160
				21	0.28	0.022	0.117
				28	0.16	0.011	0.067
		50	2 (14 d)	0	2.0	0.155	0.862
				4	1.4	0.161	0.920
				7	1.8	0.070	0.699
				14	0.80	0.053	0.324
				21	0.75	0.074	0.308
				28	0.71	0.038	0.263

Table 4 Buprofezin residues in mandarins (var. Ellendale) following treatment with Applaud insecticide[6]

Trial Ref.	Location	Rate g ai/hL	Applications	DAT	Peel	Pulp	Whole fruit mg/kg
GHE-P-1452	Mundubbera, Queensland	24	1	7	3.05	0.049	0.60
				14	3.15	0.064	0.72
				21	2.16	0.051	0.49
				28	2.87	0.084	0.69
		48	1	7	4.78	0.066	1.1
				14	5.38	0.084	1.1
				21	4.79	0.130	1.1
				28	4.85	0.094	1.1
		56	1	7	7.77	0.175	1.7
				14	8.62	0.329	1.9
				21	8.31	0.148	1.7
				28	8.86	0.196	1.8

Table 5 Buprofezin residues in mandarins (var. Ellendale) following treatment with Applaud insecticide[78]

Trial	Location	Rate	Applications	DAT	Peel	Pulp	Whole fruit

78 Calculated from residue detected in whole fruit and pulp and weight of peel and pulp

Ref.		g ai/hL					mg/kg
GHE-P-1452	Mundubbera, Queensland	24	1	7	2.01	0.024	0.42
				14	2.21	0.090	0.48
				21	1.85	0.027	0.37
				28	1.15	0.016	0.24
		48	1	7	4.04	0.066	0.88
				14	3.51	0.059	0.79
				21	2.96	0.040	0.62
				28	1.38	0.015	0.30
		56	1	7	8.94	0.186	1.9
				14	8.61	0.134	1.6
				21	8.48	0.149	1.7
				28	4.89	0.068	1.0

Table 6 Buprofezin residues in oranges (var. Navel) and mandarins (var. Imperial) following treatment with Applaud insecticide[7]

Trial Ref	Location	Rate g ai/hL	Applications (interval)	DAT	Peel	Pulp	Whole fruit mg/kg
GHE-P 1946	Navel, Gayndah	13.2	2 (14 d)	28	0.03	< LOD	0.01
				42	0.03	< LOD	0.01
				56	0.04	< LOD	0.01
		26.4		28	0.22	< LOQ	0.05
				42	0.02	< LOD	< LOD
				56	0.12	< LOD	0.03
	Imperial, Gayndah	13.2	2 (14 d)	28	0.07	< LOD	0.02
				42	0.04	< LOD	0.01
				56	0.03	< LOD	0.01
		26.4		28	0.17	< LOQ	0.05
				42	0.03	< LOD	0.01
				56	0.03	< LOD	0.01
	Hickson, Gayndah	13.2	2 (14 d)	28	0.26	< LOD	0.05
				42	0.11	< LOD	0.02
				56	0.03	< LOD	0.01
		26.4		28	1.6	< LOQ	0.33
				42	0.16	< LOD	0.03
				56	0.4	< LOQ	0.08

Table 7 Buprofezin residues in lemons (var. Lisbon) following treatment with Applaud insecticide[79]

Trial Ref.	Location	Rate g ai/hL	Applications (Interval)	DAT	Residues in Whole fruit mg/kg	
					buprofezin	para-hydroxy metabolite

79 Calculated from residue detected in whole fruit and pulp and weight of peel and pulp

Trial Ref.	Location	Rate g ai/hL	Applications (Interval)	DAT	Residues in Whole fruit mg/kg	
					buprofezin	para-hydroxy metabolite
GHE-P-1285	Oakura, New Zealand	12.5	2 (17 d)	1	0.279	< LOQ
				4	0.229	< LOQ
				7	0.265	< LOQ
				14	0.218	< LOQ
				21	0.165	< LOQ
				28	0.127	< LOQ
		25	2 (17 d)	1	0.814	< LOQ
				4	0.807	< LOQ
				7	0.888	< LOQ
				14	0.716	< LOQ
				21	0.568	< LOQ
				28	0.395	< LOQ
		50	2 (17 d)	1	1.576	< LOQ
				4	1.634	< LOQ
				7	1.265	< LOQ
				14	1.340	< LOQ
				21	0.978	< LOQ
				28	0.968	< LOQ

5.2 Custard apple (FI0332)

Two trials were conducted on custard apple (*Annona cherimola*) in Australia in which two applications at rates of 30 – 60 mL/hL (12 – 24 g ai/hL) were made with a harvest interval of 14 days. In both trials, the two applications of Applaud were made at intervals of 15 to 21 days. The LOQ in the trials was 0.01 mg/kg. The results are summarised in Table 8.

Table 8 Buprofezin residues in custard apple (var. African pride) following treatment with Applaud insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Intervals)	DAT	Whole fruit mg/kg
GHF-P 1944	Tolga, Queensland	12	2 (20-21 d)	14	0.02
				28	< LOQ
		24		14	0.05
				28	< LOQ
	Tolga, Queensland	12	2 (15-21 d)	14	0.03
				28	< LOQ
		24		14	0.04
				28	0.02

5.3 Mango (FI0345)

Four trials were carried out in Queensland during 1994 where Applaud 25 W or 40 SC Insecticide was applied two or three times at 25 and 50 g ai/hL to mango trees from flowering/fruit set to medium size fruit. Samples were taken 0, 7, 14, 21/28, 56 – 59 and 84 days after treatment. Residues in the whole fruit were calculated from mass balance. The analytical method was developed to deliver a lower validated limit of quantitation of 0.02 mg/kg in peel and < 0.1 mg/kg in pulp.
After 2 applications of 25 g ai/h L (current label rate 26.4 g ai/hL) at 28 – 33 day intervals, the highest residue found at 15 – 28 days after application in whole fruit was 0.05 mg/kg. Residue levels in whole fruit were calculated as follows [residue level in skin × skin weight + residue level in flesh × flesh weight) ÷ (skin weight + flesh weight + seed weight)].
The results are summarised in Tables 9, 10, 11 and 12.

Table 9 Buprofezin residues in mangoes (var. Keitt) following treatment with Applaud insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Interval)	DAT	Peel	Pulp	Whole fruit [a] mg/kg
GHF-P 1461	Walkamin, Queensland	25	2 (33 d)	0	0.648	< 0.01	0.21
				7	0.61	nop[b]	0.13
				14	0.182	nop	0.034
				28	0.025	nop	ndr[c]
				57	< 0.02	nop	ndr
				71	< 0.02	nop	ndr
		50		0	1.42	0.015	0.47
				7	1.69	< 0.01	0.33
				14	0.68	nop	0.12
				28	0.134	nop	0.034
				57	0.037	nop	ndr
				71	0.024	nop	ndr

a – Calculated from residue detected in peel and pulp and weight of while fruit, peel and pulp.

b – nop: no observed peak

c – ndr: no detectable residue, <0.013 mg/kg

Table 10 Buprofezin residues in mangoes (var. Kensington Pride) following treatment with Applaud insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Intervals)	DAT	Peel	Pulp	Whole fruit [a] mg/kg
GHF-P 1461	Ayr, Queensland	25	2 (33 d)	0	0.746	< 0.01	0.17
				7	0.521	nop[b]	0.10
				21	0.228	< 0.01	0.045
				56	0.025	nop	ndr[c]
		50		0	2.85	0.024	0.52
				7	1.24	< 0.01	0.20
				21	0.169	< 0.01	0.026
				56	0.076	nop	ndr

a – Calculated from residue detected in peel and pulp and weight of while fruit, peel and pulp.

b – nop: no observed peak

c – ndr: no detectable residue, <0.013 mg/kg

Table 11 Buprofezin residues in mangoes (var. Kensington Pride) following treatment with Applaud insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Intervals)	DAT	Peel	Pulp	Whole fruit [a] mg/kg
GHF-P 1461	Rockhampton, Queensland	25	2 (28 d)	0	1.03	< 0.01	0.27
				7	0.433	nop[b]	0.076
				15	0.273	nop	0.05
				59	0.057	nop	0.014
				78	< 0.02	nop	ndr[c]
		50		0	1.98	0.015	0.28
				7	2.23	0.017	0.36
				15	1.01	0.017	0.16
				59	0.363	nop	0.088
				78	0.127	nop	0.018

a – Calculated from residue detected in peel and pulp and weight of while fruit, peel and pulp.

b – nop: no observed peak

c – ndr: no detectable residue, <0.013 mg/kg

Table 12 Buprofezin residues in mangoes (var. Kent) following treatment with Applaud insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Interval)	DAT	Peel	Pulp	Whole fruit [a] mg/kg[12]

Trial Ref.	Location	Rate g ai/hL	Applications (Interval)	DAT	Peel	Pulp	Whole fruit [a] mg/kg[12]
GHF-P 1461	Gatton, Queensland	25	2 (28 d)	0	1.61	< 0.01	0.57
				7	0.264	nop[b]	0.087
				14	0.02	nop	ndr[c]
				28	< 0.02	nop	ndr
				56	< 0.02	nop	ndr
				84	nop	nop	ndr
		50		0	3.35	0.019	0.96
				7	0.522	< 0.01	0.14
				14	0.224	nop	0.053
				28	0.026	nop	ndr
				56	0.036	nop	ndr
				84	nop	nop	ndr

a – Calculated from residue detected in peel and pulp and weight of while fruit, peel and pulp.

b – nop: no observed peak

c – ndr: no detectable residue, <0.013 mg/kg

5.4 Grapes (FB0269)

Six trials were conducted on grapevines in Australia. The label specifies that a maximum of two applications at a rate of 13.2 – 26.4 g ai/hL (30 – 60 mL/hL) with an interval of 14 to 21 days. In two of the trials, three applications of Applaud were made at intervals of about 14 days and in the other four trials there were two sprays applied at intervals of about 14 days. The residue analysis results from the three-spray schedule trials are considered to belong to the same residue population as the trials receiving a two-spray schedule. In all of the trials, Applaud was applied as high volume sprays at rates of 30, 60 and 120 mL/hL. The results are summarised in Table 13. The Limit of Quantification (LOQ) was 0.01 mg/kg.

Table 13 Buprofezin residues in grapes following treatment with Applaud insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Intervals)	Residues at 56 DAT
GHF-P 2792	Armagh, South Australia	13.2	2 (11 – 15 d)	< LOQ
		26.4		0.02
		52.8		0.04
	Caversham, West Australia	13.2	2 (13 – 15 d)	< LOQ
		26.4		0.03
		52.8		0.10
GHF-P 2842	Bridgewater, Victoria	13.2	3 (20 and 10 d)	<LOD
		26.4		< LOQ
		52.8		0.01
	Armagh, SA	13.2	3 (14 d)	< LOQ
		26.4		0.07
		52.8		0.14
	Lower Barrington, Tasmania	13.2	2 (14 d)	0.07
		26.4		0.09
		52.8		0.22
	Lower Barrington, Tas	13.2	2 (14 d)	0.07
		26.4		0.19
		52.8		0.21

A further four trials were reported on grapevines in Australia where two applications of buprofezin were made at a rate of 26.4 g ai/hL (60 mL/hL) with a spray interval of 12 to 36 days but with a harvest interval of 88 to 113 days. The results are summarised in Table 14. The Limit of Quantification (LOQ) was 0.01 mg/kg.

Table 14 Buprofezin residues in grapes following treatment with Applaud insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Intervals)	DAT	Residues
GHF-P 2881	Wonga Park, Victoria	26.4	2 (24 d)	88	< 0.01
	Wonga Park, Victoria	26.4	2 (12 d)	97	< 0.01
	Swan Hill, Victoria	26.4	2 (20 d)	110	< 0.01
	Stirling,	26.4	2 (36 d)	113	0.02

	South Australia				

5.5 Pear (FP0230)

Six trials were conducted on pears in Australia. The label specifies a maximum of two applications at rates of 30 – 60 mL/hL with an interval of 10 to 14 days. In two of the trials, three applications of Applaud were made at intervals of 10 days. In another trial, three applications were made at intervals ranging from 6 to 19 days. In two trials, two applications were made at intervals of 13 to 15 days while in the remaining trial only one application was made at double rates. The residue analysis results from the three- spray schedule trials are slightly higher than those obtained in the two-spray schedule trials, and the trial with one spray, but are sufficiently close for all results to be considered as belonging to the same residue population. The results are summarised in Table 15. The Limit of Quantification (LOQ) was 0.01 mg/kg.

Table 15 Buprofezin residues in pears (var. Packham and Williams) following treatment with Applaud insecticide

Trial Ref.	Location	Rate g ai/hL	Applications & Intervals	DAT	Residues mg/kg
GHF-P 2795	Dhurringile, Vic	13.2	1	25	0.22
				59	0.02
		26.4		25	0.33
				59	0.10
		52.8		25	1.25
				59	0.32
	Paracombe, SA	13.2	2 @ 14 d	30	0.06
				62	< LOQ
		26.4		30	0.10
				62	0.02
		52.8		30	0.33
				62	0.04
	Pickering Brook, WA	13.2	2 @ 13 – 15 d	27	0.07
				56	< LOQ
		26.4		27	0.12
				56	0.04
		52.8		27	0.46
				56	0.06
GHF-P 2839	Shepparton East, Vic	13.2	3 @ 8 – 19 d	52	0.03
				111	<LOD
		26.4		52	0.05
				111	0.01
		52.8		52	0.12
				111	<LOD
	Paracombe, SA	13.2	3 @ 10 d	56	0.02
				129	<LOD
		26.4		56	0.05
				129	0.01
		52.8		56	0.12
				129	0.03

Trial Ref.	Location	Rate g ai/hL	Applications & Intervals	DAT	Residues mg/kg
	Paracombe, SA	13.2	3 @ 10 d	56	0.02
				129	<LOD
		26.4		56	0.03
				129	0.01
		52.8		56	0.07
				129	0.03

5.6 Apple (FP0226)

Two trials were also carried out in New Zealand apples during the 1995/96 season. The New Zealand label specifies a maximum of two applications at rates of 12 g ai/hL (30 mL/hL) with an application interval of 10 to 14 days and a pre-harvest interval of 56 days. Buprofezin residues were determined following a single treatment of Applaud 25 W Insecticide, applied at four different crop stages, at rates of 12.5 and 25 g ai/hL. At harvest residues found from the label rate of 12.5 g ai/hL rate at a PHI of 60 days were 0.009 and 0.051 mg/kg. The analytical method was developed to deliver a limit of detection of 0.005 mg/kg. The results are summarised in Table 16.

Table 16 Buprofezin residues in apples (var. Royal Gala and Granny Smith) following treatment with Applaud insecticide

Trial Ref.	Location	Rate g ai/hL	Applications & intervals	DAT	Residues mg/kg
GHF-P 1519	Hawkes Bay, New Zealand	12.5	1	60	0.051
				74	0.036
				87	0.015
				101	0.017
		25	1	60	0.077
				74	0.059
				87	0.05
				101	0.061
	Hawkes Bay, New Zealand	12.5	1	60	0.009
				74	0.013
				87	0.005
				101	0.015
		25	1	60	0.054
				74	0.035
				87	0.04
				101	0.008

5.7 Persimmon (FT0307)

Two trials were conducted on persimmons in Australia. The label specifies a maximum of two sprays at a rate of 60 mL/hL (26.4 g ai/hL) with an interval of 14 days. In both trials, two applications of Applaud were made at intervals of 13 and 15 days. In both trials, Applaud was applied as high volume sprays at 60 mL/100 L. The LOQ in the trials was 0.01 mg/kg. The results are summarised in Table 17.

Table 17 Residues of Buprofezin in persimmons following two Applications of Applaud 40 SC Insecticide

Trial Ref.	Location	Rate g ai/hL	Applications & Intervals	DAT	Residues mg/kg
FR02020	West Woombye, Queensland	26.4	2 @ 13 d	14	0.51
				28	0.44
	Amamoor, Queensland	26.4	2 @ 15 d	14	0.46
				28	0.46

5.8 Cucumber (VC0424)

Two trials were conducted on glasshouse cucumbers in Australia. The approved use pattern (PER8963) specifies a maximum of two sprays at a rate of 30 mL/hL (13.2 g ai/hL) with a pre-harvest interval of 3 days. In both trials, two applications of Applaud were made at intervals of 14 days at rates of 60 mL/100 L, i.e., 2× label rate. The LOQ in the trials was 0.02 mg/kg. The results are summarised in Table 18.

Table 18 Residues of Buprofezin in cucumber following two Applications of Applaud 40 SC Insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Intervals)	DAT	Residues mg/kg
AVG270	Virginia, South Australia	26.4	2 (14 d)	0	0.29
				3	0.14
				7	0.07
	Cuprona, Tasmania	26.4	2 (14 d)	0	0.43
				3	0.11
				7	0.06

5.9 Eggplant (VO0440)

One trial was conducted on glasshouse eggplant in Spain. The approved use pattern in Australia (PER9178) and New Zealand specify a maximum of two sprays at rates of 264 g ai/ha in Australia or 12.5 or 13.2 g ai/hL in New Zealand with a pre-harvest interval of 3 days. In the Spanish trial, one application of buprofezin was made at a rate of 15 g ai/hL. The LOQ for the trial was 0.02 mg/kg. The results are summarised in Table 19.

Table 19 Residues of Buprofezin in eggplant following two Applications of Applaud 25 WP Insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Intervals)	DAT	Residues mg/kg
Valverde-Garcia *et al*. 1993.	Nijar, Spain	15	1	0	0.06
				2	0.04
				7	0.02
				14	0.01

5.10 Tomato (VO0448)

One trial was conducted on glasshouse tomatoes in New Zealand. The approved use pattern in Australia (PER9178 and PER5917) and New Zealand specify a maximum of two sprays at rates of 264 g ai/ha or 13.2 g ai/hL in Australia and 12.5 or 13.2 g ai/hL in New Zealand with a pre-harvest interval of 3 days. In one New Zealand trial, one application of buprofezin was made at rates of 12.5, 25 and 50 g ai/hL. The results are summarised in Table 20.

Table 20 Residues of Buprofezin in eggplant following two Applications of Applaud 25 W Insecticide

Trial Ref.	Location	Rate g ai/hL	Applications (Intervals)	DAT	Residues mg/kg [a]
GHF-P 998	Mangere, Auckland New Zealand	12.5	1	0	0.161
				1	0.135
				4	0.142
				7	0.114
				14	0.104
				21	0.048
				28	0.023
		25	1	0	0.232
				1	0.252
				4	0.156
				7	0.157
				14	0.189
				21	0.065
				28	0.041
		50	1	0	0.551
				1	0.533
				4	0.595
				7	0.424
				14	0.309
				21	0.223
				28	0.081

a – Uncorrected for control or recovery.

6. FATE OF RESIDUES IN STORAGE AND PROCESSING
No information is provided in this report.

7. RESIDUES IN FOOD IN COMMERCE OR AT CONSUMPTION
No information is provided in this report.

7.1 Residues in food as consumed
No information is provided in this report.

8. NATIONAL RESIDUE LIMITS

Table 21 Australian MRLs for buprofezin (APVMA MRL Standard, May 2008)

CCN	Food Commodity	MRL (mg/kg)
Buprofezin residue definition: Buprofezin		
FC 0001	Citrus fruits	2
SO 0691	Cotton seed	T1
OC 0691	Cotton seed oil, crude	T0.3
VC 0424	Cucumber	T0.5
FI 0332	Custard apple	0.1
DF 0269	Dried grapes (currants, raisins, sultanas)	1
MO 0105	Edible offal (mammalian)	*0.05
VO 0440	Eggplant	T2
FB 0269	Grapes	0.3
FI 0345	Mango	0.2
MM 0095	Meat (mammalian) [in the fat]	*0.05
ML 0106	Milks	*0.01
FT 0305	Olives	T0.5
OC 0305	Olive oil, crude	T2
FI 0351	Passion fruit	2
FP 0230	Pear	0.2
FT 0307	Persimmon, Japanese	1
VC 0431	Squash, summer	T0.5
VO 0448	Tomato	T2

*MRL set at or about the limit of analytical quantitation

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REFERENCES

MRL Standard. 2008. Maximum residue limits in food and animal feedstuffs of agricultural and veterinary chemicals and associated substances. Australian Pesticide and Veterinary Medicines Authority. Canberra.

APPENDIX IV Submission for MRLs to Taiwan

Industry Response to Taiwan MRL request

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Executive summary

This report has been compiled in response to a recent request from DAFF to provide priority a list of chemical-commodity combinations for consideration by Taiwan. HAL was informed that due to a review of MRLs being undertaken by the Taiwanese authorities Australia had been given an opportunity to nominate a list of priority chemical-commodity combinations for assessment and potential adoption as import tolerances. HAL was also advised that a total number of nominations available to horticulture are 20.

To provide a meaningful list it was decided to undertake a comparison of MRLs between Australia and Taiwan, identify gaps and seek advice from manufacturers, the APVMA and industry representatives on the composition of the final list. Given the limited number of chemical-commodity combinations available and the large number of MRL discrepancies identified, a further series of vetting steps was undertaken to develop a priority list for consideration by the concerned horticultural industries.

Affected industries are asked to review the proposed listing in terms of appropriateness and relevance. Unfortunately, due to the extremely tight time-frame to react a response is required by DAFF by March 20th. **It is therefore critical that you or your nominated industry representative review what is proposed and if needed provide a response by COB March 19th**.

1. Background Information

On the third of March HAL were advised by DAFF that an opportunity existed to nominate 20 chemical-commodity combinations to Taiwan for potential adoption as import tolerances. To provide DAFF with a meaningful list it was decided to undertake a comparison of MRLs between Australia and Taiwan to identify gaps and develop a final list.

In 2007 Australian horticultural exports to Taiwan were in excess of AUD$ 12 million. On historical levels horticultural exports to Taiwan have exceeded AUD $30 million, which better reflects the market potential of Taiwan. These were comprised of over 20 different fruits and vegetables with the main commodities being cherries, grapes, oranges, mandarins, peaches, nectarines, macadamia nuts, onions and potatoes. Due to the short timeframe it was decided to focus upon the top ten commodities for the analysis.

The initial step involved identifying the MRL gaps between Australia and Taiwan. On completion of this analysis, advice was sought from chemical manufacturers to identify those chemical-commodity combinations where regulatory activity, independent of Australia, may either be in place or planned. Input was then sought from the APVMA as to data availability.

Data availability was seen as crucial, as associated with any nomination is the requirement to submit, for assessment, a data package acceptable to the Taiwanese authorities. Consequently, it was important to identify and exclude those chemicals where data may either be scant or not available to ensure the credibility of the final list. The resultant list was then 'screened' against a set of criteria which included manufacturer support, APVMA chemical review nomination, the existence of industry gap analyses and previous submissions to Taiwan.

2. MRL Review

Current Australian MRLs for apples, cherries, grapes, oranges, mandarins, peaches, nectarines, macadamia nuts, onions and potatoes were compared to the most recent MRL listing available for Taiwan[80]. The result of this comparison was the identification of over 300 MRL discrepancies across the ten commodities. A collated listing is provided in Annex 1 to this report.

2.1 Company responses

A number of manufacturers, i.e., Bayer, Syngenta, Nufarm/BASF, Chemtura (Crompton's), Sumitomo, Farmoz (Makhteshim), Dow and Dupont were contacted regarding the chemical-commodity combinations where MRL discrepancies existed. Specifically, the companies were asked to identify whether any regulatory submissions, independent of Australia, were either be in place or planned. Based upon the responses received those chemical-commodity combinations, where submissions for had been made or planned, were then removed from the list. On the basis of responses received to date a number of chemical-commodity combination were able to be removed from consideration.

2.2 Importance - Gap analysis

A number of horticultural industries have undertaken strategic analyses of pesticide use and needs, e.g., carrots, potato, peas and apples. Based upon the outcomes of these reviews chemicals identified as seldom or not used were removed from the listing.

2.3 Previous data submission

In 2000 as part of an industry funded project (HG00021) in response to an announced change to the Taiwanese chemical testing regime a review of chemical-commodity combinations for exported produce was undertaken resulting in data submissions being made to the Taiwanese authorities This project involved a process a

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screening chemical-commodity combinations on the basis of chemical company support with regard to making protected data available for submission to Taiwan, that adequate data was available, whether other countries, e.g., The USA, had applied or intended applying for any of the MRL chemical-crop combinations of interest to Australia and if Australian residue data would need to be generated to satisfy Taiwan requirements. The outcome of the project was the submission of data for cyfluthrin (macadamia nuts), imidacloprid (pome and stone fruit), parathion-methyl (pome and stone fruit), propargite (pome and stone fruit), tau-fluvalinate (stone fruit), metalaxyl (macadamia nuts) and imazalil (pome fruit).

Unfortunately, these original submissions have not, as yet been reviewed. HAL has been informed that if still required the original submissions would need to be included in the current list of 20 nominations.

2.4 Data availability

As with the previous review undertaken in 2000 prior to consideration for inclusion in the Taiwan nomination list it was seen as critical that there needed to be confirmation that suitable supporting data existed. This was assessed via discussions with manufacturers and the APVMA. Unless it could be confirmed that data was available a chemical-commodity combination was not considered further. In addition, a chemical-commodity combination was considered for inclusion if there had been a recent submission of data to the JMPR for review and Codex MRLs had been recommended, i.e., it was presumed that sufficient data was available.

2.5 Funding

As with the project in 2000 the level of effort required on the part of the APVMA, to prepare supporting scientific documentation for any final list of nominated chemical-commodity combination would be substantial and require financial assistance from the affected industries. This issue is particularly problematic due to the short timeframe available in which to develop a list and respond to the request from DAFF.

Following consultation, the APVMA indicated that the question of funding could be resolved if nominated chemical-commodity combinations were identical to those submissions being prepared for Japan, a project to which HAL had previously made a funding contribution.

Consequently, it was decided to only assess those compounds for inclusion on the final list where submissions to Japan have either been made or are planned.

2.6 Additional Priority Selection criteria

2.6.1 Chemical review

It was decided that those chemicals currently under review by the APVMA would not be included in the prioritisation process. This was due to the possibility that the finalisation of a review could result in use patterns being amended or removed resulting in changes to Australian MRLs occurring. Consequently, the consideration of these MRLs, in the current context of trade facilitation with Taiwan, did not appear warranted.

3. Results

At the completion of the above a list consisting of 36 possible chemical-commodity combinations was developed. As indicated previously there are also the submissions made in 2000 to be considered. It has been indicated that as these submissions are still in progress they must be considered in the priority setting process, if left they with the Taiwanese authorities they would count as part of the 20 priorities. In order to amalgamate the current with the previous list of chemical-commodity combinations it was decided to follow the same criteria of vetting used previously. This resulted in a list consisting of 40 possible chemical-commodity combinations.

This list was then assessed taking into consideration the availability of residue management options, i.e., export harvest intervals, and availability of residue monitoring data to indicate likelihood of violative residues occurring.

To this list a weighting was then applied on the basis of the industries export significance and $value of exports to Taiwan over the last three years. This weighting was used to allocate the number of selections potentially available to individual industries. From this process a final list was developed, see below.

Recommendation:

Given that only 20 chemical-commodity combinations identified for nomination above industry are asked to consider the chemical-commodity combination for relevance and appropriateness. If industry believe another chemical combination is required than that nominated they are asked to respond by the close of business on March 19th. The lack of a response will be interpreted as agreement. It is then intended that this final list of 20 chemical-commodity combinations will be provided to DAFF.

Active	Aust	Taiwan
Oranges & mandarins		
dichlorprop	T0.1	
pirimicarb	0.5	
tebufenozide	1	
thiamethoxam	T0.2	
Apples		
boscalid	2.00	
imazalil	5	
Grapes		
azoxystrobin	2	
boscalid	4	
fenhexamid	10	
Cherries		
thiacloprid	2	
Peaches		
clofentezine	0.10	
propargite	3	
tau-fluvalinate	0.1	
Carrots		
difenoconazole	0.20	
Potato		
phorate	0.5	0.05
thiabendazole	5	3
Macadamia nuts		
carbendazim		
cyfluthrin (beta-cyfluthrin)		

Onions				
Active	**Aust**		**Taiwan**	
	Bulb	Spring	Bulb	Spring

dimethomorph	0.05	2		
metaldehyde	1	1		

Annex 1: Compounds where MRL discrepancies exist between Australia and Taiwan. Shading indicates those chemical-commodity combinations previously submitted in 2000.

Oranges & mandarins			**Apples**		
Active	**Aust**	**Taiwan**	**Active**	**Aust**	**Taiwan**
2,4 – D	5	2	1-methylcyclopropene	NS	
2-Phenylphenol	10	Not set	6-benzyladenine	0.20	
buprofezin	2	0.5	abamectin	0.01	
carbaryl	7	2	ammonium thiosulphate	Exempt	
carbendazim	10	3	AVG	0.1	
Clofentezine	Not set	2	bifenazate	2.00	NS
diazinon	0.7	Not set	boscalid	2.00	
dichlorprop	T0.1	Not set	captan	10.00	
Dicofol	5	3	carbaryl	5.00	1.00
dimethoate	5	2	carbendazim	5.00	3.00
endosulfan	T2	Not set	chlorfenapyr	0.50	
ethephon	2 (O, M)	Not set	clofentezine	0.10	
fenbutatin oxide	5	2	clothianidin	0.50	Not set
fenthion	2	0.5	diazinon	0.50	
guazatine	5	5	dicofol	5.00	
imazalil	10	5	dimethoate	5.00	
imidacloprid	2	Not set	diphenylamine	10.00	
maldison	4	2	dithianon	2.00	
metaldehyde	1	Not set	dithiocarbamates	3.00	2.50
methidathion	2 (O), 5(M)	1	diuron	0.50	
methiocarb	0.1	Not set	dodine acetate	5.00	2.00
omethoate	2	1	endosulfan	2.00	
parathion methyl	T1	Not set	etoxazole	0.2	
phosphorous acid	100	Not set	fenbutatin oxide	3.00	2.00
pirimicarb	0.5	Not set	fenoxycarb	2.00	
pyriproxyfen	0.3	Not set	fenthion	2.00	
Spinosad	0.3	0.3	fipronil	T*0.01	
tebufenozide	1	Not set	fluvalinate	0.10	
thiamethoxam	T0.2	Not set	fosetyl-Al	1.00	
			hexythiazox	1.00	0.50
			imazalil	5.00	
			imidacloprid	0.30	
			indoxacarb	2.00	
			maldison	2.00	
			mancozeb	3.00	2.50
			metaldehyde	1.00	
			methidathion	0.20	
			methomyl	1.00	0.50
			methoxyfenozide		0.20
			metiram	3.00	
			NAA	1.00	
			omethoate	2.00	0.20
			oxythioquinox	0.50	
			paclobutrazol	1.00	
			pirimicarb	0.50	
			parathion methyl	T0.5	
			propargite	3.00	
			pyraclostrobin	1.00	1.00

Oranges & mandarins		
Active	**Aust**	**Taiwan**

Apples		
Active	**Aust**	**Taiwan**
spinosad	0.20	0.20
tebufenozide	1.00	0.50
tebufenpyrad	1.00	
tetradifon	5.00	
thiabendazole	10.00	5.00
thiacloprid	T1.0	
thiram	3.00	
triadimefon	1.00	0.50
trichlorfon	0.10	
trifloxystrobin	0.30	
ziram	3.00	

Grapes		
Active	**Aust**	**Taiwan**
azinphos methyl	2.00	0.50
azoxystrobin	2	
bifenazate	T1	
boscalid	4	
buprofezin	0.30	
captan	10	2
carbaryl	5.00	0.50
carbendazim	3	2
chlormequat	0.75	
chlorothalonil	10	
cyprodinil	2	1
diazinon	T2	0.50
dicofol	5.00	
dimethoate	5.00	
dimethomorph	2	1
dithianon	2	0.5
Endosulfan	2.00	
ethephon	10	2
Fenbutatin oxide	1.00	
fenhexamid	10	
Fenthion	2.00	
Fipronil	0.01	
fludioxonil	2	1
gibberellic acid		5
hexaconazole	0.05	1
Indoxacarb	0.50	
iprodione	20	5
Maldison	8.00	
mancozeb	T10	5
metalaxyl	11	1
Methidathion	0.50	0.10
Methiocarb	0.50	0.20
metiram	T10	5
myclobutanil	1	0.5
omethoate	T2	0.20

Cherries		
Active	**Aust**	**Taiwan**
Azinphos-methyl	2	2
Captan	15	
Carbendazim	10	3
Chlorothalonil	10	
Chlorpyrifos	T1	1
Clofentezine	0.1	0.5
Diazinon	0.5	1
Dimethoate	5	
Dithianon	2	
Fenthion	5	
Hexythiazox	1	0.5
Imidacloprid	0.5	
Iprodione	10	5
Maldison/Malathion	2	
Mancozeb	3	2.5
Metiram	3	2.5
Parathion-Methyl	T0.2	
Pirimicarb	0.5	
Procymidone	T10	2
Propargite	3	
Propiconazole	2	1
Pymetrozine	0.05	
Pyridaben	0.5	0.5
Spinosad	1	0.2
Thiacloprid	2	
Thiram	3	2.5
Trichlorfon	0.1	
Ziram	3	2.5

Grapes			**Cherries**		
Active	**Aust**	**Taiwan**	**Active**	**Aust**	**Taiwan**
oxadixyl	2	1			
Parathion methyl	0.50				
penconazole	0.1	0.5			
phosphorous acid	50				
Prothiofos	2.00	0.20			
pyraclostrobin	2				
Pyrethrins	1.00				
Pyridaben	5.00				
pyrimethanil	5				
quinoxyfen	0.5 (2)	2			
Spinosad	0.10				
spiroxamine	2.00				
Sulphur	10.00				
Tebufenozide	2.00				
triadimefon/triadimenol	1/0.5	0.5/2			
Trichlofon	0.10				
trifloxystrobin	0.5	2			

Peaches			**Carrots**		
Active	**Aust**	**Taiwan**	**Active**	**Aust**	**Taiwan**
2,2 -DPA	1.00		Carbaryl	5.00	
aminoethoxyvinylglycine	0.20		Chlorothalonil	7.00	1.00
captan	20.00		Chlorthal-dimethyl	5.00	0.10
carbaryl	10.0 (N)	1.00	Diazinon	0.70	0.10
carbendazim	10.00	3.00	Dicofol	5.00	0.50
chlorothalonil	7.0 (N)	1.0 (Pe)	Difenoconazole	0.20	
clofentezine	0.10		Dimethoate	2.00	
clothianidin	2.00		Dithiocarbamates	1.00	0.50
cyprodinil	T0.5	1.00	Endosulfan	T2	
diazinon	0.7 (Pe)	1.00	Fenamiphos	0.20	0.10
dicofol	5.00		Maldison	0.50	
dichlorvos	0.10		maleic hydrazide	T40	15.00
dimethoate	5.00		Methidathion		
dithianon	2.00	3.0 (Pe)	Metaldehyde	1.00	
fenbutatin oxide	3.0 (N)	2.00	Methiocarb	0.10	
fenthion	5.00		Phorate	0.50	0.05
hexythiazox	1.00	0.50	Phosphorous acid	T100	
imidacloprid	0.50		Piperonyl butoxide	8.00	
indoxacarb	2.00		Procymidone	T1.0	0.50
iprodione	10.00	5.00	Propargite	3.00	
maldison	2.00		Pyrethrins	1.00	
mancozeb	3.00	2.50	Sethoxydim	1.00	
metalaxyl	0.2 (Pe)		Spinosad	0.02	
metaldehyde	1.00		Trichlorfon	0.10	
methamidophos	1.0 (Pe)	0.50	Trifluralin	0.50	
methiocarb	0.10				
oxythioquinox	0.50				
paclobutrazol	0.01				
parathion-methyl	T0.2				
pirimicarb	0.50				
procymidone	10.00	2.00			
propargite	3.00				
propiconazole	2.00	1.00			
pymetrozine	T0.02				
pyrethrins	1.00				
spinosad	1.00	0.20			
tau-fluvalinate	0.1 (N)				
tebufenpyrad	1.0 (Pe)				
thiram	3.00	2.50			
trichlorfon	0.1 (N)				
ziram	3.00	2.50			

Potato			**Macadamia nuts**		
Active	**Aust**	**Taiwan**	**Active**	**Aust**	**Taiwan**
2,2-DPA	*0.1		beta-cyfluthrin	0.05	
2,4-D	0.1		carbaryl	1	
asulam	0.4		carbendazim	0.1	
carbaryl	0.2		copper	25	
chlorpropham	30		diazinon	0.1	
chlorpyrifos	0.05		dithiocarbamates	T5	

Potato		
Active	**Aust**	**Taiwan**
chlorthal-dimethyl	5	0.1
clethodim	1	
diazinon	0.7	0.1
dicofol	5	
dimethoate	2	
diquat	0.2	
disulfoton	0.5	
endosulfan	0.5	
fenamiphos	0.2	0.1
fludioxonil	0.02	
flutolanil	0.05	
imazalil	5	
imidacloprid	T0.5	
maldison	0.5	
maleic hydrazide	50	15
mancozeb	1	0.5
metaldehyde	1	
methamidophos	0.25	0.1
methiocarb	0.1	
metiram	1	
omethoate	2	
paraquat	0.2	
pencycuron	0.05	
phorate	0.5	0.05
phosphorous acid	T100	
pirimicarb	1	0.5
propargite	3	
propineb	1	
pyrethrins	1	
quintozene	0.2	
sethoxydim	1	
spinosad	0.02	
thiabendazole	5	3
tolclofos-methyl	0.1	
trichlorfon	0.1	

Macadamia nuts		
Active	**Aust**	**Taiwan**
endosulfan	0.05	
glufosinate	0.1	
glyphosate	0.2	
metalaxyl	1	
methomyl	T1	
oryzalin	0.1	
oxyfluorfen	0.05	
phosphorous acid	T1000	
sulfuryl fluoride	7	
tebufenozide	0.05	
trichlorfon	0.1	

Onions

Active	**Aust**		**Taiwan**	
	Bulb	Spring	Bulb	Spring
benalaxyl	0.1	T0.1		
boscalid	T1	T3		
carbaryl	5			1
carbendazim	3		0.2	1
chlorothalonil	10	T10	1	2
chlorthal-dimethyl	5	5	0.1	0.1
clethodim	0.3	T0.5		
copper (Cu)	10	10		
diazinon	0.5	T0.5	0.1	0.5
dicloran	20			2
dicofol	5	5		
dimethoate	2	2		
dimethomorph	0.05	2		
diquat	0.1	*0.05		
dithiocarbamates	4	T10	0.5	4
maldison		T5		2
metaldehyde	1	1		
methidathion	*0.01	0.1		
oxadixyl	0.5			
phorate	0.5	0.5	0.05	0.05
phosphorous acid	T10	T10		
propachlor	2.5			
propargite	3	3		
pyrethrins	1	1		
quintozene	0.2			
sethoxydim	0.3	T0.5		
trichlorfon	0.1	0.1		

Annex 2: Previously identified priority chemicals.

Pome fruit (Apple/pear)

Compound	Data status	Comment	MRL (mg/kg)		
			Australia	Taiwan	USA
Captan	Under evaluation by Taiwan, NRA report sent 2000	No further application needed	10	-	25 (apple)
Diphenylamine	USA/Taiwan (EE Muir)	No application needed (claimed already sent to Taiwan)	5 apple, 7 pear	-	10
Fenoxycarb	Australian data (Syngenta)	No application possible, data not able to be accessed	2	-	-
Fenthion	JMPR + Australian data on stone fruit (Bayer)	Report sent	2	-	-
Imazalil	Australian data (Janssen-Cilag)	Report sent	5	-	-
Parathion methyl	Australian data, JMPR (Bayer)	Report sent	T0.5	-	1
Propargite	Australian data, JMPR	Report sent	3	-	3
Tebufenpyrad	(Uniroyal) Australian data (Syngenta)	No application possible as Syngenta does not hold rights to toxicology data for Taiwan (under evaluation in Taiwan)	1	-	-

Stone fruit

Compound	Data status	Comment	MRL (mg/kg)		
			Australia	Taiwan	USA
Captan	Under evaluation by Taiwan, NRA report 2000	No application needed	15	-	50/100
Carbendazim (or benomyl)	MRLs developed in Taiwan, low priority	No application possible, not supported by chemical company	10	3	15 (C, Ph, Pl)
Fenthion	JMPR + Australian data (Bayer)	Report sent	5	-	-
(tau)-fluvalinate	Australian data (Syngenta)	Report sent	0.1	-	-
Imidacloprid	Australian data (Bayer)	Report sent	0.5	-	
Parathion methyl	Australian data, JMPR, ECRP (Bayer)	Report sent	T0.2	-	1 (A, N, P, Pl)
Pirimicarb	Australian data (CropCare)	No suitable data, industry needs to generate residue data	0.5	-	
Procymidone	Australian + JMPR data (Sumitomo)		10	2	
Propargite	Australian data on pears, JMPR (Uniroyal)	Report sent	3	-	4 N, 7(A, P, Pl)
Tebufenpyrad	Australian data (Syngenta)	No application possible as Syngenta does not hold rights to toxicology data for Taiwan (under	1 (peach)	-	-

Compound	Data status	Comment	MRL (mg/kg)		
			Australia	Taiwan	USA
		evaluation in Taiwan)			
Trichlorfon	Survey data? (Bayer)	No suitable data, industry needs to generate residue data	0.1, peach 0.2	-	-

Citrus

Compound	Data status	Comment	MRL (mg/kg)		
			Australia	Taiwan	USA
Carbendazim (benomyl or carbendazim)	USA (DuPont) (MRLs developed in Taiwan, low priority)	No application possible as not supported by chemical company	10	3	10 (benomyl)
Imazalil	USA (Janssen-Cilag)	USA application for MRL of 10 assessed by Taiwan and MRL of 5 established. No application needed	10	5	10
ortho-phenylphenol (OPP, SOPP)	International data (Bayer), Australia adopted MRLs and ADI from CODEX	Send JMPR report, company may be willing to send full data package (toxicology + residues) at a later date	10		

Macadamia nuts (tree nuts)

Compound	Comment	MRL (mg/kg)		
		Australia	Taiwan	USA
Cyfluthrin	Report sent	0.05	-	-
Metalaxyl	Report sent	1	-	-

Industry Response to G/SPS/N/TPKM/48

(The proposed reduction of the guazatine MRL for citrus.)

Directory

Executive summary

This report has been compiled in response to the recently circulated SPS notification G/SPS/N/TPKM/48. Of particular concern to Australia is the proposed reduction of the guazatine MRL for citrus.

Australia exported in excess of AUD$ 6 million of citrus to Taiwan in 2003. Guazatine is registered and used in Australian citrus for the control of a number of post-harvest storage rots for which guazatine is the most effective control option. It is applied post-harvest and as a result detectable residues can occur. Consequently the lowering of the citrus MRL for guazatine in Taiwan could jeopardise market access for Australian citrus exports.

This response contains information on Australian registered uses of guazatine in citrus, citrus monitoring data and a dietary risk analyses for guazatine in citrus. It argues that on the basis of the low frequency of detection, low residues and the dietary risk analyses, potential residues resulting from the use of guazatine pose no significant risk to consumers and that the lowering of the Taiwanese citrus MRL is unnecessary.

1. Background Information

This report has been compiled for submission to the WTO in response to SPS notification G/SPS/N/TPKM/48. Of particular concern is the proposed lowering of the Taiwanese MRL for guazatine in citrus. This is of concern as Australia exported in excess of AUD$ 6 million of citrus to Taiwan in 2002/03 and it is possible that detectable residues of guazatine could occur in exported fruit, resulting in MRL violations.

Guazatine is currently registered for use in Australian citrus for the control of the storage rots Green mould, Blue mould and Sour rot. To control these rots the product is used post-harvest from which detectable residues can result. Consequently, the lowering of the citrus MRL for guazatine in Taiwan could jeopardise market access for Australian citrus exports.

This response contains information on Australian registered uses of guazatine in citrus, citrus monitoring data and an international dietary risk analyses for guazatine in citrus. It argues that on the basis of the available data and dietary risk analyses the risk to consumers from guazatine residues at the current MRL of 5.0 mg/kg is negligible and that the lowering of the Taiwanese citrus MRL could adversely affect Australian citrus exports.

1.1 Post-harvest use on fruit

Guazatine is registered for use in citrus in Australia for the control of Green mould (*Penicillium digitatum*), Blue mould (*Penicillium italicum*) and Sour rot (*Geotrichum candidium*). It is approved for use in Australia as either a bulk dip or a packing line treatment. As a result detectable residues can occur. Guazatine is one of a number of pesticides available for use in the control of storage decay, particularly for Blue and Green mould. However, at present guazatine is one of only two products available for the control of Sour rot, the other being ortho phenylphenol for which no MRL is established in Taiwan. As a result, the use of guazatine in Australian citrus while not wide spread is often necessary.

2. Residues in food as consumed

2.1 Residue monitoring

Information gathered from as part of residue monitoring program[81] indicates that there is limited use of guazatine in citrus with a total 2.5% of orange samples and 2.2% of mandarin samples detected with guazatine residues. The highest residue found in oranges was < 2.5 mg/kg and < 1.0 mg/kg in mandarins. This level of detection, while low, would still result in MRL violations in Taiwan if the

[81] Report on the Australian National Residue Survey 1998 Results - DAFF

proposed MRL were promulgated.

2.2 Intake calculation

To estimate the potential risk to consumers of consuming treated citrus, IEDI calculations using the WHO GEMS Guideline[82] were done. The dietary intake levels used were based on the Standard for the Far-East Diet as indicated by the GEMS program of the World Health Organisation. Using the current Taiwanese MRL of 5.0 mg/kg as the default residue level and the Australian ADI value of 0.006 mg/kg bw the estimated daily intake from citrus was calculated to be 9.6%[83] of the ADI (see Table 1).

The above calculation is conservative and over estimates the likely level of exposure, as actual residue levels are likely to be significantly lower (see section 2.1) and that residues are reported on a whole fruit basis, i.e., includes the inedible portion the peel. A more realistic intake calculation could be carried out with the highest residues found in the monitoring further reducing the estimated levels of exposure.

[82] Guidelines for predicting dietary intake of pesticide residues (revised). WHO
[83] body weight

Table 1. International estimated daily intake for guazatine based on the WHO Far Eastern diets G & L[84]. The previous CCPR ADI (0.03 mg/kg bw) and the Australian ADI for guazatine is set at 0.006-mg/kg bw.

Commodity	MRL	Diet g/person/day	Intake[85] µg/person	Estimated intake as % ADI	Diet g/person/day	Intake µg/person	Estimated intake as % ADI
Citrus	5.0	17.3	86.5	26.2%	40.4	202	61.2
Mandarin	5.0	7	35	10.6%	19.1	95.5	28.9%
Oranges	5	7.4	37	11.2%	12	60	18.2%
	HR						
Citrus	2.5	17.3	43.3	13.1%	40.4	101	30.6
Mandarin	2.5	7	17.5	5.3%	19.1	47.8	14.5%
Oranges	2.5	7.4	18.5	5.6	12	30	15

3. Conclusion:

On the basis of the available residue data it can be seen that residues resulting from the use of guazatine and the frequency of detection in citrus are both low. Furthermore, from calculating estimates of dietary intake it was found that potential levels of exposure are also very low. This assessment found that worse case exposure estimate would be 9.6% of the ADI for citrus.

Therefore, it is believed that the potential risk to consumers of exposure to guazatine residues in citrus is extremely low. In addition, if exposure were to occur the level of exposure would also low. On this basis it is suggested that the Taiwanese authorities should either consider retaining the current MRL for citrus or establish and import tolerance that will accommodate residue levels likely to be found in exports of Australian citrus.

[84] Based 55kg body weight
[85] Estimated daily intake µg/kg bw/day

4. References:

ADI LIST **(**Acceptable Daily Intakes) for agricultural and veterinary chemicals. Therapeutic Goods Administration. Commonwealth Department of Health and Aged Care

Report on the Australian National Residue Survey 1998 Results - DAFF
http://www.affa.gov.au/corporate_docs/publications/pdf/product_integrity/residues/nrsnetresults.pdf

GEMS/Food regional diets (regional per capita consumption of raw and semi-processed agricultural commodities) Food Safety Department
World Health Organization.

APPENDIX V Glossary of Abbreviations

DAFF	Department of Agriculture, Fisheries and Forestry – Australia
AMGA	Australian Mushroom Gower's Association
APAL	Apples and Pears Australia Ltd
APVMA	Australian Pesticides and Veterinary Medicines Authority
AOIA	Australian Onion Industry Association
ARfD	Acute Reference Dose
Ausveg	Australian vegetable and potato growers Association
CCPR	Code Committee on Pesticides Residues
CPA	Crop Protection Approvals
DAS	Dow AgroSciences
FRSC	Food Regulation Standing Committee
FSANZ	Food Safety Australia New Zealand
HAL	Horticulture Australia Limited
IDO	Industry Development Officer
JMPR	Joint Meeting on Pesticide Residues
MRL	Maximum Residue Limit
OH&S	Occupational Health and Safety
PSIC	Product Safety and Integrity Committee
NRA	National Registration Authority for Agricultural and Veterinary Chemicals
R&D	Research and Development
SPS	Sanitary Phytosanitary
WTO	World Trade Organisation