



*Know-how for Horticulture™*

**Advancing  
Horticulture's  
coordinated response  
to the existing  
chemical review  
program**

K P Bodnaruk  
AKC Consulting Pty Ltd

Project Number: AH99002

## **AH99002**

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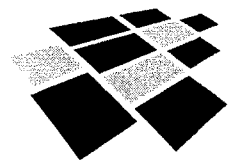
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**Horticulture Australia**

*HAL Project Number: AH99002*

**ADVANCING HORTICULTURE'S COORDINATED RESPONSE  
TO THE EXISTING CHEMICAL REVIEW PROGRAM.**

Final Report

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**Purpose of the Project:**

To provide a coordinated response to ECRP reviews from within Australian horticulture 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

Industry Support for NRA chemical reviews.

The NRA's chemical review program is now 6 years old with a number of key horticultural products subjected to reviews and many more planned.

In order to help industries to deal with the issues arising from these reviews HRDC (now HAL) and the AusHort R&D Committee have funded Kevin Bodnaruk to coordinate and develop responses to the reviews undertaken by the NRA. The aim is to assist growers and grower organizations, to better respond to the review process.

Mr Bodnaruk started in the role in November 1999 and began working on issues relating to the reviews of endosulfan and methyl parathion. That work has now progressed through a joint HAL/Nufarm project that generated residue trial data from 90 field trials to support endosulfan in a range of horticultural crops. Those trials have been completed and the resulting reports submitted to the NRA. Further reviews, in varying stages of progress, currently being dealt with include chlorpyrifos, diazinon, fenthion, azinphos-methyl and dimethoate.

In dealing with the reviews Mr Bodnaruk has liaised with a range of industry participants including peak industry body representatives, growers, chemical manufacturers and the regulators (both federal and state). The aim was to make sure that horticultural industries are given adequate information on the implications and progress of reviews for their consideration. This was to ensure that important uses of chemicals were not lost through a lack of adequate consultation.

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

## TECHNICAL SUMMARY

The NRA chemical review process, in its current form, has been underway in Australia since 1995. In that time 37 reviews have been undertaken. This correlates to 59 active constituents and 950 products. Many of these have been significant compounds in horticultural production. The chemical reviews are being initiated as the NRA needs to reassess existing registered chemicals with regard to residues, occupational health and safety and the environment due to changing regulatory standards. Registrants, industry and the public are notified of the commencement of reviews with a specified time period in which to submit information in support of continued, or discontinued, registration of the chemical.

The review program has required various horticultural industries to respond to issues raised in the reviews. Many of the issues raised during ECRP reviews, and the responses required by the NRA, are common across a range of industries represented by AusHort, including use patterns, worker exposure and safety, and environmental and trade issues. As a consequence, it was recognized that there was a need to have a united approach on communication and negotiation with agrochemical companies, industry groups, NRA and other government bodies.

Of concern for horticultural industries was that where there was little or no manufacturer support for a pesticide uses would be removed. This could result in the loss, over time, of many important crop protection management options.

In order to better respond to the chemical reviews in 1999 HRDC funded a project to coordinate industry responses to the reviews, make submissions on behalf of industries and to make recommendations about priorities and funding. This was previously identified as a problem area in the chemical review process. A key element in the project has been the collation and provision of information to the NRA with regard to pesticide usage and use patterns.

The first products dealt with by the project were endosulfan and methyl parathion. Mr Bodnaruk liaised extensively with horticulture industry representatives to establish their stance towards these two chemicals. Upon determining industry's position negotiations were undertaken with regulators to determine residue data requirements. Further consultation with horticultural industries and chemical manufacturers occurred regarding trial funding. No support was forthcoming for methyl parathion, however, trials were planned in 36 crops. Trials commenced in 2000 and were completed by mid 2001. In total 90 residue trials were completed. Trials were undertaken in all major horticultural production regions within Australia. Data from the trials has been collated, reports written and submitted to the NRA.

The aim of this project is to continue to have available crop protection products for use by the horticultural industries. The project was funded for two years.

## **1 INTRODUCTION**

### **1.1 Background**

The NRA 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 NRA 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 specified periods of time 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.

The NRA chemical review process has been underway in Australia since 1995. In that time 37 reviews have been undertaken. This correlates to 59 active constituents and 950 products. Many of these have been significant compounds in horticultural production.

A key factor in this process has been the provision of data to comply with NRA requirements. In some instances this has been provided, entirely, by the manufacturer, in others, industry have had to become involved. Unfortunately, the decision to initiate work and confirm funding has at times been a protracted process with final agreement reached only after lengthy negotiations, e.g., endosulfan.

### **1.2 Current Process**

The current cycle of chemicals being reviewed include seven insecticides (viz. fenitrothion, fenthion, azinophos methyl, aldicarb, methiocarb, chlorpyrifos, and diazinon) and two herbicides (diquat and paraquat) all of which are used by a range of horticultural industries. The NRA review timetable for the former is not finalised, and the call-up for the latter, although originally expected in late 1999, is yet to be announced.

### **1.3 Data generation**

To date an ECRP review has meant a call for the submission of all new relevant data available relating to the compound being reviewed. The data submitted can often relate to new findings with regard to toxicology, ecotoxicology, efficacy, occupational health and safety, animal welfare and dietary intake (MRLs).

The bulk of this data is product specific, i.e., supports the continued availability of the product, and belongs to manufacturers. However, difficulties can arise when crop specific data is required, e.g., residue or occupational health data. Here manufacturers will make a commercial decision based the market size and expected dollar returns. In some instances manufacturers have decided that the estimated return on investment does not justify the cost of data generation.

Where only residue data is required to update MRLs the opportunity exists for individual industries to fund the data generation. This has been the approach taken for endosulfan.



The 'reluctance' by some manufacturers to support some smaller crop uses may improve as a consequence of proposed amendments to data protection legislation. Currently, protection on data submitted, as a consequence of ECRP, is 2-5 years from the date of submission, depending upon the type and number of studies. It is being proposed that the above time frames be extended which would have the effect of allowing greater time for data generators to recoup their investment.

#### **1.4 Data requirements**

The amount of data required to support an MRL varies depending upon whether the crop is categorized, by the NRA, as being minor or whether the use is minor but in a major crop. Also, the existence of MRLs for the use in other countries or similar crops can, potentially be used, to support the setting of temporary MRLs.

#### **1.5 Horticulture Response**

As most horticultural industries do not have the resources or expertise to respond appropriately to the ECRP it was decided that all would benefit from a coordinated approach. Many of the issues in the ECRP and the responses required by the NRA are common across a range of industries represented by AusHort, including use patterns, worker exposure and safety, and environmental and trade issues. There is also a need to have a united approach on communication and negotiation with agrochemical companies, industry groups, NRA and other government bodies

In response to the National Registration Authorities (NRA) Existing Chemical Review Program (ECRP) the Australian Horticultural Industries R&D Committee (AusHort) initiated a project to ensure a coordinated response from horticultural industries occurred. The first products to be dealt with by the project were endosulfan and methyl parathion. The project was funded for two years.

## **2. METHODOLOGY**

### **2.1 Outline**

Work in the project has been primarily in the areas of communication and data generation. Communication activities have centred on ensuring firstly, that horticultural industries are aware of the current status of chemical reviews and the potential implications of review recommendations. Secondly, that industries were given adequate time in which to develop considered responses to the reviews; thirdly, ensuring that regulatory agencies are provided with the horticultural industry responses to any issues raised. And lastly, ensuring that chemical manufacturers are contacted and where possible involved in providing support for uses identified as valuable.

### **2.2 Communication strategy**

A communication strategy was developed and implemented to address the issues of information flow. This strategy was based upon two elements; direct contact with stakeholders and an information dissemination strategy. 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 a push-pull approach, i.e., 'push' information via detailed updates on the ECRP process to industry representatives for circulation then 'pull' this information through via general media distribution aimed at generating interest amongst growers in the issues.

The strategy involved establishing contact with key industry personnel, nominated by HAL. Then via electronic and conventional mail provide updates to key peak industry contacts for their consideration and distribution within their associations via industry newsletters or magazines, e.g., Fruitwise. General articles were then provided to horticulture print media on ECRP progress and outcomes, e.g., Good Fruit & Vegetables. The aim of this was to raise the awareness of ECRP issues, amongst growers. This enabled interested growers to then be in a position to contact their respective industry representatives to obtain more detailed information.

### **2.3 Communication activities**

#### **2.3.1 Reporting/Presentations**

- Regular reports were provided to the responsible HAL Program Manager, the Industry Steering Committee and to the AusHort R&D Committee. The Steering committee has met five times during the course of the project. Presentations have been made to the AusHort R&D committee on two occasions.
- Presentations on the current status of chemical reviews and the ECRP process were also made to industry meetings, e.g., QFVG and Vegetable industry R&D meeting.

#### **2.3.2 Liaison**

- Liaised with each horticultural industry, registrants, and allied industries to determine their stance towards chemicals under review.
- Liaising with all stakeholders, horticultural industries, NRA, registrants, National Occupational Health and Safety Commission (NOHSC), to determine and develop the appropriate response from horticultural industries to ECRP reviews.

### **2.3.3 Data generation/submission**

- Coordinated and helped manage R&D effort required to generate data on residues. This involved negotiating data requirements with the NRA, writing residue protocols, visiting trial contractors, collating the data and writing reports for submission to the NRA. Trial work has been completed for endosulfan and is currently underway for diazinon.
- Through contact with industry participants developed and submitted industry responses to ECRP issues. Issues addressed have focused primarily on confirming use patterns for pesticides and OH&S related pesticide application practices.

### **2.3 Project Review**

A review was undertaken approximately 8 months into the project. A cross section of industry representatives was contacted via telephone with regard to the approach being taken and its adequacy from their perspective.

Unstructured interviews were used as they provided greatest flexibility for formulating issues that needed to be further explored. An interview guide was used. This was used to provide a checklist to ensure that relevant topics were covered. No standardised wording of questions was used. Primarily, broad, open-ended questions were asked, relevant to the context of the interview. The aim of these questions was to elicit any issues of concern

## **3 RESULTS AND DISCUSSION**

### **3.1 Project Output**

#### **3.1.1 Communication activities**

A communication network of industry representatives nominated by HAL and industry development officers (IDO's) was developed. This allowed the project to utilise existing industry communication channels to disseminate information to industry participants, i.e., growers and advisers. Through this network regular updates have been provided (see Attachment I).

Regular liaison with registrants, other cropping industries, Avcare, NRA, NOHSC and other relevant bodies with regard to issues raised by chemical reviews occurred. This liaison occurred face-to-face, via telephone and in meetings.

#### **3.1.2 Trial data**

Endosulfan trial protocols were prepared in consultation with the NRA to ensure data generated would meet regulatory requirements. Assistance was provided to CPA Research in the coordination and management of the field trial program. Ninety residue trials were completed and analysed. The resulting data was collated and reports were written and submitted to the NRA (see 3.3.2 below).

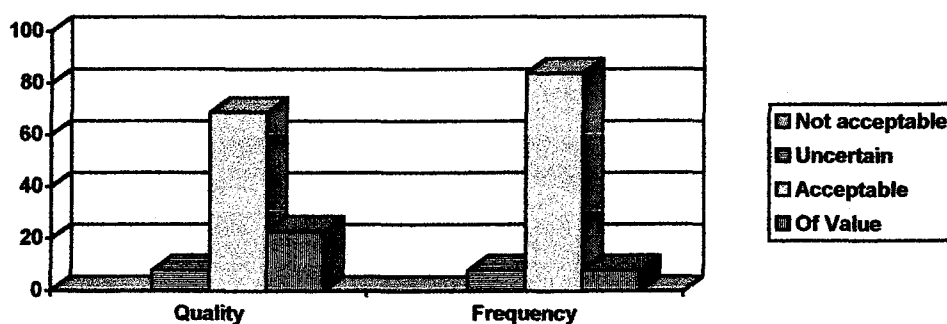
For diazinon four crops are being supported. Protocols have been prepared in consultation with the NRA. Coordination of the trial program has meant liaising with QFVG, AMGA, Golden Circle, A&C Rural and the AOIA. Trials in bananas and pineapples are underway. Trials in mushrooms and onions are planned for early 2002.

### 3.1.3 NRA Submissions

Two formal submissions were made on behalf of horticultural industries in response to ECRP reports for diazinon and dichlorvos (see Appendix II). Furthermore, input was provided to the NRA regarding methyl parathion, chlorpyrifos, chlorfenvinphos, fenitrothion and aldicarb.

## 3.2 Project Review

Table 1: Responses regarding the quality and frequency of information provided.



Approximately 37% of people from the industry contact lists being used for the project were contacted. In the course of the interview questions regarding the frequency and quality of the information being provided were asked. The results of this survey are presented in Table 1. No respondent felt that the quality of information or the frequency of its distribution were unacceptable. The majority indicated that the information was either acceptable or of value. These results confirmed that the approach being taken was appropriate.

## 3.3 PROJECT outcomes

### 3.3.1 Methyl parathion

Negotiated data/protocol requirements with NRA. Contacted affected industries with proposals to provide support for methyl parathion. Contacted manufacturers regarding their possible involvement and opportunities for support. On the basis of responses formulated a response to NRA.

### 3.3.2 Endosulfan.

Developed and contacted industry representatives, advisers and growers regarding importance and use pattern of endosulfan. Developed various funding options with respect to possible support for a residue trial program. On the basis of responses from industry representatives to the proposals protocols were prepared following negotiations with NRA. Upon start of residue program assisted CPA Research Ltd in field management of residue trial program. Negotiated

extensions to the submission deadlines with NRA based upon time lost during early stages of review prior to commencement of the project and delays experienced completing laboratory analysis.

Initiated discussions with manufacturers regarding opportunities for financial support. Participated in initial negotiations with Nufarm regarding their financial contributions. Upon completion of residue trials collated all data and wrote final residue reports for submission to the NRA. See Appendix III for a summary of endosulfan residue trials. Full protocols, laboratory and field reports and completed residue trial reports are reported as part of this report due intellectual property considerations. Information is however, available on the attached data disc.

Two significant problems arose during the course of the trial program. These were the inexperience of some field trialists and the slow laboratory analysis. In future programs these issues would need to be addressed prior to the commencement of research.

### **3.3.3 Chlorpyrifos**

Circulated to peak industry bodies and IDO's information on chlorpyrifos draft review. Also circulated a summary of the Dow AgroSciences (DAS) level of support for chlorpyrifos seeking comment regarding proposed use patterns. Currently negotiating with DAS and NRA regarding data requirements to maintain in-crop use in tomatoes.

### **3.3.4 Diazinon**

Contacted representatives of affected industries on issues arising from diazinon ECRP review. A response to the draft report was prepared and submitted after consultation with the industries regarding potential support for continued access. On the basis of the response negotiated with NRA residue trial requirements. Residue trials to support use in pineapples, mushroom, onions and bananas are planned or underway.

### **3.3.5 Fenthion**

At the completion of this project only an early draft OH&S report has been sighted. Due to concerns over some assumptions regarding orchard application techniques contained in the draft a number of tree crop advisers and farmers were contacted. On the basis of their replies, a response was developed and forwarded to the NRA.

## **4 FUTURE CONSIDERATIONS:**

### **4.1 New review program**

Progress has been made with regard to hopefully improving the chemical review process. The NRA has undertaken a review of the ECRP and special review process. This review was initiated in response to the problems encountered with the time resources involved and the unwieldy nature of some of the reviews. This review has been completed and proposals agreed, in principle, by the NRA board. The key thrust of the proposals is that the majority of reviews will be more targeted focusing on specific areas of concern, e.g., residues or environment specifically rather than every aspect. Broad ECRP type reviews will still occur

but will be initiated on a case-by-case basis rather than being done for all nominated chemicals. The new approach will not commence, however, until current cycle three compounds are finalised, e.g., azinphos methyl, fenthion, paraquat, diquat, aldicarb and methiocarb.

Coupled to the more targeted chemical reviews will be a greater emphasis on communication with stakeholders, e.g., registrants and user industries. The NRA has acknowledged that the previous approach of Performance Questionnaires was lacking in some areas. Consequently, they will be looking to greater involvement of user groups in the early stages of the process in order to better define use patterns and practices. The NRA envisages that the suggested changes would speed the review process and provide stakeholders greater time to respond.

An additional factor that will need to be considered in the future is the requirement by the NRA that after 2003 all residue trials will need to be under a Quality Assured system. A number of trial contractors are progressing towards accreditation. It is anticipated that this may add considerably to the costs of undertaking residue trials.

#### **4.2 Future review chemicals**

The following list of chemicals have been agreed in principle by the NRA board to be advanced as the next round of review chemicals. These include 2,4-D, cypermethrin, dimethoate, fenamiphos, profenofos, maldison, methamidophos and methidathion.

#### **4.3 Data Protection**

Maintaining access to much needed pesticides has been identified as a significant problem for many Australian horticultural industries. Fundamental to this problem is the availability of supporting data suitable for submission to the National Registration Authority (NRA).

In order to preserve an existing use, data may be needed to show that the product is safe, efficacious and that unacceptable residues do not occur. Unfortunately, many manufacturers are unwilling to fund such data generation, particularly for off-patent products where the likely return on investment will be low. This situation is further compounded by Australia's current data protection legislation.

Presently there is limited data protection for data submitted in response to chemical reviews, e.g., 2 years from date of submission for residue data. As a consequence manufacturers potentially gain little or no competitive advantage from such data generation and often decline to do so. This results in existing uses potentially being lost, or industry having to fund the relevant research.

Agriculture Fisheries and Forestry Australia (AFFA) have proposed amending current regulations to increase the period of data protection available. One objective of this is to encourage investment by manufacturers in the generation of data.

#### **4.4 Acute Dietary Intake**

Acute dietary intake has recently been added, by regulators, to the risk assessment procedures relating to the registration and review of pesticide uses in Australia. The assessment involves estimating the pesticide residue concentration in a commodity to estimate the potential short-term dietary intake of that pesticide. The derived value is then compared to an acute reference dose (ARfD) calculated on the basis of pesticide concentrations known to cause acute toxicological effects in animals. If assessments indicate the possibility that exposures may exceed the ARfD then the MRL for the pesticide use in question will not be promulgated. In the case of chemical reviews, existing registered uses and corresponding MRLs could be withdrawn. This can have potentially significant implications for Australian horticulture, particularly in the area of chemical reviews where uses may be lost as a consequence of the calculations.

#### **5 RECOMMENDATIONS:**

- A. That the project be continued. The amendments to the review program is likely to make the role of the ECRP coordinator critical with regard to industry being able to respond adequately to the early stage scoping reviews planned by the NRA.
- B. That the role of the coordinator be combined with that of the Codex coordinator.

## APPENDIX I.

ECRP Updates Circulated to industry representatives.

### ECRP UPDATE - JULY 2000

#### WHAT'S NEW

It's been a few months since the last update with a number of issues progressed, e.g., endosulfan, and other arising, e.g., chlorpyrifos. For endosulfan, developments have been positive with the program to generate supporting residue data underway and funded by Nufarm. Chlorpyrifos has become a potential issue as a result of recent actions taken by the US EPA. Essentially, any use around the home has been removed. Horticultural crops affected are tomatoes (the use removed), apples (restricted to pre-bloom applications) and grapes (restricted to dormant applications). What impact, if any, this has in Australia remains to be seen. And lastly, the NRA review of the ECRP process is progressing and appears to be heading in the right direction. For further information see below.

- **ECRP Review**

- As indicated above, the NRA has been doing a review of the ECRP process. This review has been in response to the problems encountered under the current system, where basically no one is happy. A consequence of the review has been a number of proposals that hopefully will improve the focus and speed of the reviews as well as providing a greater role for grower participation. I am providing input into the review after consultation with representatives of peak industry bodies. It is the intention of the NRA to have a new process agreed and in place before the end of the year. A positive step.

- **Endosulfan.**

- The residue trial program, to support the use of endosulfan is now underway. After much discussions and negotiations with various chemical manufacturers, Nufarm have agreed to financially support the residue program. This has meant that no grower levee funds will be required. Crop Protection Approvals Ltd (the company handling minor use applications on behalf of horticulture) are managing the field component of the trial program. The first trials are already underway. There are over 80 residue trials planned. The entire program (field and lab analysis) will be completed by April/May 2001 and will cost over \$400,000. The crops being supported are:- Macadamia nut, Celery, Rhubarb, Avocado, Custard apple, Mango, Paw paw, Persimon, Beetroot, Carrot, Potato, Sweet potato, Broccoli, Cauliflower, Cabbage, Brussels sprouts, Orange, Lemon, Mandarin, Cucumber, Zucchini, Rockmelon, Capsicum, Eggplant, Sweet corn, Tomato, Chinese cabbage, Silverbeet, Leafy lettuce, Beans, Peas, Apples, Pears, Peaches, Nectarines and Apricots.
- The Occupational Health and Safety program is also underway. The work being done by Dr Lyn Fragar of the Australian Centre for Agricultural Health and Safety. This work is addressing issues related to operator exposure through the use of endosulfan in orchard and hand held spraying equipment.

- **Chlorpyrifos.**

- The final report being prepared for submission to August NRA Board meeting. If accepted this is likely to be available in September.
- Locally, Dow AgroSciences, have provided support for the majority of crops on the current label. However, it is unclear what impact, if any, the recent reductions in chlorpyrifos uses in the US will have. It is probable that home garden and pest control uses will be affected locally. Whether any horticultural uses will be affected is unclear.

- **Methyl parathion.**



- No support was obtained to fund further residue trials. The manufacturers are working on pome and stone fruit. It is envisaged that the NRA will, in time, recommend that all other uses be deleted from the label, e.g., those other than pome fruit, stone fruit and potatoes.
  
- **Fenitrothion.**
  - NSW Ag are interested in finding partners to help fund an OH&S study to support ground-rig application of fenitrothion EC for locust control. While their focus is more in broadacre farming this could also have application in horticultural regions.
  - Relevant industries will be contacted to determine level of interest in participating should a project be initiated.
  
- **Diazinon**
  - The draft report is being prepared for submission to August NRA Board meeting and it is hoped that this will also be available in September.
  - A key issue is the current lack of any manufacturer prepared to support crop protection uses. Some recent discussions with manufacturers have yielded a glimmer of interest, the level of interest will probably depend upon the findings of the report.
  - The NRA believe that, should a manufacturer be prepared to provide support a number of horticultural uses could be preserved with the generation of new data.
  - In most cases, the use pattern would need to be 'nailed-down' and residue data generated. Affected horticultural industries will be approached to confirm level of interest and confirm use patterns.
  - Some OH&S issues exist with diazinon but these may be manageable through adapting the use pattern to minimize human exposure.
  - In the report it will be proposed that the current MRLs be converted to temporary allowing a few years for the provision of data.
  
- **Fenthion**
  - The fenthion review is in its very early stages. Issues that are likely to be addressed are residues, the toxicity of the product for home garden use and dietary intake considerations.
  - The indications are that residue data will be required, but it is too early to get any idea of what other data, e.g., OH&S, that might be needed.
  - Bayer has indicated that they intend to support fenthion where practicable.
  - Affected industries will be contacted with regard to the use pattern. This is particularly important where a label claim might be ambiguous or doesn't reflect current uses. The reviewers, OH&S in particular, tend to take worse case scenarios in their deliberations, so if these areas can be addressed during the preliminary stages a lot of time and subsequent effort can be saved.
  
- **Carbaryl**
  - Carbaryl is the subject of a special review. Use in cereals and the home garden are under scrutiny. There is a chance that home garden use might be severely restricted. There is a potential that this might impact on the nursery industry through packaging, i.e., no small packs available.
  
- **Azinphos methyl**
  - As per the fenthion review it is in its early stages. Bayer has submitted a fairly detailed package containing much current data. While the bulk of the information has not been assessed, it is not envisaged that any major issues will arise as azinphos methyl was only recently reviewed in the US with no major problems emerging. A clearer picture will emerge by October 2000.

- **Dimethoate**

- It has been flagged that dimethoate will be the subject of a special review during 2001. As per fenthion, affected industries are being contacted with regard to giving thought to use patterns. As per fenthion it is likely that residue data will be required to support some uses.
- It is likely that dietary intake issues will also come into play resulting in pressure on some uses in terms WHPs which will probably require data generation.
- Manufacturers are being contacted to determine the level of support for dimethoate.

If you have any questions regarding any of the matters covered please contact me (Kevin Bodnaruk) by phone on 02 9499 3833 or email [akc\\_con@zip.com.au](mailto:akc_con@zip.com.au).

## ECRP UPDATE - FEBRUARY 2001

### WHAT'S NEW

Since the last update a number of products have progressed further through the ECRP process, e.g., diazinon, chlorfenvinphos, dichlorvos, fenitrothion, Azinphos methyl, fenthion and aldicarb still progressing.

Endosulfan trial work is currently on schedule to meet the submission deadlines. The contractors and trial sites are being visited to ensure everything stays on track. The draft report for diazinon was released in November indicating that residue data will be required. A response was prepared and submitted to the NRA. Hopefully, resulting in positive outcomes for the industries affected by the recommendations.

Mevinphos (Phosdrin), the manufacturer is hopeful that outstanding issues will be resolved with the submission of relevant data. They aim to have the suspension lifted and be able to supply product again in the near future.

Chlorfenvinphos (Birlane) has been deregistered as the manufacturer declined to support the product. Options are being explored to see whether there is any scope to extend access beyond the recommended phase-out period.

And lastly, the NRA review of the ECRP process has been completed and apparently agreed by the NRA Board. Hopefully, providing a more targeted approach to chemical reviews. For further information see below.

### • ECRP Review

- Progress has been made with regard to improving the chemical review process. As indicated previously, the NRA has undertaken a review of the ECRP process. This review was initiated in response to the problems encountered with the time resources involved and the unwieldy nature of some of the reviews. This review has been completed and proposals agreed, in principle, by the NRA board at its December meeting. The key thrust of the proposals is that the majority of reviews will be more targeted focusing on specific areas of concern, e.g., residues or environment specifically rather than every aspect. Broad ECRP type reviews may still occur but will be initiated on a case-by-case basis rather than being done for all nominated chemicals. The new approach will not commence, however, until current cycle three compounds are finalised, e.g., azinphos methyl, fenthion, paraquat, diquat, aldicarb and methiocarb.
- Coupled to the more targeted chemical reviews will be a greater emphasis on communication with stakeholders, e.g., registrants and user industries. The NRA acknowledges that the previous approach of Performance Questionnaires was lacking in some areas. Consequently, they will be looking to greater involvement of user groups in the early stages of the process in order to better define use patterns. The NRA envisages that the suggested changes would speed the review process and provide stakeholders greater time to respond.

### • Chlorfenvinphos.

- The recommendations contained in the Chlorfenvinphos (Birlane) Report were disappointing, resulting in the cancellation of the product registration for all crop uses in December and a two year grace period for stocks remaining on farm or in reseller stores. This was particularly exasperating as no

negative issues were identified with use by the mushroom industry. Currently we are trying to determine whether there might be options (permits?) that could be further explored in order to extend access to the product.

- **Endosulfan.**

- Of the 88 planned trials, 35 are completed and another 18 trials are underway. Another 35 trials are to commence. The last of the trials should be macadamia and mango with harvests completed in April 2001. To ensure that the trials are done correctly either actual trial sites or the contractors have been visited in NQld, SEQld, NSW, Vic, SA and WA. Further visits in Qld and TAS are planned during the remainder of the season.
- The Occupational Health and Safety program is also well underway. The work being done by Dr Lyn Fragar of the Australian Centre for Agricultural Health and Safety. This work is addressing issues related to operator exposure through the use of endosulfan in orchard and hand held spraying equipment.

- **Mevinphos.**

- The NRA/NOHSC are currently reviewing OH&S data provided by BASF. The manufacturer is aiming to have the registration suspension lifted at the next NRA Board Meeting in March 2001.

- **Chlorpyrifos.**

- The Preliminary Report currently available. Home garden use in particular, has been targeted. From a horticultural perspective application of chlorpyrifos to bunches is causing some confusion due to, apparently different permits for NSW and Qld. The banana industry is currently working to satisfy NRA requirements.
- Also, the use in celery is being questioned. Indications from industry have been that soil use at transplanting/planting was adequate. However, it appears that there has been a call from Victoria for the foliar use to be retained. Unfortunately, this would involve residue data generation.

- **Methyl parathion.**

- The NRA are currently contacting affected industries seeking final confirmation of whether the product is to be supported. Failing that support they will then recommend that all uses, other than for pome fruit, stone fruit and potatoes, be deleted from the label.

- **Fenitrothion.**

- After some discussions it has been resolved that horticultural industries do not need to provide OH&S data to support ground-rig application of fenitrothion EC for locust control. The focus is on broadacre farming and pastures.

- **Diazinon**

- A draft report has been completed and was made available for public comment late 2000. Essentially, residue data will be required to continue access to any of the uses.
- Representatives of a number of horticultural industries (QFVG, beans, macadamia, banana, capsicum, citrus, pineapple, pome, blue berries, mushroom, nursery, sweet corn, onion and garlic and various other vegetable industries) have been contacted. To date interest has been expressed by pineapple, mushroom, onion, WA cauliflower, beetroot, rhubarb and nursery industries.
- Golden Circle and A&C Rural have agreed to fund the residue trials required to support diazinon in pineapples.

- A response to the draft report, based upon the consultation, was prepared and submitted to the NRA. The banana industry is currently considering the possibility of retaining access for rust thrips and beetle borer. Currently liaising with NRA with regard to data requirements and develop costings.
- If there are any further comments with regard to diazinon uses, please contact me as the NRA are still accepting input.
  
- **Aldicarb**
  - Concerns have been expressed by Environment Australia regarding possible contamination of waterways. At this stage it appears that they will propose water monitoring. This would potentially be of significance for the citrus industry in the Riverland. However, the citrus industry has been active in developing an alternative (Rugby), which should reduce the need to generate data. It is expected that it would be available for the 2001/2002 season.
  
- **Fenthion**
  - The fenthion review is in its very early stages. It is anticipated that residue data is likely to be prominent in NRA deliberations but it is too early to get any idea of what other data, e.g., OH&S, that might be needed.
  - Bayer has indicated previously that they intend to support fenthion where practicable.
  - Affected industries will be contacted with regard to the use pattern. This is particularly important where a label claim might be ambiguous or doesn't reflect current uses. The reviewers, OH&S in particular, tend to take worse case scenarios in their deliberations, so if these areas can be addressed during the preliminary stages a lot of time and subsequent effort can be saved.
  
- **Carbaryl**
  - Carbaryl is the subject of a special review. Use in cereals and the home garden are under scrutiny. There is a chance that home garden use might be severely restricted. There is a potential that this might impact on the nursery industry through packaging, i.e., no small packs available.
  
- **Azinphos methyl**
  - Still early days, the NRA is still awaiting information from all other review bodies. Though no significant issues anticipated due to the quality of the data package that Bayer has submitted.
  
- **Dimethoate**
  - A proposal to schedule a review of dimethoate is going to the March NRA Board meeting. Once more details are available affected industries will be contacted with regard to giving thought to use patterns. As indicated previously it is likely that residue data will be required to support some uses.
  - It is likely that dietary intake issues will also come into play resulting in pressure on some uses in terms WHPs which will probably require data generation.
  - Manufacturers are being contacted to determine the level of support for dimethoate.

If you have any questions regarding any of the matters covered please contact me (Kevin Bodnaruk) by phone on 02 9499 3833 or email [akc\\_con@zip.com.au](mailto:akc_con@zip.com.au).

## ECRP UPDATE - NOVEMBER 2001

### WHAT'S NEW

Since the last update a number of products have progressed further through the ECRP process, e.g., endosulfan diazinon, chlorfenvinphos, dichlorvos, fenitrothion, azinphos methyl, fenthion and aldicarb.

For endosulfan the residue trial work has been completed and submitted to the NRA. Ninety field residue trials were undertaken to support the continued access to endosulfan for thirty six crops. These trials have been carried out in all of the major horticultural production regions of Australia.

Following the release of the draft report for diazinon five horticultural industries have indicated that they will support continued access. These are onions, pineapples, mushrooms, nursery and bananas. As a consequence residue data will be generated for mushrooms, bananas, onions and pineapples.

Mevinphos (Phosdrin), the suspension of registration has been extended till June 2002. Until such time as the suspension is lifted BASF cannot supply product to resellers. Reseller with the product in-stock can, however, continue to sell the product to growers.

Chlorfenvinphos (Birlane) has been deregistered as the manufacturer declined to support the product. Options were explored regarding any potential to extend access beyond the recommended phase-out period, this, unfortunately has not been successful.

- And lastly, as reported previously the NRA review of the ECRP process has been completed and agreed by the NRA Board. The intent is to provide a more targeted approach to chemical reviews. Unfortunately, the targeted reviews will not commence until the current round of reviews is completed, e.g., azinphos methyl, fenthion, paraquat, diquat, aldicarb and methiocarb.

- **Chlorfenvinphos.**

- Unfortunately, there has been no success in finding an alternate option to extend access to the product.

- **Endosulfan.**

- A total of 90 planned trials have been completed. The laboratory analyses have also been completed and residue reports written. The completed data package was presented to Nufarm who have subsequently submitted the data to the NRA. A regulatory decision is anticipated before mid 2002.

- **Mevinphos.**

- The NRA/NOHSC are still reviewing OH&S data provided by BASF. As indicated above the suspension of registration has been extended till June 2002. The manufacturer is aiming to have the registration suspension lifted by that date.

- **Chlorpyrifos.**

- The in-crop use of chlorpyrifos in tomatoes has come under threat with the principle registrant withdrawing support for the use. The processing tomato industry has indicated that continued access is important. Unfortunately, to maintain access residue data will need to be generated. Negotiations are currently underway with manufacturers and the NRA regarding the quantity of data needed and

the potential for support.

- **Methyl parathion.**

- The NRA have yet finalize the timetable for regulatory action regarding unsupported uses. Once this is finalized it is anticipated that for unsupported uses a period of grace will be available whilst labels are amended, after which unapproved uses will not be allowed.

- **Fenitrothion.**

- No change from previous updates, i.e., no OH&S data needs to be provided from horticultural industries to support ground-rig application of fenitrothion EC for locust control.

- **Diazinon**

- As previously indicated submissions to the NRA were made on behalf of a number of horticultural industries. It was indicated that further residue data will be required to continue access to any of the uses.
- Representatives of a number of horticultural industries (QFVG, beans, macadamia, banana, capsicum, citrus, pineapple, pome, blue berries, mushroom, nursery, sweet corn, onion and garlic and various other vegetable industries) have been contacted.
- Support for continued access has come from the pineapple, mushroom, onion, banana and nursery industries.
- Pineapple work is being funded by a chemical manufacturer. Banana trials are being funded by the Qld banana industry. Mushroom trials are being funded by the AMGA and onion trials are being funded by the AOIA.

- **Aldicarb**

- The draft review report was released in April of this year. There does not appear much impact with regard to horticultural uses.

- **Fenthion**

- The fenthion review is moving slowly. As indicated it is anticipated that residue data is likely to be prominent in NRA deliberations. To date, only preliminary information regarding potential OH&S requirements has become available.
- Bayer has indicated that they will consider supporting fenthion where practicable.
- Affected industries will be contacted in the new year to confirm use patterns.

- **Carbaryl**

- Carbaryl is the subject of a special review. Use in cereals and the home garden are under scrutiny.

- **Azinphos methyl**

- Still early days, the NRA is still awaiting information from all other review bodies. No significant issues are anticipated however, it is uncertain what impact, if any, the recent regulatory decisions by the US EPA will have locally, i.e., deletions of uses.

- **Future chemicals**

- The NRA board has agreed, in principle, to advance the following compounds for review, 2,4-D, cypermethrin, dimethoate, fenamiphos, profenofos, maldison, methamidophos and methidathion. A number of these products have important uses in horticulture. Once more details are available affected industries will be contacted as needed with regard to importance, use patterns etc. It is likely that

*HAL Project Number: AH99002*

residue data will be required to support use of some products, e.g., dimethoate and fenamiphos.

If you have any questions regarding any of the matters covered please contact me (Kevin Bodnaruk) by phone on 02 9499 3833 or email [akc\\_con@zip.com.au](mailto:akc_con@zip.com.au).



## APPENDIX II. Industry submission in response to ECRP Reports.

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22 September 2000

### **Response to proposed regulatory approach for dichlorvos**

Outlined below are specific comments in relation to the review use of dichlorvos and its continued use in nurseries and avocados. These comments have been derived from discussions with the Nursery Industry Association of Australia, the Australian Avocado Growers Federation and Qld Fruit and Vegetable Growers Association.

#### **Current Usage (Section 3.1.4)**

Firstly, in terms of application, the use of dichlorvos is limited in both industries. Currently, dichlorvos tends to fulfil a niche role in pest management in both industries. In nurseries, the use of greatest importance is for the control of western flower thrips (WFT) (*Frankliniella occidentalis*). In avocados it can be used, in conjunction with chlorpyrifos, for the control of Avocado leaf roller (ALR) (*Homona spargotis*).

#### **Efficacy (Section 3.1.5)**

**Nursery:** It is important for the nursery industry to maintain access to dichlorvos for WFT control due to issue of resistance management and disinfestation. As yet no resistance has been found to dichlorvos in WFT (G Herron pers. comm.), consequently the industry wishes to retain access to the compound.

**Avocados:** Currently, there are only three alternatives available for the control of ALR, dichlorvos, chlorpyrifos and *Bacillus thuringiensis*. The loss of dichlorvos, notwithstanding its limited use, will obviously significantly deplete control options. Furthermore, the registered use for chlorpyrifos, in Qld, is as a tank mixture with dichlorvos. Therefore, the loss of dichlorvos could further reduce available options.

#### **Regulatory proposals.**

**Nursery Industry:** The nursery industry views continued access to dichlorvos but only for disinfestation of empty greenhouse/glasshouse structures, i.e., as an occasional application of a space spray. The use of the compound in this manner limits exposure of the compound to the insect, lessening potential for resistance development, removes the need for any MRLs and should negate any concerns over operator or handling exposure.

Therefore, the proposed regulatory action, as outlined in the report, of allowing use as a non-crop atmospheric treatment of empty glasshouse/greenhouse structures, would be acceptable to the nursery industry.

**Avocado Industry:** As indicated above the major concern of the avocado industry is to maintain a number of control options. Currently, a trial permit (No.2422) exists for tebufenozide; in addition a minor use permit has

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been submitted to the NRA for its use against ALR.

Should this permit be granted the need to retain access to dichlorvos is significantly reduce. Consequently, the avocado industry would not support the generation of residue data and accept the removal of this use.

Please contact me if you have any questions or seek clarification of any points made above.

Regards,

*Kevin Bodnaruk*

ECRP Coordinator – Horticulture

**B) DIAZINON**

## **Response to the Draft Report on Diazinon**

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This response is a compilation of comments from various industry stakeholders. Those contacted in the development of this response include representatives of peak grower bodies, consultants, reseller agronomists, departmental officers and growers. A number of stakeholders intend to also comment directly to the NRA and are not covered within this document, e.g., the mushroom industry.

### **Level of industry support**

The use of diazinon in the following crops pome fruit, beans, blueberries, sweet corn, cucurbits, stone fruit, tomatoes, citrus, macadamia nuts and the majority of other vegetables is NOT being supported by the

respective horticultural industries.

Uses that are seen as being necessary are for the control of mealy bug in pineapples, onion seedling maggot and thrips in onions, webworm in beetroot and corn-borer in rhubarb, fungus gnats in nurseries, seedling maggot in cauliflower in WA and cecids and phorids in mushroom production.

A number of uses against specific pests in a range of crops is still being investigated, e.g., bean podborer control in peas, rust thrips in bananas, day feeding armyworm in sweet corn and cluster caterpillar in Brassica vegetables. A further response with regard to these uses is planned shortly.

## **CROP SPECIFIC RESPONSES**

### **1.0 ONIONS**

#### **1.1 Extent of use**

There is approximately 5,000 ha of onions grown by 600 farmers in Australia (ABS Census). The crop is planted throughout the year with approximately 6 months taken from planting to harvest. Onion production occurs in all states with the major production areas centred on the Lockyer Valley in Queensland, Werribee in Victoria, Griffith in NSW, the Central Coast and north west of Tasmania and the Adelaide Hills and the Riverland in South Australia.

The current diazinon labels have onion seedling maggot/onion maggot (*Delia platura*), wireworm and thrips listed for control. Of these only the control of onion seedling maggot (OSM) and thrips has been identified as being of greatest need. Industry sources have indicated that the use of diazinon is infrequent corresponding to intermittent pest outbreaks.

For the control of these two pests there are currently few management options. For the control of thrips in onions only dimethoate, maldison, methidathion and omethoate are currently available. Endosulfan is still registered in onions but is anticipated to be lost in the near future as the use was not supported during that compounds ECRP review.

For the control of OSM there is only one alternative chemical option available, phorate. Which must be applied as a soil treatment prior to planting. Consequently, the loss of diazinon would remove the only in-crop applied control option available.

#### **1.2 METHOD OF APPLICATION**

The current label supports application by both ground and air. It has been indicated from industry that both options need to be retained. Outbreaks of OSM are often associated with wet soil, where ground based application is impractical. Consequently, the loss of aerial application could effectively remove diazinon as a viable control option, greatly increase the likelihood of crop damage occurring.

Under Section 6.4.6 Aerial Application of the draft report it is recommended that aerial application be removed from all labels. As outlined above this would seriously disadvantage the onion industry where seedling maggot control was required.

It is believed that the recommendation for removal is mistaken as it is based upon assumptions that are inappropriate for onions. Firstly, the maximum rate to be applied for OSM control is 700 mL/ha (0.56 kg ai/ha) significantly reducing the potential for adverse effects in the event of off-target drift. Secondly, aerial application in onions is to treat both the infested soil as well as the emerged seedlings. Consequently, placement spraying with a medium to coarse droplet spectrum (BCPC classification system) in the range of VMD of  $\geq 300\mu\text{m}$  would be desirable. To ensure adequate coverage and efficacy, application volumes will need to be increased to compensate for volume lost into the larger droplets, e.g., 30-40 L/ha.

With regard to drift management and risk minimisation it is believed that the utilisation of techniques such as placement spraying with other drift management strategies would be significantly reduce the potential hazard to

non-target organisms. For example, specifying, as above a larger droplet spectrum to be applied, optimum wind speed (0-3 m/s) and temperature ranges ( $\leq 28^{\circ}\text{C}$  and  $\geq 50\%$  RH) and recommending the use of buffer zones from potentially sensitive areas (as per current endosulfan label) and stipulating that applications should not occur if winds are blowing in the direction of sensitive areas.

Furthermore, based upon ABS data the likely treated area is not anticipated to be large. The average area of onion production per farm is approximately 8 ha in size. It is unlikely that all areas are planted simultaneously therefore in all likelihood the areas to be treated will be no more than a few hectares per farm. Coupled to the geographical spread of onion production and that crops are grown year round the amount of diazinon to be applied is likely to be small.

### **1.3 TIMING**

For the control of OSM two applications of diazinon 10 days apart are recommended. Information from industry indicates that this use pattern provide effective control. These application are normally applied very early in the season, i.e., within three to four weeks of germination.

For the control of thrips the label indicates a rate of 700 mL/ha applied on 10 day intervals. When the product is used it has been indicated that at most only three applications 10 days apart are required to control an outbreak. The current label indicates a 14 day withholding period, however, it is believed that a longer withholding period could be adopted, e.g., 21-28 days.

### **1.4 RESIDUE DATA**

It is believed that the generation of further residue data is not required. Extensive onion residue data supplied to the 1993 JMPR review of diazinon indicated that in onions residues of diazinon did not persist. Data from the USA showed that after three applications of diazinon (applied at 0.55 kg ai/ha) residues in onion bulbs, 14 days after the last application, were at or below 0.02 mg/kg significantly below the current recommended TMRL for bulb vegetables of 0.05 mg/kg. This result was despite diazinon also being applied at 4.4 kg ai/ha to the soil prior to planting.

Furthermore, onions have been routinely monitored for diazinon as part of the National Residue Survey with no residues being detected. Therefore, given the use pattern outlined above, i.e., extending the WHP and capping maximum applications to three it is unlikely that residues approaching the TMRL are likely to occur. Consequently, it is believed that no further residue work needs to be undertaken.

### **1.5 RE-ENTRY**

The potential for exposure to diazinon in onions is believed to be negligible due to the nature of the product and the use pattern. Firstly, as outlined above the use pattern is targeted towards early season use with only two applications. Given that the life of the crop is 5-6 months it is unlikely that any residue would remain at harvest, either in the onion or in the soil. This view is supported by the residue data cited in section 1.4, where residues have diminished to at or below 0.02 mg/kg 14 days post treatment.

Also, diazinon is likely to be used after periods of wet weather making physical entry into a treated crop, in the short term, unnecessary.

## **2.0 PINEAPPLES**

### **2.1 EXTENT OF USE**

There is approximately 4,600 ha of pineapples grown by over 200 farmers in Queensland (ABS Census). The crop takes approximately 24 months from planting to first harvest. A subsequent ratoon crop is then harvested a further 13-15 months later.

The current diazinon labels have pineapple scale and mealybugs listed for control. Both of these pests have

been identified as being significant to the industry due to adverse yield effects and disease spread (mealybug wilt). As indicated in the Draft Report there is only one other management option available for the control of these pests, chlorpyrifos. Consequently, the loss of diazinon would be significant to the pineapple industry. Currently, the industry recommends the use of both chemicals to avoid the development of resistance.

Diazinon also has a potential fit in the development of IPM in pineapples. While, it is acknowledged that mortality of predators and parasites is high, where direct contact occurs, it has been found that the adverse impact of diazinon, on beneficial arthropods, diminishes rapidly over time, i.e., after 14 days (Meyerdirk *et al.* 1982, Bodnaruk & Papacek 1993). Allowing rapid re-establishment of beneficial arthropods. This is of particular importance in the management of pineapple scale (Swaine *et al.* 1991).

## 2.2 METHOD OF APPLICATION

In pineapples diazinon is only applied by ground based equipment. As indicated in the Draft Report water volumes of 2,500 to 3000 L/ha are applied. The product is applied at these volumes to ensure both crop canopy penetration and crown drenching. This is required due to the pests being targeted, i.e., mealybug and scale where infestations tend to be at the base of the plant. As a consequence, droplets at the coarser end of the spectrum are required.

With regard to spray drift management the recommendations made require further consideration. Reference is made to the use of high tractor mounted boom sprayers in pineapples. The height of boom sprayers in pineapples is determined by the height of the crop, i.e., approximately 50 cm above crop height. Therefore, during the first 12 months of crop growth, the height of the boom above the ground will be relatively low. Closer to crop maturity the maximum height of a boom would be approximately 1.5 m. However, due to the spray application used the quantity of diazinon encompassed in droplets of a driftable size will be relatively low. Furthermore, due to the 'rough' surface of the crop canopy droplet capture is likely to be high.

Therefore, the recommendation for a 50 metre buffer with regard to spray drift appears unnecessary. It is believed that the use of a spray drift warning and recommendation of coarser droplets and nozzles to limit spray drift near sensitive areas should suffice for all applications.

## 2.3 RATE

Pineapple scale: Applied at 65 mL/100L. As required.

This use would result in a maximum 1.56 kg ai/ha at the water volumes indicated above.

Mealybugs:

Applied at 1.5 – 3.0 L/ha in a maximum of 5 applications per year on an approximate three month cycle governed by crop growth and pest pressure.

The above use patterns, due to the crop growth cycle would result in a maximum 8 applications per crop.

Examples of pineapple crop cycles:

**Summer Crop Cycle:** Plant Feb-Apr, harvest plant crop Feb/Mar 2 yrs later, harvest first ratoon May/Jun the following year. Total cycle time = 37-39 months.

**April Crop Cycle:** Plant Jul/Aug, harvest plant crop April 2 years later, harvest first ratoon October the following year. Total cycle time = 39 months.

#### **2.4 RESIDUE DATA**

It is believed that only limited residue data needs to be generated in order to retain diazinon use in pineapples. Extensive residue data supplied to the 1993 JMPR review of diazinon indicated that based upon the Australian use pattern diazinon residues would not exceed the TMRL of 0.5 mg/kg. Data from the USA showed that after eight applications of diazinon, applied at rates 4 and 5 time higher than the maximum use rate in Australia, residues in whole fruit were below 0.01 mg/kg 14 days after the last application. In addition, residues in juice, seven days after the last application, were also below 0.01 mg/kg. Therefore, it is suggested that nothing more than confirmatory residue work needs to be undertaken locally.

#### **2.5 RE ENTRY**

In the main, pineapples are planted in double rows on raised 1.5 m centred beds. After planting all in-crop operations are mechanical. Consequently, a 24 hour re-entry period after treatment should suffice.

At harvest exposure to diazinon residues is also considered negligible. Due to the nature of the crop, i.e., dense lanceolate leaves with spines along margins, entry into the field by individuals is rare. Consequently, harvest is normally a manual one-pass operation with considerable protective clothing worn for physical protection. Coupled with the fact that residues, 14 days after application, are below 0.01 mg/kg it is believed that exposure risks are of no concern.



### 3.0 NURSERY INDUSTRY

#### 3.1 EXTENT OF USE

The most common use is as a pot drench to control insect pests in the potting media (inc. fungus gnats and root mealy bugs). Please note there are no registered alternatives to this use. Use is patchy with variations between climatic areas, crop types and pests but indications are that it is used by about 10% of industry per year. Based on ABS data (see Table 1 below) this translates to approximately 250 businesses. The NIAA believe the ABS data understates the size of the industry, consequently a more accurate assessment would be closer to 350 businesses.

There is some use as a foliage spray, though this is primarily to meet WA Dept. of Agriculture quarantine requirements for stock sold into WA from other states. It is a legal requirement to spray stock destined for WA with diazinon at present. The NIAA is not prepared to defend this use pattern, as this is a state requirement the WA Dept. should provide alternatives. NIAA have alerted the state department to the situation.

#### 3.1.1 Average size (and an indication of range of sizes) of nurseries in which diazinon is used;

The size of an operation has no bearing on use patterns as this is dictated by the pest. See Table 1 below for indication of size range based on number of employees.

	1 to 3	4 to 9	10 to 20	21 and over	Total
<b>NSW &amp; ACT</b>	723	208	50	31	1,012
<b>Victoria</b>	230	159	59	39	487
<b>Queensland</b>	366	187	39	20	612
<b>SA</b>	74	58	22	9	163
<b>WA</b>	83	69	23	7	181
<b>Tasmania</b>	56	18	6	5	85
<b>NT</b>	11	5	1	0	17
<b>Australia</b>	1,544	704	199	111	2,556

For more industry statistics see Nursery Industry Assoc. of Australia web site <http://www.niaa.org.au/>

#### 3.2 METHODS OF APPLICATION

For application both knapsack and motorised equipment is used. The spray mixture is applied to the potting media as a drench (dipping is not done due to cost). Common practice is to apply the spray mixture as a coarse stream directly to the surface of the potting media. Spray units are operated at very low pressure to ensure all the mixture is applied to the surface of the media. Foliar application is not utilised. Pots are treated in-situ as it is uneconomic to move them for treatment, i.e., pots are not handled either before or after immediately after application. In most situations overhead irrigation is then utilised, post-treatment, to aid movement of the insecticides into the potting media to reach the target pests.

#### 3.3 APPLICATION RATE.

Application rates vary depending upon the pest being targeted and are based upon current label or permitted rates, e.g., the dipping mixture rate is applied as a potting media drench (6 mL/10L). In some areas (Qld) a lower rate is used for the control of fungus gnats (2 mL/10 L) and a higher rate 1-2 mL/1L for staphylinid beetle control (QLD Board Approval 70101).

#### 3.4 FREQUENCY OF APPLICATION.

This can vary because the use of diazinon is not routine but applied within an IPM approach. It is estimated that maximum usage would be 6 times a year in nurseries with severe infestations; even then treatment would be restricted to the affected areas, i.e., not all potted plants.

### 3.5 RE-ENTRY

As described above the chemical solution is applied at low pressure through hand wands. Applicators utilise personal protective equipment as per label instructions. As indicated previously only affected pots are treated, i.e., not all potted material, and treated pots are usually irrigated shortly after application. It has been indicated that it would be unnecessary for staff to touch or handle this stock shortly after application. Commonly, the treated pots are not handled for several days as the drenching is used as part of the production process. Consequently, the risk of dermal contact is negligible. Given this use pattern it is believed that there is no need for the generation of re-entry data or dislodgeable residue data.

However the quarantine use of diazinon would require handling by staff as it is part of the dispatch process. This use pattern could potentially expose workers and others to unnecessarily. This use pattern is not supported by the nursery industry and alternatives should be sought from WA Dept. of Ag.

### 4.0 CAULIFLOWER IN WESTERN AUSTRALIA

In WA, diazinon is used by the cauliflower growers in the Manjimup area for the control of onion maggot (*Delia platura*). The larval stage of which feeds on the cauliflower curd making it unmarketable. Trichlorfon has been used for control of this pest, but it is not as effective. Diazinon is also a preferred insecticide where onion maggot and diamondback moth occur together because trichlorfon is not registered for the control of diamondback moth. Unlike other states resistance to diazinon has not developed in WA. Onion maggot is primarily a problem in late spring/early summer - October to December.

Onion maggot is not present consistently each season. When growers see the pest, it is already starting to cause damage and insecticide use is mandatory. There are no other known control options. Other products may be effective, but no assessment has been made for possible alternatives.

It is acknowledged that this use of diazinon for onion maggot is not registered, but the insecticide is applied at label rates registered for use against other pests of brassicas, i.e., 700 mL/ha.

If need be, we would be interested in either undertaking work or assist others to undertake appropriate studies, to help keep diazinon available for this use or to seek alternatives. I assume the use of diazinon in NSW, SA against onion maggot is for protection of seedlings and so is different from the situation in WA cauliflowers.

### 5.0 BEETROOT AND RHUBARB - WEBWORM & CORN BORER CONTROL

For both of these crops the pests indicated can be devastating if left unchecked. At present, diazinon is the only product registered/approved for use against oriental corn borer (*Ostrinia furnacalis*) in rhubarb and one of two for the control of webworm (*Hymenia recurvalis*) in beetroot.

In beetroot endosulfan is the only other compound currently registered for the control of webworm. The pest is intermittent but considered significant when infestations occur. From a pest management perspective having more than one compound available, is desirable. Particularly, where they are from different chemical groups.

Currently, the use pattern for the compound varies depending upon the level of insect infestation. However, it is envisaged that no more than 3 applications would be needed. Particularly, where another compound may be available for use. It is believed that residue data is not needed due to the fact that beetroot is a minor crop and that sufficient indicative data is available from the 1993 JMPR report. In the report it was indicated that a number of supervised residue trials in sugar beet were conducted. The European trials were with 2-4 applications of 0.14-0.5 kg ai/ha at 2-4 week intervals. In the US trials four or five foliar sprays at weekly intervals at 0.55 kg ai/ha were made. Residues of diazinon were not detectable (<0.01 or <0.02 mg/kg) in the roots or tops after 21 days and longer. Consequently it is suggested that by extending the withholding period to 21 days and the capping the number of applications to 3 the need for residue trial data is removed.

In the case of rhubarb, the distribution of the oriental corn borer is limited to the Mt Tambourine district of Qld. This insect is a significant pest of a maize, sorghum and millet crops throughout south-east Asia. It is believed that the use of diazinon in rhubarb has been a significant check on the potential spread of this pest from its current restricted distribution into nearby corn and sorghum crops (J Hargreaves pers comm.). The loss therefore of diazinon could result in the pest spreading into other more economically significant crops.

Diazinon is generally applied only twice during the course of a crop (6-9 months) for the control of oriental corn borer. The treatments tend to occur early in the life of the crop and a greater withholding period could be applied, e.g., 28 days. Given the nature of the compound, i.e., rapid breakdown, it is believed that with only two applications recommended and a withholding period of 28 days, residue data is not required.

#### References:

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Crop group	Crop	States	Treatment (mL/100 L or L/ha)	No. of applic	Applic. Interval (days)	Target WHP (days)	Sample times (days)			
							0 Dat	7 Dat	14 Dat	21 Dat
Root & tuber vegetables	Beetroot	Q	2.1 L/ha	4	14 d	14 d	0.39	0.32	0.2	0.25
	Carrot	S	2.1 L/ha	3	14 d	14 d	0.674	0.076	0.06	0.13
	Carrot	S	2.1 L/ha	3	14 d	14 d	-	-	0.095	0.06
	Carrot	V	2.1 L/ha	3	14 d	14 d	<0.005	<0.005	<0.005	<0.005
	Carrot	W	2.1 L/ha	3	14 d	14 d	-	-	0.037	0.054
	Potato	V	2.1 L/ha	3	14 d	14 d	0.01	<0.005	<0.005	<0.005
	Potato	Q	2.1 L/ha	3	14 d	14 d	0.008	0.007	0.007	<0.005
	Potato	W	2.1 L/ha	3	14 d	14 d	<0.005	<0.005	<0.005	<0.005
	Potato	S	2.1 L/ha	3	14 d	14 d	-	-	<0.005	-
	Sweet potato	Q	2.1 L/ha	3	14 d	14 d	<0.005	<0.005	<0.005	<0.005
							0 Dat	3 Dat	7 Dat	14 Dat
Brassica vegetables	Broccoli	Q	190mL/100L	3	10 d	7 d	0.84	0.7	0.172	<0.005
	Broccoli	V	190mL/100L	3	10 d	7 d	2.6	0.9	0.29	0.018
	Cauliflower	W	190mL/100L	3	10 d	7 d	0.17	0.14	0.1	0.029
	Cauliflower	V	190mL/100L	3	10 d	7 d	0.087	0.074	0.016	<0.005
	Cabbage	Q	190mL/100L	3	10 d	7 d	0.53	0.32	0.09	0.052
	Cabbage	V	190mL/100L	3	10 d	7 d	0.064	0.026	0.031	<0.005
	Brussels sprouts	S	190mL/100L	3	10 d	7 d	10	3.4	1.9	1.4
	Brussels sprouts	V	190mL/100L	3	10 d	7 d	0.26	0.33	0.14	0.09
							0 Dat	1 Dat	3 Dat	7 Dat
Citrus	Orange	V	30mL/100L	4	14 d	3 d	0.10	0.08	0.05	0.05
	Orange	S	30mL/100L	4	14 d	3 d	0.19	0.12	0.08	0.03
	Lemon	N	30mL/100L	4	14 d	3 d	0.25	0.16	0.17	0.19
	Lemon	Q	30mL/100L	4	14 d	3 d	0.15	0.05	0.03	0.02
	Lemon	S	30mL/100L	4	14 d	3 d	0.19	0.18	0.16	0.13
	Mandarin	Q	30mL/100L	4	14 d	3 d	0.09	0.15	0.11	0.08
	Mandarin	S	30mL/100L	4	14 d	3 d	0.15	0.09	0.07	0.04
							0 Dat	3 Dat	5 Dat	7 Dat
Cucurbit vegetables	Cucumber	N	190mL/100L	4	14 d	7 d	0.15	0.11	0.076	0.12
	Cucumber	Q	190mL/100L	4	14 d	7 d	0.14	0.079	0.082	0.094
	Zucchini	N	190mL/100L	4	14 d	7 d	0.16	0.09	0.067	0.088
	Zucchini	Q	190mL/100L	4	14 d	7 d	0.2	0.055	0.045	0.037

Crop group	Crop	States	Treatment (mL/100 L or L/ha)	No. of applic	Applic. Interval (days)	Target WHP (days)	Sample times (Days)			
							0 Dat	3 Dat	7 Dat	14 Dat
<b>Cucurbit vegetables cont.</b>	Zucchini	Q	190mL/100L	4	14 d	7 d	0.24	0.087	0.059	0.08
	Zucchini	W	190mL/100L	4	14 d	7 d	0.28	0.049	0.038	0.025
	Rockmelon	V	190mL/100L	4	14 d	7 d	0.7	0.55	0.27	0.23
	Rockmelon	Q	190mL/100L	4	14 d	7 d	0.69	0.98	1.2	1.00
							<b>0 Dat</b>	<b>3 Dat</b>	<b>7 Dat</b>	<b>14 Dat</b>
<b>Fruiting vegetables</b>	Capsicum	Q	2.1 L/ha	3	14 d	7 d	0.19	0.16	0.17	0.36
	Capsicum	Q	2.1 L/ha	3	14 d	7 d	-	-	0.089	0.074
	Capsicum	V	2.1 L/ha	3	14 d	7 d	-	-	0.037	0.027
	Capsicum	S	2.1 L/ha	3	14 d	7 d	0.88	0.4	0.075	0.006
	Eggplant	N	2.1 L/ha	3	14 d	7 d	0.064	0.007	<0.005	<0.005
	Eggplant	Q	2.1 L/ha	3	14 d	7 d	0.57	0.14	0.055	0.041
	Eggplant	V	2.1 L/ha	3	14 d	7 d	0.032	<0.005	<0.005	<0.005
	Eggplant	Q	2.1 L/ha	3	14 d	7 d	0.028	<0.005	<0.005	0.011
	Sweet corn	Q	2.1 L/ha	3	14 d	7 d	<0.005	<0.005	<0.005	<0.005
	Sweet corn	V	2.1 L/ha	3	14 d	7 d	<0.005	<0.005	<0.005	<0.005
	Sweet corn	N	2.1 L/ha	3	14 d	7 d	<0.005	<0.005	<0.005	<0.005
	Tomato	Q-n	2.1 L/ha	3	14 d	14 d	0.089	0.056	0.035	0.015
	Tomato	Q-se	2.1 L/ha	3	14 d	14 d	0.083	<0.005	<0.005	<0.005
	Tomato	V-n	2.1 L/ha	3	14 d	14 d	0.059	0.069	0.027	0.038
	Tomato	N-s	2.1 L/ha	3	14 d	14 d	0.081	0.094	0.09	0.02
							<b>0 Dat</b>	<b>7 Dat</b>	<b>14 Dat</b>	<b>21 Dat</b>
<b>Leafy vegetable**</b>	Chinese cabbage	V	190 mL/100L	3	14 d	14 d	3.40	1.00	0.34	0.26
	Chinese cabbage	Q	190 mL/100L	3	14 d	14 d	29.00	3.60	0.23	0.25
	Silverbeet	V	190 mL/100L	3	14 d	14 d	6.1	1.6	1.6	0.56
	Silverbeet	Q	190 mL/100L	3	14 d	14 d	18	3.7	1.4	0.31
							<b>0 Dat</b>	<b>7 Dat</b>	<b>14 Dat</b>	<b>28 Dat</b>
	Leafy lettuce	V	190 mL/100L	3	14 d	14 d	3.40	1.00	0.48	0.17
	Leafy lettuce	N	190 mL/100L	3	14 d	14 d	16.00	2.10	1.20	0.17
	Leafy lettuce	N	190 mL/100L	3	14 d	14 d	6.50	0.42	0.05	0.04
	Leafy lettuce	Q	190 mL/100L	3	14 d	14 d	1.50	0.07	0.03	-

Crop group	Crop	States	Treatment (mL/100 L or L/ha)	No. of applic	Applic. Interval (days)	Target WHP (days)	Sample times (Days)			
							0 Dat	3 Dat	7 Dat	14 Dat
<b>Vegetables Legume</b>	Beans	Q	2.1L/ha	3	14 d	7 d	-	-	0.15	0.05
	Beans	T	2.1L/ha	3	14 d	7 d	0.5	0.24	<0.005	<.0005
	Beans	V	2.1L/ha	3	14 d	7 d	0.29	0.014	0.092	0.037
	Peas	Q	2.1L/ha	3	14 d	7 d	1.00	0.31	0.082	0.037
	Peas	T	2.1L/ha	3	14 d	7 d	1.10	0.36	0.12	0.03
	Peas	V	2.1L/ha	3	14 d	7 d	2.00	0.7	0.37	-
							<b>0 Dat</b>	<b>7 Dat</b>	<b>14 Dat</b>	<b>21 Dat</b>
<b>Pome fruit</b>	Apples#	N	190mL/100L	6	14 d	14 d	2.1	0.77	0.29	0.27
	Apples	Q	190mL/100L	6	14 d	14 d	-	-	0.53	-
	Pears	V	190mL/100L	6	14 d	14 d	0.91	0.84	0.79	0.42
	Pears	S	190mL/100L	6	14 d	14 d	1.7	1.2	0.44	-
							<b>0 Dat</b>	<b>14 Dat</b>	<b>28 Dat</b>	<b>35 Dat</b>
<b>Stone fruit</b>	Peaches	V	190mL/100L	3	14 d	28 d	0.22	1.00	0.3	0.19
	Peaches	Q	190mL/100L	3	14 d	28 d	1.7	0.45	0.21	0.14
	Nectarines	S	190mL/100L	3	14 d	28 d	2.8	0.62	0.18	0.43
	Apricots	S	190mL/100L	3	14 d	28 d	3.7	0.81	1.00	0.26

**APPENDIX IV GLOSSARY OF ABBREVIATIONS**

AFFA	Department of Agriculture, Fisheries and Forestry – Australia
AMGA	Australian Mushroom Growers Association
AOIA	Australian Onion Industry Association
ARfD	Acute Reference Dose
CPA	Crop Protection Approvals
DAS	Dow AgroSciences
ECRP	Existing Chemical Review Program
HAL	Horticulture Australia Limited
HRDC	Horticulture Research and Development Corporation
IDO	Industry Development Officer
MRL	Maximum Residue Limit
NOHSC	National Occupational Health and Safety Commission
OH&S	Occupational Health and Safety
NRA	National Registration Authority for Agricultural and Veterinary Chemicals
QFVG	Queensland Fruit and Vegetable Growers
R&D	Research and Development