Generation of residue, efficacy and crop safety data for pesticide minor-use permit applications - CPR

Rebecca Lean
Crop Protection Research Pty Ltd

Project Number: VG11028

VG11028

This report is published by Horticulture Australia Ltd to pass on information concerning horticultural research and development undertaken for the vegetables industry.

The research contained in this report was funded by Horticulture Australia Ltd with the financial support of:
Syngenta Australia Pty Ltd
the vegetables industry

ISBN 0 7341 3302 2

Published and distributed by:
Horticulture Australia Ltd
Level 7
179 Elizabeth Street
Sydney NSW 2000
Telephone: (02) 8295 2300
Fax: (02) 8295 2399

HAL

Horticulture Australia

Final Report to Horticulture Australia Ltd for project number:

VG11028 (21st October, 2013)

Generation of residue, efficacy and crop safety data for pesticide minor-use permit applications - CPR

Dale Griffin and Rebecca Lean

Crop Protection Research Pty Ltd

Horticulture Australia Ltd Project Number: VG11028

Project leader: Ms Rebecca Lean

Contact details: PO Box 4068

Mount Eliza VIC 3930

Phone: +61 (03) 90059041

Fax: +61 (03) 59768846

Mobile:+ +61 0418 139 788

Email: rlean@cpresearch.com.au

Web: www.cpresearch.com.au

Purpose: To report on GLP studies conducted to generate residue data in various vegetable crops for several pesticide active-constituents. The data will be submitted to the APVMA for their consideration along with minor-use permit renewal applications seeking the continued use of the pesticides in the various crops.

Reported: 21st October, 2013

This project has been funded by Horticulture Australia Ltd (HAL) using the vegetable industry levy and matched funds from the Australian Government.

Contents list

1. Media Summary

Growers of some horticultural crops are left exposed to greater production risk and can incur significant crop losses when pesticides are not registered for use on their crop(s). This potentially leaves pests, weeds and diseases inadequately controlled.

This situation occurs when a cost-benefit analysis indicates that the cost of generating data and preparing data packages for product registration is significantly higher than the additional sales that may be generated from a new registration.

To address this situation, sometimes referred to as a market-failure, the Australian Pesticides and Veterinary Medicines Authority (APVMA), who regulate pesticide-use in Australia, developed a permit system whereby, they permit the use of a pesticide on a crop after reviewing less data than would otherwise be reviewed when a manufacturer registers a pesticide.

Because the amount of supportive data required for permits is typically much lower than is required for a full registration, growers and peak industry bodies sometimes fund the generation of residue data and submit it to the APVMA to secure permits for their grower members.

AusVeg, the Australian vegetable industry's peak representative body, through Horticulture Australia Ltd (HAL), commissioned Crop Protection Research Pty Ltd (CPR), to generate such data, and to prepare submissions incorporating the data, to support permit applications and renewals.

This report summarises the work undertaken by CPR to generate residue data and to prepare and submit permit applications. Table 1 the pesticides for which data was generated in each crop and briefly outlines the relevant permits related to the data generation. The table also updates the progress permit renewal applications.

Table 1. The pesticides and crops for which residue data was generated during project VG11028. The data was generated to support renewal of off-label permits.

Pesticide	Crops	Relevant permit(s)	Permit renewal status
Chlorothalonil	Silver beet and spinach	PER11572	Permit renewal application with APVMA for consideration
Metalaxyl-M	Lettuce and broccoli	PER10735 and PER11474	Permit renewal application with APVMA for consideration
Metalaxyl-M plus mancozeb	Capsicums and chillies	PER10760	Permit renewed as PER13003. Permit renewal application with APVMA seeking support to renew PER13003.
Phosphorous acid	Rhubarb	PER9922	Permit renewed as PER13586. Permit renewal application with APVMA seeking support to renew PER13586.
Trifloxystrobin	Celery and leafy brassica vegetables	PER11641 and PER11356	Permits consolidated and renewed as PER13658. Permit renewal application with APVMA seeking support to renew PER13658.

2. Technical Summary

Project VG11028 was managed as 5 sub-projects, each of which was a single pesticide residue study and which were conducted in accordance with the OECD principles of Good Laboratory Practice (GLP).

Each of the 5 residue studies was designed to determine the residual level of pesticide active constituent(s), which remained in horticultural produce, following one or more applications of a commercially-formulated agrichemical product.

The active constituents studied, followed in parentheses by the crops treated with them, were: chlorothalonil (silverbeet and spinach), metalaxyl-M (lettuce and broccoli), mancozeb plus metalaxyl-M (capsicums and chillies), phosphorous-acid (rhubarb) and trifloxystrobin (celery and leafy vegetables).

A range of crops were treated with the pesticide in each of the studies with each crop located at different study-sites in most circumstances. Where possible, the study-sites were positioned in commercially-grown crops, otherwise they were grown specifically for the study at facilities or properties where staff were on hand to grow them in accordance with local Good Agricultural Practice (GAP).

Application of pesticides was completed using a hand-held, gas-powered boom-sprayer fitted with hollow-cone nozzles.

At certain times after the application of pesticides was completed, samples from areas of non-treated crop, as well as treated crop, were collected, packaged to prevent contamination and deep-frozen to minimise residue degradation.

The samples were then sent to a pesticide-residue laboratory for analysis where they were unpacked, defrosted to the point where they could be sub-sampled and homogenised before residue extraction procedures were conducted on the homogenate.

Depending upon the pesticide, the extract was analysed using validated methodology, based on liquid or gas-chromatography and mass-spectrophotometry, to detect and quantify the residue(s).

When pesticides that were detected at levels higher than the limit of quantitation (LOQ), the results were recorded, and reported as milligrams of pesticide per of kilogram produce (mg/kg) which is equivalent to parts per million (ppm).

Each residue study was reported separately before being submitted, along with the appropriate minor-use permit renewal forms, to Growcom Ltd for review before being sent to the APVMA for consideration and approval.

Table 2 summarises the progress of permit renewal application.

Table 2. The pesticides and crops for which residue data was generated during project VG11028. The data was generated to support renewal of off-label permits, some of which were renewed during the course of the project. All data generated have been submitted to the APVMA for consideration in regard to permit renewal applications.

Pesticide	Crops	Relevant permit(s)	Permit renewal status
Chlorothalonil	Silver beet and spinach	PER11572	Permit renewal application with APVMA for consideration
Metalaxyl-M	Lettuce and broccoli	PER10735 and PER11474	Permit renewal application with APVMA for consideration
Metalaxyl-M plus mancozeb	Capsicums and chillies	PER10760	Permit renewed as PER13003. Permit renewal application with APVMA seeking support to renew PER13003.
Phosphorous acid	Rhubarb	PER9922	Permit renewed as PER13586. Permit renewal application with APVMA seeking support to renew PER13586.
Trifloxystrobin	Celery and leafy brassica vegetables	PER11641 and PER11356	Permits consolidated and renewed as PER13658. Permit renewal application with APVMA seeking support to renew PER13658.

3. Introduction

In Australia, before an agrochemical product can be sold or used, the Australian Pesticides and Veterinary Medicines Authority (APVMA) must register it. This only occurs following a review of a comprehensive package of data that includes efficacy, crop safety and residue data. The manufacturer of the product must supply this information to the APVMA before this process can begin.

The cost of generating and collating such data packages is high, often costing many hundreds-of-thousands of dollars. These costs must be recouped by the manufacturer through sales of their product.

However, only small areas of many horticultural crops are grown and manufacturers consider it too difficult or impossible to recoup their registration costs. Thus, manufacturers will rarely spend resources on generating the data or preparing the associated applications.

As a result, horticulturalists are often placed in situations where they risk severe crop losses from insects, weeds and diseases because the agrochemical tools needed to protect their crops from these pests are not registered for their situation. On the other hand, they could spray their crops with pesticides that are not registered and risk buyers rejecting their produce and potentially-face severe penalties for pesticide miss-use.

The need to gain minor-use permits and new registrations has come about due to loss of some agrochemical products and/or registered uses because of chemical reviews and product rationalisation.

The APVMA's permit system adds some flexibility to the lengthy registration process and legalises the availability of products for minor-use purposes, not specified on the product label. However, off-label permits issued by the APVMA still must be applied for along with information and data that verifies that the permitted use will be effective and will not have any harmful effects on humans, the crops or the environment.

In early 2000, the vegetable industry undertook a national approach to permits by working with industry generated 'wishlists' for new pesticide uses, but this led to congestion in Australian Pesticide & Veterinary Management Authority (APVMA) system and dissatisfaction amongst growers and grower groups. This was in part due to widespread duplication of the requests made for permits in the absence of a truly co-ordinated system and concern over the priority assessment for each pesticide. This approach was also unable to give relevant priority to new pesticide technologies and available Integrated Pest Management (IPM) friendly pesticides that were outside the industry's experience.

A new approach to address the current and future pesticide requirements for horticultural crops has been developed using the Strategic Agrichemical Review Process (SARP). This approach had the benefit of IPM compatibility, where possible, improved scope for resistance management, sound biological profile and residue and trade acceptance domestically and for export.

This review process provides the vegetable industry with sound pesticide options for the future that the industry can pursue for registration with the manufacturer, or minor-use permits with APVMA for clearly identified crop protection needs, many of which will also assist the expansion of effective IPM strategies. All of the residue studies reported in this project have been identified through that SARP.

4. Materials and methods

Project VG11028 was managed as 5 separate residue studies (Table 3); a separate study for each of the active constituents (pesticides) included in the project.

In accordance with the OECD Principles of Good Laboratory Practice (GLP), each residue study was identified using a unique residue-study ID. Each study included several different crops and/or were conducted across multiple study-sites.

Before each residue study began, an audited, GLP-compliant study plan was prepared. This document provided all the details necessary to complete the field and laboratory-phase activities of each study.

The auditing was completed by an independent, third party quality assurance expert (MAS Consulting Pty Ltd) to ensure the study plan complied with the principles of GLP.

Because the combination of pesticide active-constituent(s) and crops included in each study were unique, the methods used, particularly the laboratory-based methods, varied from study to study. Brief details of the specific materials and methods used in each are provided in sections 4.1 to 4.5 below.

4.1. Chlorothalonil (silver beet and spinach)

A residue study conducted in accordance with the principles of Good Laboratory Practice (GLP) was undertaken across four sites located in south-east Queensland and south-west New South Wales on commercial, field grown spinach and silver beet crops.

Each site received four applications of Cavalry® 720 SC Fungicide at 2.3 L/ha (chlorothalonil 720 g/L) that was made approximately 28, 21, 14 and 7 days before harvest. All treatments were applied using a hand-held, gas-powered boom-sprayer.

Samples of crop were collected at 0, 3, 7 (commercial harvest) and 10 days after the last application (DALA) of treatments.

As samples were collected, they were packaged into heavy-duty plastic-bags, labelled and stored in freezers before being shipped to the analytical laboratory where they were analysed for residual chlorothalonil.

The analyses were completed using equipment and methods which utilised gas-chromatography and mass spectrophotometry techniques (GC/MS).

Upon completion of the field and analytical-phases of the study all records, including the GLP-study final report, were forwarded to the quality assurance consultant for auditing to ensure compliance with the principles of GLP.

The audited final GLP report was forwarded to Growcom Australia, along with completed permit renewal application documents and the appropriate application fee, for review and submission to the Australian Pesticides and Veterinary Medicines Authority (APVMA). The documents were forwarded to Growcom Australia on approximately the 7th May, 2013.

Table 3. Project VG11028 was managed by separating it into 5 sub-projects (GLP Studies). In accordance with the OECD Principles of Good Laboratory Practice, each of these was identified uniquely. The sub-projects included a single active constituent, usually included several crops and were conducted across multiple study sites.

CPR residue-study ID (HAL reference)	Pesticide active constituent	Crops included in study	Number of study sites	Locations by State
11-HAL-026(a)GLP (AVG142 & AVG138)	**chlorothalonil**	Silver beet and spinach	4	NSW (x2) and QLD (x1)
11-HAL-026(b)GLP (HAL1631 and AVG597)	**metalaxyl-M**	Broccoli and lettuce	4	VIC (x4)
11-HAL-026(c)GLP (AVG946)	**metalaxyl-M and mancozeb**	Capsicums and chillies	4	NSW (x2) and QLD (x2)
11-HAL-026(d)GLP (HAL1418)	**phosphorous-acid**	Rhubarb	3	VIC (x1), NSW (x1) and QLD (x1)
11-HAL-026(e)GLP (HAL1712 and HAL1626)	**trifloxystrobin**	Celery and leafy brassica vegetables	4	VIC (x1) and QLD (x3)

4.2. Metalaxyl-M (lettuce and broccoli)

A residue study conducted in accordance with the principles of Good Laboratory Practice (GLP) was undertaken across four sites located in south-east and south-west Victoria on commercial field-grown broccoli and lettuce crops.

At the two broccoli sites, broccoli seed received a single application of Apron® XL 350 ES Fungicide at 200mL/100kg seed (metalaxyl-M 350 g/L).

Prior to transplanting at the two lettuce sites, a dose of Ridomil® Gold 25G systemic fungicide at was applied at 120g/100 metre row (metalaxyl-M 25 g/kg).

Samples of produce were collected from treated and non-treated areas of crop at commercial harvest for each site.

As samples were collected, they were packaged into heavy-duty plastic-bags, labelled and stored in freezers before being shipped to the analytical laboratory where they were analysed for residual metalaxyl-M. The analyses were completed using equipment and methods which utilised liquid-chromatography and mass spectrophotometry techniques (LC/MS/MS).

Upon completion of the field and analytical-phases of the study all records, including the GLP-study final report, were forwarded to the quality assurance consultant for auditing to ensure compliance with the principles of GLP.

The audited final GLP report was forwarded to Growcom Australia, along with completed permit renewal application documents and the appropriate application fee, for review and submission to the APVMA. The documents were forwarded to Growcom Australia on approximately the 5th June, 2013.

4.3. Mancozeb plus metalaxyl-M (capsicums and chillies)

A residue study conducted in accordance with the principles of Good Laboratory Practice (GLP) was undertaken across four sites located in south-east Queensland and south-west New South Wales on commercial field-grown chilli and capsicum crops.

Each site received two applications of Ridomil Gold® MZ WG systemic and protective fungicide (mancozeb 640 g/kg and metalaxyl-M 40 g/kg) at 2.5 kg/ha that was made approximately 14 and 7 days before harvest. All treatments were applied using a hand-held, gas-powered boom-sprayer.

Samples of capsicum and chilli fruit were collected at 0, 3, 7 (Commercial harvest) and 10 days after the last application (DALA) of treatments. As samples were collected, they were packaged into heavy-duty plastic-bags, labelled and stored in freezers before being shipped to the analytical laboratory where they were analysed for residual mancozeb and metalaxyl-M.

The analysis of metalaxyl-M was completed using equipment and methods which utilised liquid chromatography with mass spectrometer techniques (LC/MS/MS) and mancozeb residue analysis was completed using equipment and methods which utilised gas-chromatography and mass spectrophotometry techniques (GC/MS).

Upon completion of the field and analytical-phases of the study all records, including the GLP-study final report, were forwarded to the quality assurance consultant for auditing to ensure compliance with the principles of GLP.

The audited final GLP report was forwarded to Growcom Australia, along with completed permit renewal application documents and the appropriate application fee, for review and submission to the APVMA. The documents were forwarded to Growcom Australia on approximately the 4th September, 2013.

4.4. Phosphorous-acid (rhubarb)

A residue study conducted in accordance with the principles of Good Laboratory Practice (GLP) was undertaken across three sites located in south-east Queensland, south-western New South Wales and south-east Victoria on commercial field-grown rhubarb crops.

Each site received three applications of Agri-Phos® systemic fungicide at 3 L/ha (phosphorus acid 600 g/L) that was made approximately 15, 8 and 1 days before typical commercial harvest. All treatments were applied using a hand-held, gas-powered boom-sprayer.

Samples of crop were collected at 0, 1 (commercial harvest), 3 and 7 days after the last application (DALA) of treatments.

As samples were collected, they were packaged into heavy-duty plastic-bags, labelled and stored in freezers before being shipped to the analytical laboratory where they were analysed for residual phosphorous acid.

The analyses were completed using equipment and methods which utilised liquid chromatograph with mass spectrometer (LC/MS/MS).

Upon completion of the field and analytical-phases of the study all records, including the GLP-study final report, were forwarded to the quality assurance consultant for auditing to ensure compliance with the principles of GLP.

The audited final GLP report was forwarded to Growcom Australia, along with completed permit renewal application documents and the appropriate application fee, for review and submission to the APVMA. The documents were forwarded to Growcom Australia on approximately the 17th September, 2013.

4.5. Trifloxystrobin (celery and leafy vegetables)

A residue study conducted in accordance with the principles of Good Laboratory Practice (GLP) was undertaken across four sites located in south-east Queensland and south-east Victoria on commercially field grown celery and silverbeet, and in protected spinach crops.

Each site received three applications of Flint® 500 SC Fungicide at 200g/ha (trifloxystrobin 500 g/kg) that was made approximately 17, 10 and 3 days before typical commercial harvest. All treatments were applied using a hand-held, gas-powered boom-sprayer.

Samples of crop were collected at 0, 1, 3 (commercial harvest), 7 and 14 days after the last application (DALA) of treatments.

As samples were collected, they were packaged into heavy-duty plastic-bags, labelled and stored in freezers before being shipped to the analytical laboratory where they were analysed for residual trifloxystrobin.

The analyses were completed using equipment and methods which utilised liquid chromatograph with mass spectrometer (LC/MS/MS).

Upon completion of the field and analytical-phases of the study all records, including the GLP-study final report, were forwarded to the quality assurance consultant for auditing to ensure compliance with the principles of GLP.

The audited final GLP report was forwarded to Growcom Australia, along with completed permit renewal application documents and the appropriate application fee, for review and submission to the APVMA. The documents were forwarded to Growcom Australia on approximately the 17th September, 2013.

5. Results

5.1. Chlorothalonil (silver beet and spinach)

The limit of quantitation (LOQ) was reported to be 0.01 milligrams of chlorothalonil per kilogram of silver beet or spinach.

Residual levels of chlorothalonil were below the LOQ in samples of silver beet and spinach collected from the non-treated areas of the four study-sites.

Quantifiable residues of chlorothalonil were measured in all treated-samples, regardless of site-location and sampling timing. However, the residues in any of the samples were well below the current temporary maximum residue level (tMRL) of 100 mg/kg, even those collected on the same day that the final application of treatments was made.

An independent auditor reported that all-phases of the study were conducted in accordance with the principles of GLP.

An application seeking the renewal of permit 11572 was prepared and forwarded to Growcom Australia for review before forwarding to the APVMA for their consideration. The outcome of this application is not yet known.

5.2. Metalaxyl-M (lettuce and broccoli)

The limit of quantitation (LOQ) was reported to be 0.01 milligrams of metalaxyl-M per kilogram of broccoli, head lettuce and leafy lettuce.

Residues of metalaxyl-M were below the LOQ in all samples collected during the study, including those treated with metalaxyl-M.

An independent auditor reported that all-phases of the study were conducted in accordance with the principles of GLP.

An application seeking consolidation and renewal of permits 10735 and 11474 was prepared and forwarded to Growcom Australia for review before forwarding to the APVMA for their consideration. The outcome of this application is not yet known.

5.3. Mancozeb plus metalaxyl-M (capsicums and chillies)

The limit of quantitation (LOQ) was reported to be 0.1 milligrams of mancozeb and 0.01 milligrams of metalaxyl-M per kilogram of chilli or capsicum fruit.

Residual levels of mancozeb and metalaxyl-M were below the LOQ in samples collected from the non-treated from all four study-sites.

Residual levels, substantially lower than the current tMRL for metalaxyl-M (1.0 mg/kg) in capsicum and chillies were detected in treated samples collected from all sites at the with-holding period (WHP) of 7-days. Residual levels of mancozeb in treated fruit were also substantially lower than the current tMRL (3.0 mg/kg) at 7-days in fruit collected from all but 1 site where the levels were substantially higher than the tMRL until 10-days after application.

This anomaly could not be explained and an audit of the field and laboratory-phase activities showed that there were no extraordinary events which could have reasonable contributed to the higher than tMRL residues.

An application seeking renewal of permit 13003 was prepared and forwarded to Growcom Australia for review before forwarding to the APVMA for their consideration. The outcome of this application is not yet known.

5.4. Phosphorous-acid (rhubarb)

The limit of quantitation (LOQ) was reported to be 0.1 milligrams per kilogram (mg/kg) of phosphorous acid in rhubarb.

Residual levels of phosphorous acid above the LOQ were observed in samples collected from the non-treated areas of the three study-sites. All actions were taken to ensure no cross-contamination occurred throughout study, including collection of non-treated control samples from areas of crop located a substantial distance from the treated areas. The co-operating growers, who supplied the crop for the study, confirmed no phosphorous-acid was used during or around the time of study.

Residual level of phosphorous acid in rhubarb plants collected from the treated areas of all sites was substantially lower than the current tMRL.

An independent auditor reported that all-phases of the study were conducted in accordance with the principles of GLP.

An application seeking the renewal of permit 13586 (formerly 9922) was prepared and forwarded to Growcom Australia for review before forwarding to the APVMA for their consideration. The outcome of this application is not yet known.

5.5. Trifloxystrobin (celery and leafy vegetables)

The limit of quantitation (LOQ) was reported to be 0.01 milligrams per kilogram (mg/kg) of trifloxystrobin (total) in celery, silverbeet and spinach.

Residual levels of trifloxystrobin were below the LOQ in samples collected from the non-treated areas at each of the four study-sites.

At the permitted WHP of 3-days, the residual level of trifloxystrobin (total) was above the current tMRL (1 mg/kg) in treated celery collected from one of the two sites and in treated spinach collected from that site. Residual trifloxystrobin in treated produce was below the tMRL, at the same WHP, at the second celery site and the silver beet site.

Nevertheless, the data presented here provides support to an application seeking the renewal of permit 13658 providing the tMRL for each crop is increased substantially.

6. Discussion

6.1. Chlorothalonil (silver beet and spinach)

The data generated during this study supported an application for the renewal of minor-use permit 11572 which allowed the use of chlorothalonil on silver beet and spinach. Currently, there is a temporary MRL (tMRL) of 100 mg/kg accepted for residual chlorothalonil in leafy vegetables such as silver beet and spinach. All samples treated with chlorothalonil during this study and then analysed for residual chlorothalonil had levels substantially lower than the tMRL.

Thus, a permit renewal application was prepared and, along with the supporting GLP residue report, was submitted to Growcom Australia on 7 May, 2013.

6.2. Metalaxyl-M (lettuce and broccoli)

There was a permit allowing the usage of Apron® XL 350 ES Fungicide at 200mL/100kg of seed in broccoli (PER10735) and Ridomil® Gold 25G systemic fungicide at 120g/100 metre row in leafy and head lettuce (PER11474). These permits were under-pinned by a tMRL of 0.1 mg/kg in broccoli and lead lettuce and 0.3 mg/kg in leafy lettuce. Both of these permits have since expired.

There were no detectable residues in the treated produce collected during this study; thus, the data reported supports an application to renew the existing permits and would support an application, by a registrant, to seek label-registration, for the use of Apron® XL 350 ES Fungicide and Ridomil® Gold 25G Systemic Fungicide as crop protection treatments for broccoli seed and lettuce transplants.

Thus, a permit renewal application was prepared and, along with the supporting GLP residue report, was submitted to Growcom Australia on 5 June, 2013.

6.3. Mancozeb plus metalaxyl-M (capsicums and chillies)

At the commissioning of this project there was a permit (PER10760) allowing the use of Ridomil Gold® MZ WG systemic and protective fungicide at 2.5 kg/ha in chillies and capsicums. The permit was renewed during the course of the project (PER13003).

The new permit is underpinned by a maximum residue level (MRL) for mancozeb (dithiocarbamates) of 3 mg/kg (fruiting vegetables other than cucurbits), and 1 mg/kg for metalaxyl-M (peppers). Whilst the residual level of mancozeb found in fruit from one of the sites was higher than the current tMRL, the data is generally considered to be supportive of permit renewal.

Thus, a permit renewal application was prepared and, along with the supporting GLP residue report, was submitted to Growcom Australia on 4th September, 2013.

6.4. Phosphorous-acid (rhubarb)

Currently, permit 13586 (formally PER9922) allows the use of Agri-Phos® systemic fungicide at 3 L/ha in rhubarb. This permit is underpinned by a tMRL for phosphorous acid of 100 mg/kg.

Residual levels of phosphorous acid were well below the current tMRL in rhubarb collected from the treated areas of crop at all study sites; thus, the data reported here provides support to an application seeking the renewal of permit 13586 and moving the MRL from temporary to permanent.

Hence, a permit renewal application was prepared and, along with the supporting GLP residue report, was submitted to Growcom Australia for review on 17th September, 2013.

6.5. Trifloxystrobin (celery and leafy vegetables)

Currently, APVMA permit 13658 (formerly 11356) allows the use of Flint® 500 SC Fungicide at 200g/ha in celery, silver beet and spinach. The permit is underpinned by temporary maximum residue levels (tMRLs) for trifloxystrobin of 1 mg/kg (celery) and 0.7 mg/kg (spinach and silver beet).

The residual trifloxystrobin found in produce collected during this study were higher than the current tMRLs at two of the four sites; thus, it is difficult to determine how this will be interpreted by the APVMA, who will consider the permit renewal application, which was prepared and submitted to Growcom Australia on 17th September, 2013.

It is possible that permit 13658 will be renewed on the basis of the data reported here, regardless of higher-than-tMRL residues in some produce, because the APVMA may increase the tMRL to accommodate the residues that may occur when growers exercise the permit.

7. Technology transfer

Technology transfer activities were not included in the scope of this project. The data generated from the studies reported on here have been included in submissions to the Australian Pesticides and Veterinary Medicines Authority. These submissions are for permit applications. The results of the applications are disseminated on the APVMA website, the Government Gazette and by industry publications.

8. Recommendations

8.1. Chlorothalonil (silver beet and spinach)

A permit renewal application has been submitted to Growcom Australia for review and submission to the Australian Pesticides and Veterinary Medicines Authority (APVMA).

CPR recommends that Growcom Australia submits the permit application to the APVMA without delay and regularly enquires to the APVMA regarding the status and outcome of this application.

8.2. Metalaxyl-M (lettuce and broccoli)

A permit renewal application has been submitted to Growcom Australia for review and submission to the Australian Pesticides and Veterinary Medicines Authority (APVMA).

CPR recommends that Growcom Australia submits the permit application to the APVMA without delay and regularly enquires to the APVMA regarding the status and outcome of this application.

8.3. Mancozeb plus metalaxyl-M (capsicums and chillies)

A permit renewal application has been submitted to Growcom Australia for review and submission to the Australian Pesticides and Veterinary Medicines Authority (APVMA).

Regardless of residual mancozeb being higher than the maximum residue limit (MRL) in fruit from one of the sites included in the study, the residues found in fruit collected from all other sites were substantially lower than the MRL.

Therefore, CPR recommends that Growcom Australia submits the permit application to the APVMA without delay and regularly enquires to the APVMA regarding the status and outcome of this application.

8.4. Phosphorous-acid (rhubarb)

A permit renewal application has been submitted to Growcom Australia for review and submission to the Australian Pesticides and Veterinary Medicines Authority (APVMA).

CPR considers that the data was supportive of a permit renewal and, as such, recommends that Growcom Australia submits the permit application to the APVMA without delay and regularly enquires to the APVMA regarding the status and outcome of this application.

8.5. Trifloxystrobin (celery and leafy vegetables)

A permit renewal application has been submitted to Growcom Australia for review and submission to the Australian Pesticides and Veterinary Medicines Authority (APVMA).

Regardless of residual trifloxystrobin at levels higher than the MRL in produce from two sites included in the study, residues found in produce collected from all other sites were lower than the MRL.

Therefore, CPR recommends that Growcom Australia submits the permit application to the APVMA without delay and regularly enquires to the APVMA regarding the status and outcome of this application.