Horticulture Innovation Australia

Final Report

Generation of residue data for pesticide minor-use permit applications in vegetable crops 2014

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Peracto

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VG14038

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Summary

With APVMA approval of the minor-use permit applications that have been submitted, this project will provide growers with effective pesticide options for the control of various pests and diseases.

Control measures for the various target pests and diseases within this project are limited with the proposed uses able to provide an alternative product or a more effective level of control for the fruit and vegetable industry.

Horticulture Innovation Australia Limited (HIAL) and the Queensland Fruit and Vegetable Growers require the generation of residue data for the control of various pests and diseases to support minor-use permit applications to the Australian Pesticides and Veterinary Medicines Authority (APVMA). The key outcome from this project is the gaining of approval renewal from the APVMA for use of the listed pesticide uses under the APVMA minor-use permits and eventual registration of the uses.

This project consisted of eight studies, with these residue trials conducted to determine residue levels and crop safety following the use of various pesticides (see Methodology for further details). Residue data for the eight residues studies that are part of project VG14038, have been reported in their GLP Reports which were used to support minor-use permit renewal applications for the various active ingredients following submission to the APVMA.

Keywords

Buprofezin, leafy lettuce, whitefly; abamectin, snow peas, sugar snap peas, two spotted mite, red spider mite; clethodim, cauliflower, broccoli, Brussels sprouts, Ryegrass, Winter grass; fenhexamid, sugar snap peas, grey mould, chocolate spot; iprodione, chilli, capsicum, sclerotinia rot; mancozeb, metalaxyl-M, peppers, downy mildew, tebuconazole, beetroot, chichory, endive, radish, silverbeet, spinach.

Introduction

The various pests and diseases within this project can cause significant damage to crops unless they are controlled. Control measures for the various target pests and diseases are limited with the proposed uses able to provide an alternative product or a more effective level of control for the fruit and vegetable industry.

The selective use of pesticides to control pests plays an important role in increasing production, improving the quality of Australia's horticultural crops and enabling growers to earn reasonable returns on their investments. At the same time, today's health conscious society is extremely sensitive to issues relating to chemical use and it is essential that consumers be protected by adequate regulations governing the use of agrochemicals.

The Queensland Fruit and Vegetables Growers required residue trials to be undertaken to maintain the various permits and set the MRL on some occasions. These were conducted throughout Australia at geographically distinct sites within key growing regions.

The APVMA's National 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/data that verifies that the permitted use will be effective and will not have any harmful effects on humans, the crops or the environment.

This report contains a summary of the experimental methods and results of each of the trials conducted under the VG14038 project. Final residue reports have been submitted to Growcom for submission to the APVMA together with the relevant renewal application for minor-use permits.

Methodology

This project consisted of eight residue trials as per the tables below

Table 1: Permit and study details

Peracto Study Number & Permit number	Study Title	Permit Description
PER12712	Determination of residues of buprofezin in leafy lettuce (field and protected cropping)	buprofezin (Applaud Insecticide)/ leafy lettuce (field and protected cropping)/ greenhouse whitefly, silverleaf whitefly and leafhoppers
PER12846	Determination of residues of abamectin in snow peas (forage) and sugar snap peas (forage)	abamectin (Vertimec) / snow peas and sugar snap peas/ Two spotted mite
PER13304	Determination of residues of etoxazole in cucumbers (protected cropping and zucchini (protected cropping) following a single application	etoxazole (Paramite Selective Miticide)/ cucurbits/ Two spotted mite, red spider mite
PER14164	Determination of residues of clethodim in cauliflower, broccoli and Brussels sprouts following a single application	clethodim (Status 240 EC Herbicide)/ broccoli, Brussles sprouts, cauliflower/ ryegrass, winter grass
PER14211	Determination of residues of fenhexamid in sugar snap peas (field and protected cropping)	fenhexamid (Teldor 500 SC Fungicide)/sugar snap peas (field and protected cropping)/ Grey mould and chocolate spot
PER14353	Determination of residues of iprodione in chillies and capsicums	iprodione (Chief Aquaflo Fungicide)/ peppers and celeriac/Sclerotinia rot
Study Number: PER14454 Permit PER14454 withdrawn with PER12399 submitted as replacement	Determination of residues of mancozeb + metalaxyl-M in chillies and capsicums	mancozeb & metalaxyl-M (Ridomil Gold MZ WG Systemic and Protective Fungicide)/peppers (capsicums, chillies and Paprika)/Downy mildew
PER14456	Determination of residues of tebuconazole in beetroot (leaves and roots, spinach and silverbeet	tebuconazole (Folicur 430 SC Fungicide)/Beetroot, chicory, endive, radish, silverbeet and spinach/ Sclerotinia rot

Table 2: Trial requirements

	Trials required	Trial #	Trial Locations	Conditions	Trial Timings
PER12712	buprofezin GLP residue studies	2	Tasmania & Queensland	Tasmania (protected cropping) & Queensland (field)	Field Phase: Mar 15 – Jul 15 Analytical Phase: Apr 15 – Oct 15
PER12846	abamectin GLP residue studies	2	Tasmania & Queensland	Field trials, outdoor	Field Phase: Apr 15 – Aug 15 Analytical Phase: May 15 – Oct 15
PER13304	etoxazole GLP residue studies	3	Tasmania, South Australia & Queensland	Tasmania (protected cropping),South Australia (protected cropping) & Queensland (protected cropping)	Field Phase: Mar – Jul 15 Analytical Phase: Apr 15 – Oct 15
PER14164	clethodim GLP residue studies	8	Western Australia, Tasmania (x 3), Queensland (x 2), South Australia and Victoria	Field trials, outdoor	Field Phase: Mar – Aug 15 Analytical Phase: Mar 15 - Jan 16
PER14211	fenhexamid GLP residue studies	3	Queensland (x 2) & Tasmania	Queensland (protected cropping) & Tasmania (field)	Field Phase: May 15 – May 16 Analytical Phase: May 16 – Jun 16
PER14353	iprodione GLP residue studies	5	North Queensland (x 2), Bundaberg, Queensland (x 2) & Western Australia	Field trials, outdoor	Field Phase: Mar 15 – Jul 15 Analytical Phase: Apr 15 – Dec 15

	Trials required	Trial #	Trial Locations	Conditions	Trial Timings
Study number PER14454. Permit PER14454 withdrawn with PER12399 submitted as replacement	mancozeb & metalaxl-M GLP residue studies	2	Queensland and Western Australia	Field trials, outdoor	Field Phase: Mar – Jul 15 Analytical Phase: Apr – Oct 15
PER14456	tebuconazole GLP residue studies	3	Tasmania, Victoria & Queensland	Field trials, outdoor	Field Phase: Jan – Aug 15 Analytical Phase: Feb – Oct 15

Field Component

Peracto Pty Ltd prepared a draft Study Plan for the study, as per OECD GLP Guideline for residue studies. The draft Study Plan was distributed to the HIA Project Reference Group and the Quality Assurance section of Peracto Pty Ltd for comment. After all comments were considered, the final Study Plan was prepared and given to the Study Director for signing and then sent to the Sponsor representative for signing. A copy of the signed Study Plan was then sent to all relevant personnel involved in the Study.

Field sites were selected in commercial crops grown under Good Agricultural Practice at locations where the nominated crop is commonly grown. Specific site details and requirements were as per the approved Study Plan and the Standard Operating Procedures (SOPs) of Peracto Pty Ltd. Test plots were an un-replicated plot design and marked on an area as determined in the Study Plan with sufficient separation between treated and untreated plots. Plots were clearly identified as detailed in the Study Plan.

Treatments were applied using calibrated hand spray equipment incorporating a nozzle configuration appropriate for the particular crop and application method which simulated best commercial practice.

The application number and frequency followed schedules listed in the Study Plan at all sites. Sampling was carried out by hand as described in the Study Plan with samplings detailed in the Results component of this report. The appropriate documentation was completed, with relevant SOPs adhered to that were relevant to the crop and plant portion to be sampled and analysed. Samples were labelled as described in the Study Plan and then immediately packed into an appropriate vessel and returned to the test site freezer. Frozen samples were dispatched upon completion of the study to the Analytical Laboratory.

All stages of the process were monitored by the Peracto QA team with appropriate reports being presented in the final report. The nominal treatment information and sample timings for all trials were as follows in Table 3.

Table 3: Trial requirements - application and sampling details

Study Number	Site	Trt.	Test Item	Rate of Test Item	Rate of Active	Application Timings	Application Volume	Sample Timing
PER12712	1	T1	Untreated Control	Nil	N/A	N/A	N/A	Commercial Harvest (coinciding with 3 DALA for T2)
		T2	Buprofezin (Applaud 440 SC)	60 mL/100L (max 600 mL product/ha)	26.4 g a.i./100L	17 and 3 DBH	Just prior to the point of runoff	0, 1, 3 and 7 DALA
	3	T1	Untreated Control	Nil	N/A	N/A	N/A	Foliage: 10 DBH. Whole Plant: Commercial Harvest (coinciding with 3 DALA)
		T2	Buprofezin (Applaud 440 SC)	600 mL/ha product/ha	264 g a.i./ha	17 and 3 DBH	Sufficient to obtain even coverage and penetration of plants	Foliage: 10 DBH. Whole plant: 0, 1, 3 and 7 DALA
PER12846	1 & 3	T1	Untreated Control	Nil	N/A	N/A	N/A	Commercial Harvest (coinciding with 0 DALA of T2)
		T2	Abamectin (Vertimec)	450 mL/ha	8.1 g a.i./ha	28 and 0 DBH	Sufficient to obtain even coverage	0, 1, 3 and 7 DALA
		T3	Abamectin (Vertimec)	900 mL/ha	16.2 g a.i./ha			

Study Number	Site	Trt.	Test Item	Rate of Test Item	Rate of Active	Application Timings	Application Volume	Sample Timing
PER13304	2, 3 and 4	T1	Untreated Control	Nil	N/A	N/A	N/A	Commercial Harvest (coinciding with 7 DALA sample of T2)
		T2	Etoxazole (Paramite Selective Miticide)	35 mL/ 100 L or 350 mL/ha	3.85 g a.i./100 L or 38.5 g a.i./ha	7 DBH	Sufficient to obtain even coverage and penetration of plants	0, 3, 5 and 7 DALA
PER14164	1, 3, 4, 5, 6, 7, 8 and 9	T1	Untreated Control	Nil	N/A	N/A	N/A	Commercial Harvest (coinciding with 28 DALA sample of T2)
		T2	clethodim (Status 240 EC Herbicide) (plus Hasten at 1 L/100L)	500 mL/ha	120 g a.i./ha	28 DBH	Sufficient to obtain even coverage and penetration of plants, minimum 50 L/ha	14, 21 and 28 DALA

Study Number	Site	Trt.	Test Item	Rate of Test Item	Rate of Active	Application Timings	Application Volume	Sample Timing
PER14211	2, 3 and 4	T1	Untreated Control	Nil	N/A	N/A	N/A	Pods – Commercial Harvest (coinciding with 1 DALA sample of T2)
								Foliage – 3 DALA
		T2	fenhexamid (Teldor 500 SC Fungicide)	1 L/ha where spray volume is less than 1000 L/ha or 100 mL/100L where spray volume exceeds 1000 L/ha	500 g a.i./ha or 50 g a.i./100L	8 and 1 DBH	500 – 1500 L/ha	Pods – 0, 1 and 3 DALA
								Foliage – 3 DALA
PER14353	1, 2, 3, 4 and 5	T1	Untreated Control	Nil	N/A	N/A	N/A	Commercial Harvest (coinciding with 7 DALA sample of T2)
		T2	iprodione (Chief Aquaflo Fungicide)	1 L/ha where spray colume is less than 1000 L/ha or 100 mL/100L where spray volume equals or exceeds 1000 L/ha	500 g a.i./ha or 50 g a.i./100 L	21 and 7 DBH	Sufficient to obtain even coverage and penetration of plants	0, 3,7 and 10 DALA

Study Number	Site	Trt.	Test Item	Rate of Test Item	Rate of Active	Application Timings	Application Volume	Sample Timing
PER14454	1 and 2	T1	Untreated Control	Nil	N/A	N/A	N/A	Commercial Harvest (coinciding with the 7 DALA sample of T2)
		T2	mancozeb & metalaxyl-M (Ridomil Gold MZ WG Systemic and Protective Fungicide)	250 g/100L or 2.5 kg/ha in a spray volume of 200 – 500 L/ha, Non-ionic surfactant to be added at label rate	160+10 g a.i./100 L or 1600+100 g a.i./ha	14 and 7 DBH	Sufficient to obtain even coverage and penetration of plants (200 – 500 L/ha)	0, 3, 7 and 10 DALA
PER14456	1, 3 and 4	T1	Untreated Control	Nil	N/A	N/A	N/A	Commercial Harvest (coinciding with 35 DALA sample of T2)
		T2	tebuconazole (Folicur 430 SC Fungicide)	350 mL/ha	150.5 g a.i./ha	42 and 35 DBH	Sufficient to obtain even coverage and penetration of plants	0, 14, 21 and 35 DALA

Analytical Component
Samples were sent frozen from the field test sites to Eurofins Agroscience Testing Pty Ltd or the Australian Wine Research Institute (AWRI) as per the Study Plan or applicable Study Plan Amendment, where the laboratory supervised the analytical component of the project. The laboratory acknowledged receipt of the residue samples, and the samples were analysed as per the Study Plan and the appropriate analytical method. The laboratory report was sent to the Study Director for inclusion in a composite Study Report.

Analytical Methods:

PER12712 (Euorfins Agroscience Testing Pty Ltd) – "Determination of Multi-Pesticide Residues in Plant using DSPE", AATM-S-60.1, Rev.4, January 2015, Eurofins Agroscience Testing Pty Ltd.

A summary of the analytical method is presented as below:
Buprofezin residues are extracted from the blended homogenous samples with acetonitrile:water (9:1). An aliquot of the extract is taken and diluted. Buprofexin residues are determined by reverse-phase Ultra Performance Liquid Chromatography (UPLC) coupled with tandem mass spectrometric detection (MS-MS).

The above analytical method was validated by fortifying sub-samples of untreated control lettuce with known amounts of the test substance buprofezin. The fortified samples were then analysed using the defined method and the recovery of the test compound was determined

PER12846 (Eurofins Agroscience Testing Pty Ltd) – "Determination of Abamectin in Plant materials and Processed Fractions", AATM-R-11, Revision 6, January 2015, Eurofins Agroscience Testing Pty Ltd.

A summary of the analytical method is presented as below:
Abamectin residues are extracted from the blended homogenous samples with ethyl acetate. The extract is washed with water then evaporated to dryness. The residuum is reconstituted in hexane. An aliquot of the hexane is taken and cleaned up using an NH_2SPE cartridge. Residues of abamectin are eluted from the cartridge with acetone: dichloromethane (2:1, v/v) and then evaporated to dryness. The analytes are converted to the anhydro derivative with N-methyl imidazole and trifluoroacetic anhydride. Final determination of the derivatised abamectin is via reversed phase HPLC with fluorescence detection against a series of standards similarly derivatised. Note: Avermectin B_{1a} and its 9,9-Z isomer form a single anhydro derivative compound as does avermectin B_{1b} and its 8,9-Z isomer, hence if any 8,9-Z isomer is present in the forage samples it will be reported as abamectin.

The above analytical method was validated by fortifying sub-samples of untreated control snow pea forage and sugar snap pea forage with known amounts of the test substance abamectin. The fortified samples were then analysed using the defined method and the recovery of the test compound was determined.

PER13304 (Eurofins Agroscience Testing Pty Ltd) – "Determination of Multi-Pesticide Residues in Plant using DSPE", AATM-S-60.1, Rev. 4, January 2015, Eurofins Agroscience Testing Pty Ltd.

A summary of the method is presented below:
Etoxazole residues are extracted from the blended homogenous samples with acetonitrile:water (9:1).

An aliquot of the extract is taken and diluted. Etoxazole residues are determined by reverse-phase Ultra Performance Liquid Chromatography (UPLC) coupled with tandem mass spectrometric detection (MS-MS).

The above analytical method was validated by fortifying sub-samples of untreated control of cucumber and zucchini with known amounts of the test substance etoxazole. The fortified samples were then analysed using the defined method and the recovery of the test compound was determined.

PER14164 (Eurofins Agroscience Testing Pty Ltd) – Field specimens were sent to Eurofins Agroscience Testing Pty Ltd where they were prepared for analysis. However due to substantial delays obtaining the required analytical standards, the field specimens and analytical phase were transferred to the Australian Wine Research Institute (AWRI).
(Australian Wine Research Institute) – "GM152 - Determination of clethodim residues in fruit and vegetables using liquid chromatography and mass spectrometry (LC/MS/MS)".

A summary of the method is presented below:
10 g subsample of homogenate was weighted into a 50 mL centrifuge with 0.1 mL of surrogate standard solution (10 µg/mL triphenyl phosphate) with two glass beads. 15 mL of acetonitrile (1% acetic acid) was added and the tube shaken for approximately one (1) minute. 1 mL of 3M sulphuric acid was added and vortexed to mix. Metachloroperbenzoic acid (MCPBA) was added and the sample tube shaken for a further one (1) minute). The extract was heated at 50 °C for approximately thirty (30) minutes. 10 mL of sodium thiosulphate was added and shaken for 1 minute, then centrifuged. A 0.5 mL aliquot of the supernatant was added to a glass test tube and diluted with 0.5 mL 25% methanol/0.005% formic acid/0.01% EDTA solution and mixed. The final extract was filtered directly into the 2 mL GC vial, and then analysed using an Agilent 1290 liquid chromatograph (LC) with 64+0C mass spectrometer (MS/MS).

PER14211 (Eurofins Agroscience Testing Pty Ltd) – "Determination of Multi-Pesticide Residues in Plant using DSPE", AATM-S-60.1, Revision 4, January 2015, Eurofins Agroscience Testing Pty Ltd".

A summary of the method is presented below:
Fenhexamid residues are extracted from the blended homogenous samples with acetonitrile water (9:1). An aliquot of the extract is taken and diluted. Fenhexamid residues are determined by reverse-phase Ultra Performance Liquid Chromatography (UPLC) coupled with tandem mass spectrometric detection (MS-MS).
The above analytical method was validated by fortifying sub-samples of untreated control of sugar snap peas with known amounts of the test substance fenhexamid. The fortified samples were then analysed using the defined method and the recovery of the test compound was determined.

PER14353 (Eurofins Agroscience Testing Pty Ltd) – "Determination of Multi-Pesticide Residues in Plant using DSPE", AATM-S-60.1, Rev. 4, January 2015, Eurofins Agroscience Testing Pty Ltd".
A summary of the method is presented below:

Iprodione residues are extracted from the blended homogenous samples with acetonitrile water (9:1). An aliquot of the extract is taken and diluted. Iprodione residues are determined by reverse-phase Ultra Performance Liquid Chromatography (UPLC) coupled with tandem mass spectrometric detection (MS-

MS).
The above analytical method was validated by fortifying sub-samples of untreated control of capsicum and chilli with known amounts of the test substance iprodione. The fortified samples were then analysed using the defined method and the recovery of the test compound was determined.

PER14454 (Eurofins Agroscience Testing Pty Ltd) – "Determination of Dithiocarbamate Fungicide Residues by Carbon Disulphide Generation & GC/MS in Fresh Fruit and Vegetables". AATM-S-56a, Rev.2, May 2012, Agrisearch Analytical Pty Ltd.

A summary of the method is presented below:
Dithiocarbamate fungicide residues in crops are hydrolysed to carbon disulphide in the presence of hydrochloric acid, stannous chloride, and iso-octane with heating. The carbon disulphide evolved is extracted into the iso-octane layer, which is analysed by Gas Chromatography Mass Spectrometry. Quantitation is via CS_2 standards using chloroform as an internal standard.

The above analytical method was validated by fortifying sub-samples of untreated control capsicum and chilli with known amounts of the test substance mancozeb. The fortified samples were then analysed using the defined method and the recovery of the test compound for each sample expressed as CS_2 was determined.

PER14456 (Eurofins Agroscience Testing Pty Ltd) - "Determination of Multi-Pesticide Residues in Plant using DSPE", AATM-S-60.1, Rev. 4, January 2015, Eurofins Agroscience Testing Pty Ltd".

A summary of the method is presented below:
Tebuconazole residues are extracted from the blended homogenous samples with acetonitrile: water (9:1). An aliquot of the extract is taken and diluted. Tebuconazole residues are determined by reverse-phase Ultra Performance Liquid Chromatography (UPLC) coupled with tandem mass spectrometric detection (MS-MS).
The above analytical method was validated by fortifying sub-samples of untreated control of beetroot (leaves and roots), spinach and silverbeet with known amounts of the test substance tebuconazole. The fortified samples were then analysed using the defined method and the recovery of the test compound was determined.

Results

PER12712 Residue Study

GLP Study Title: Determination of residues of buprofezin in leafy lettuce (field and protected cropping).

This study was conducted at two field sites as follows:

Study Commencement Date	02/12/14	
Test Site	1	3
Locations	Devonport, TAS	Gatton, QLD
Field Phase Start Dates	17/03/15	09/06/15
Field Phase Completion Dates	16/04/15	10/07/15

The leafy lettuce to be treated in Tasmania (protected cropping) received two applications of buprofezin (Applaud 440 SC) at a nominal rate of 26.4 g a.i./ 100 L; the actual application rates were 24.5 g a.i./ 100 L for both 17 and 3 DBH applications. The leafy lettuce to be treated in Queensland (field) received two applications of buprofezin (Applaud 440 SC) at a nominal rate of 264 g a.i./ha; the actual application rates were 251.3 g a.i./ha for 17 DBH and 251.0 g a.i./ha for 3 DBH.

Whole plant specimens were collected at Site 1 (Tasmania) from the treated plot at 0, 1, 3 and 7 Days After Last Application (DALA). Specimens were collected from the untreated control at Commercial Harvest which coincided with the 3 DALA sample timing from the treated plot. A minimum of 10 plants were collected at all sample timings, from all areas of each plot to weigh at least 1 kg.

Leafy lettuce foliage specimens were collected at Site 3 (Queensland) from the treated plot at 10 Days Before Harvest (DBH), with whole plant specimens collected 0, 1, 3 and 7 Days After Last Application (DALA). Foliage specimens were collected from the untreated control at 10 DBH with whole plant specimens collected from the untreated control at Commercial Harvest which coincided with the 3 DALA sample timing from the treated plot. A minimum of 0.5 kg of leaves were collected from 12 separate plants. A minimum of 10 plants were collected for whole plant specimens at all sample timings, from all areas of each plot to weigh at least 1 kg.

Residues of buprofezin in leafy lettuce for each site are below.

Site 1 – Tasmania (protected cropping)

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ 100L)	Buprofezin (as received) (mg/kg)[1]
FI001	Whole Plant	T1	Commercial Harvest	Untreated Control	Nil	< LOD
FI002	Whole Plant	T2	0 DALA	Buprofezin (Applaud 440 SC)	26.4	3.98
FI003	Whole Plant	T2	1 DALA	Buprofezin (Applaud 440 SC)	26.4	2.39
FI004	Whole Plant	T2	3 DALA	Buprofezin (Applaud 440 SC)	26.4	1.42
FI005	Whole Plant	T2	7 DALA	Buprofezin (Applaud 440 SC)	26.4	1.57

DALA = Days After Last Application
[1] LOD = Limit of Detection = 0.003 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg

Site 3 – Queensland (field)

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ ha)	Buprofezin (as received) (mg/kg)[1]
FI013	Foliage	T1	10 DBH	Untreated Control	Nil	< LOD
FI014	Whole Plant	T1	Commercial Harvest	Untreated Control	Nil	< LOD
FI015	Foliage	T2	10 DBH	Buprofezin (Applaud 440 SC)	264	1.12
FI016	Whole Plant	T2	0 DALA	Buprofezin (Applaud 440 SC)	264	7.37
FI017	Whole Plant	T2	1 DALA	Buprofezin (Applaud 440 SC)	264	7.14
FI018	Whole Plant	T2	3 DALA	Buprofezin (Applaud 440 SC)	264	6.17
FI019	Whole Plant	T2	7 DALA	Buprofezin (Applaud 440 SC)	264	0.83

DALA = Days After Last Application
[1] LOD = Limit of Detection = 0.003 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg

PER12846 Residue Study

GLP Study Title: Determination of residues of abamectin in snow peas (forage) and sugar snap peas (forage).

This study was conducted at two field sites as follows:

Study Commencement Date	02/12/14	
Test Site	1	3
Locations	Bundaberg, QLD	Forth, TAS
Crop	Snow Peas	Sugar Snap Peas
Field Phase Start Dates	04/06/15	13/04/15
Field Phase Completion Dates	26/08/15	27/05/15

The snow peas and sugar snap peas to be treated received two application of abamectin (Vertimec) at a nominal rate of 8.1 and 16.2 g a.i./ha; the actual application rates were between 8.4 – 8.9 g a.i./ha and 17.2 – 17.9 g a.i./ha.

Forage (whole plant) specimens were collected at commercial harvest (0 DALA) for the untreated control, while treated plots were collected at 0, 1, 3 and 7 Days After Last Application (DALA). All above ground parts of the plant were sampled i.e. pods and foliage, to achieve a minimum specimen weight of 1 kg. Only mature, commercially viable plants were sampled.

Residues of abamectin in snow peas and sugar snap peas for each site are below.

Site 1 (Queensland – Snow peas)

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha	Total abamectin (as received basis) (mg/kg)	% Moisture	Total abamectin (as dry basis) (mg/kg)[1]
FI001	Forage (whole plant)	T1	Commercial Harvest	Untreated Control	Nil	< LOD	79.6	< LOD
FI002	Forage (whole plant)	T2	0 DALA	abamectin (Vertimec)	8.1	0.039	80.6	0.20
FI003	Forage (whole plant)	T3	0 DALA	abamectin (Vertimec)	16.2	0.16	80.6	0.81
FI004	Forage (whole plant)	T2	1 DALA	abamectin (Vertimec)	8.1	0.009*	81.2	0.047*
FI005	Forage (whole plant)	T3	1 DALA	abamectin (Vertimec)	16.2	0.064	79.2	0.31
FI006	Forage (whole plant)	T2	3 DALA	abamectin (Vertimec)	8.1	0.006*	79.4	0.027*
FI007	Forage (whole plant)	T3	3 DALA	abamectin (Vertimec)	16.2	0.009*	79.2	0.044*
FI008	Forage (whole plant)	T2	7 DALA	abamectin (Vertimec)	8.1	< LOD	76.6	< LOD
FI009	Forage (whole plant)	T3	7 DALA	abamectin (Vertimec)	16.2	0.008*	75.5	0.034*

DALA = Days After Last Application

^Note Abamectin = Sum of avermectin $B1_a$, avermectin $B1_b$, (Z)-8,9 avermectin $B1_a$ and (Z)-8,9 avermectin $B1_b$

Note: Abamectin results for forage samples are corrected for moisture content.

Note: Results marked with * are between LOD and LOQ, as reported values are less than the LOQ, by definition, their accuracy and precision cannot be verified.

[1]LOD = Limit of Detection = 0.003 mg/kg

[1]LOQ = Limit of Quantitation = 0.01 mg/kg

Site 3 (Tasmania – Sugar snap peas)

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha	Total abamectin (as received basis) (mg/kg)	% Moisture	Total abamectin (as dry basis) (mg/kg)[1]
FI019	Forage (whole plant)	T1	Commercial Harvest	Untreated Control	Nil	< LOD	84.6	< LOD
FI020	Forage (whole plant)	T2	0 DALA	abamectin (Vertimec)	8.1	0.077	86.8	0.58
FI021	Forage (whole plant)	T3	0 DALA	abamectin (Vertimec)	16.2	0.27	86.1	1.94
FI022	Forage (whole plant)	T2	1 DALA	abamectin (Vertimec)	8.1	0.007*	87.9	0.056*
FI023	Forage (whole plant)	T3	1 DALA	abamectin (Vertimec)	16.2	0.024	86.7	0.18
FI024	Forage (whole plant)	T2	3 DALA	abamectin (Vertimec)	8.1	0.006*	86.8	0.046*
FI025	Forage (whole plant)	T3	3 DALA	abamectin (Vertimec)	16.2	0.018	86.4	0.13
FI026	Forage (whole plant)	T2	7 DALA	abamectin (Vertimec)	8.1	0.004*	87.4	0.034*
FI027	Forage (whole plant)	T3	7 DALA	abamectin (Vertimec)	16.2	0.014	86.9	0.11

DALA = Days After Last Application

^Note Abamectin = Sum of avermectin $B1_a$, avermectin $B1_b$, (Z)-8,9 avermectin $B1_a$ and (Z)-8,9 avermectin $B1_b$

Note: Abamectin results for forage samples are corrected for moisture content.

Note: Results marked with * are between LOD and LOQ, as reported values are less than the LOQ, by definition, their accuracy and precision cannot be verified.

[1]LOD = Limit of Detection = 0.003 mg/kg

[1]LOQ = Limit of Quantitation = 0.01 mg/kg

PER13304 Residue Study

GLP Study Title: Determination of residues of etoxazole in cucumbers (protected cropping) and zucchini (protected cropping) following a single application.

This study was conducted at three field sites as follows:

Study Commencement Date	02/12/14		
Test Site	2	3	4
Locations	Northdown, TAS	MacDonald Park SA	Alloway, QLD
Crop	Cucumber	Zucchini	Cucumber
Field Phase Start Dates	25/03/15	17/07/15	27/05/15
Field Phase Completion Dates	16/04/15	24/07/15	05/06/15

The cucumbers and zucchinis to be treated received one application of etoxazole (Paramite Selective Miticide) at a nominal rate of 3.85 g a.i./100 L or 38.5 g a.i./ha; the actual application rate was 3.40 g a.i./ 100 L for all sites

Treated plots of cucumber or zucchini fruit were collected at 0, 3, 5 and 7 Days After Last Application (DALA). The untreated control was sampled at commercial harvest, coinciding with 7 DALA of the treated plots. Twelve fruit were collected from twelve separate plants in each plot to achieve a minimum weight of 2 kg.

Residues of etoxazole in cucumbers and zucchinis for each site are below.

Site 2 Tasmania, cucumber (protected cropping)

Specimen ID	**Specimen Type**	**Treatment Number**	**Sample Timing**	**Test Item**	**Rate of Active**	**Etoxazole (as received) (mg/kg)[1]**
FI006	Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD
FI007	Fruit	T2	0 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.021
FI008	Fruit	T2	3 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.026
FI009	Fruit	T2	5 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.015
FI010	Fruit	T2	7 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.010

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.003 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg

Site 3 South Australia, zucchini (protected cropping)

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active	Etoxazole (as received) (mg/kg)[1]
FI011	Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD
FI012	Fruit	T2	0 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.036
FI013	Fruit	T2	3 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.023
FI014	Fruit	T2	5 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.015
FI015	Fruit	T2	7 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.008*

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.003 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg
Note: Results marked with * are between LOD and LOQ as the reported values are less than the LOQ, by definition , their accuracy and precision cannot be verified.

Site 4 Queensland, cucumber (protected cropping)

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active	Etoxazole (as received) (mg/kg)[1]
FI016	Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD
FI017	Fruit	T2	0 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.034
FI018	Fruit	T2	3 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.039
FI019	Fruit	T2	5 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.037
FI020	Fruit	T2	7 DALA	Etoxazole (Paramite Selective Miticide)	3.85 g a.i./100L or 38.5 g a.i./ha	0.016

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.003 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg

PER14164 Residue Study

GLP Study Title: Determination of residues of clethodim in cauliflower, broccoli and Brussels Sprouts following a single application.

This study was conducted at two field sites as follows:

Study Commencement Date	02/12/14			
Test Site	1	3	4	5
Locations	Lancelin, WA	Forth, TAS	Devonport, TAS	Kindred, TAS
Crop	Cauliflower	Cauliflower	Broccoli	Brussels sprouts
Field Phase Start Dates	10/04/15	27/04/15	22/06/15	01/05/15
Field Phase Completion Dates	11/05/15	10/06/15	29/07/15	10/06/15

Study Commencement Date	02/12/14			
Test Site	6	7	8	9
Locations	Gatton, QLD	Glenore Grove, QLD	Oakbank, SA	Werribee South, VIC
Crop	Broccoli	Cauliflower	Brussels sprouts	Broccoli
Field Phase Start Dates	08/05/15	22/06/15	12/12/14	04/02/15
Field Phase Completion Dates	10/06/15	14/08/15	10/03/15	10/03/15

The cauliflower, broccoli and Brussels Sprouts to be treated received one application of clethodim at a nominal rate of 120 g a.i./ha; the actual application rates were between 110.1 and 122.8 g a.i./ha.

Treated plots of cauliflower and broccoli heads or Brussels sprout buttons were collected at 14, 21 and 28 Days After Last Application (DALA) at all sites except for Site 9, where samples were collected at 14, 21 and 24 DALA. A minimum of 1 kg of buttons from 12 plants were collected from all areas of the plot. A minimum of 12 cauliflower or broccoli heads with stems were collected from all areas of the plot to achieve a minimum of 1 kg.

Residues of clethodim in cauliflower, broccoli and Brussels sprouts for each site are below.

Site 1 Western Australia, Cauliflower

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	clethodim Total Residues (mg/kg)	Sethoxydim Total Residues (mg/kg)[1]
VB001	Head	T1	Commercial Harvest	Untreated Control	Nil	< LOD	< LOD
VB002	Head	T2	14 DALA	Status 240 EC Herbicide	120	0.186 (0.186)	0.169 (0.170)
VB003	Head	T2	21 DALA	Status 240 EC Herbicide	120	0.086	0.078
VB004	Head	T2	28 DALA	Status 240 EC Herbicide	120	0.088	0.080

DALA = Days After Last Application
Note: Commercial Harvest coincided with 28 DALA sample timing for T2
Note 2: Results in brackets indicate duplicate analysis conducted
[1]LOD = Limit of Detection = 0.01 mg/kg
[1]LOQ = Limit of Quantitation = 0.025 mg/kg

Site 3 Tasmania, Cauliflower

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	clethodim Total Residues (mg/kg)	Sethoxydim Total Residues (mg/kg)[1]
VB009	Head	T1	Commercial Harvest	Untreated Control	Nil	< LOD	< LOD
VB010	Head	T2	14 DALA	Status 240 EC Herbicide	120	0.250 (0.294)	0.227 (0.267)
VB011	Head	T2	21 DALA	Status 240 EC Herbicide	120	0.191	0.174
VB012	Head	T2	28 DALA	Status 240 EC Herbicide	120	0.274	0.250

DALA = Days After Last Application
Note: Commercial Harvest coincided with 28 DALA sample timing for T2
Note 2: Results in brackets indicate duplicate analysis conducted
[1]LOD = Limit of Detection = 0.01 mg/kg
[1]LOQ = Limit of Quantitation = 0.025 mg/kg

Site 4 Tasmania, Broccoli

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	clethodim Total Residues (mg/kg)	Sethoxydim Total Residues (mg/kg)[1]
VB013	Head	T1	Commercial Harvest	Untreated Control	Nil	< LOD	< LOD
VB014	Head	T2	14 DALA	Status 240 EC Herbicide	120	0.348 (0.333)	0.316 (0.303)
VB015	Head	T2	21 DALA	Status 240 EC Herbicide	120	0.303	0.275
VB016	Head	T2	28 DALA	Status 240 EC Herbicide	120	0.192	0.175

DALA = Days After Last Application
Note: Commercial Harvest coincided with 28 DALA sample timing for T2
Note 2: Results in brackets indicate duplicate analysis conducted
[1]LOD = Limit of Detection = 0.01 mg/kg
[1]LOQ = Limit of Quantitation = 0.025 mg/kg

Site 5 Tasmania, Brussels sprouts

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	clethodim Total Residues (mg/kg)	Sethoxydim Total Residues (mg/kg)[1]
VB017	Buttons	T1	Commercial Harvest	Untreated Control	Nil	< LOD	< LOD
VB018	Buttons	T2	14 DALA	Status 240 EC Herbicide	120	0.109 (0.110)	0.100 (0.100)
VB019	Buttons	T2	21 DALA	Status 240 EC Herbicide	120	0.100	0.091
VB020	Buttons	T2	28 DALA	Status 240 EC Herbicide	120	0.123	0.112

DALA = Days After Last Application
Note: Commercial Harvest coincided with 28 DALA sample timing for T2
Note 2: Results in brackets indicate duplicate analysis conducted
[1]LOD = Limit of Detection = 0.01 mg/kg
[1]LOQ = Limit of Quantitation = 0.025 mg/kg

Site 6 Queensland, Broccoli

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	clethodim Total Residues (mg/kg)	Sethoxydim Total Residues (mg/kg)[1]
VB021	Head	T1	Commercial Harvest	Untreated Control	Nil	< LOD	< LOD
VB022	Head	T2	14 DALA	Status 240 EC Herbicide	120	0.162 (0.163)	0.147 (0.149)
VB023	Head	T2	21 DALA	Status 240 EC Herbicide	120	0.098	0.089
VB024	Head	T2	28 DALA	Status 240 EC Herbicide	120	0.115	0.105

DALA = Days After Last Application
Note: Commercial Harvest coincided with 28 DALA sample timing for T2
Note 2: Results in brackets indicate duplicate analysis conducted
[1]LOD = Limit of Detection = 0.01 mg/kg
[1]LOQ = Limit of Quantitation = 0.025 mg/kg

Site 7 Queensland, Cauliflower

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	clethodim Total Residues (mg/kg)	Sethoxydim Total Residues (mg/kg)[1]
VB025	Head	T1	Commercial Harvest	Untreated Control	Nil	< LOD	< LOD
VB026	Head	T2	14 DALA	Status 240 EC Herbicide	120	0.342 (0.355)	0.311 (0.323)
VB027	Head	T2	21 DALA	Status 240 EC Herbicide	120	0.193	0.176
VB028	Head	T2	28 DALA	Status 240 EC Herbicide	120	0.152	0.138

DALA = Days After Last Application
Note: Commercial Harvest coincided with 28 DALA sample timing for T2
Note 2: Results in brackets indicate duplicate analysis conducted
[1]LOD = Limit of Detection = 0.01 mg/kg
[1]LOQ = Limit of Quantitation = 0.025 mg/kg

Site 8 South Australia, Brussels sprouts

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	clethodim Total Residues (mg/kg)	Sethoxydim Total Residues (mg/kg)[1]
VB029	Buttons	T1	Commercial Harvest	Untreated Control	Nil	< LOD	< LOD
VB030	Buttons	T2	14 DALA	Status 240 EC Herbicide	120	0.092 (0.090)	0.083 (0.082)
VB031	Buttons	T2	21 DALA	Status 240 EC Herbicide	120	0.061	0.055
VB032	Buttons	T2	28 DALA	Status 240 EC Herbicide	120	0.030	0.027

DALA = Days After Last Application
Note: Commercial Harvest coincided with 28 DALA sample timing for T2
Note 2: Results in brackets indicate duplicate analysis conducted
[1]LOD = Limit of Detection = 0.01 mg/kg
[1]LOQ = Limit of Quantitation = 0.025 mg/kg

Site 9 Victoria, Broccoli

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	clethodim Total Residues (mg/kg)	Sethoxydim Total Residues (mg/kg)[1]
VB033	Head	T1	Commercial Harvest	Untreated Control	Nil	< LOD	< LOD
VB034	Head	T2	14 DALA	Status 240 EC Herbicide	120	0.212 (0.214)	0.193 (0.194)
VB035	Head	T2	21 DALA	Status 240 EC Herbicide	120	0.218	0.198
VB036	Head	T2	24 DALA	Status 240 EC Herbicide	120	0.169	0.154

DALA = Days After Last Application
Note: Commercial Harvest coincided with 28 DALA sample timing for T2
Note 2: Results in brackets indicate duplicate analysis conducted
[1]LOD = Limit of Detection = 0.01 mg/kg
[1]LOQ = Limit of Quantitation = 0.025 mg/kg

PER14211
GLP Study Title: Determination of residues of fenhexamid in sugar snap peas (field and protected cropping).

This study was conducted at three field sites as follows:

Study Commencement Date	02/12/14		
Test Site	2 (cancelled site)	3	4
Locations	Gatton, QLD	Forth, TAS	Gatton, QLD
Crop	Sugar snap peas (protected cropping)	Sugar snap peas (field)	Sugar snap peas (protected cropping)
Field Phase Start Dates	27/07/15	13/05/15	15/05/16
Field Phase Completion Dates	14/08/15	27/05/15	24/05/16

The sugar snap peas to be treated received two applications of fenhexamid at 8 and 1 Days Before Harvest (DBH), except for site 2 and 3 that received applications at 9 and 1 DBH. Applications were made at a nominal rate of 500 g a.i./ha or 50 g a.i./100 L; the actual application rate was between 239.4 and 502.0 g a.i./ha.

Treated plots of sugar snap pea pods were collected at 0, 1 and 3 DALA Days After Last Application (DALA). The untreated control was sampled at commercial harvest, coinciding with 1 DALA of the treated plots, except Site 2 where pods from the Untreated Control were collected at 3 DALA. Only commercially viable pods were collected. Foliage specimes were collected at 3 DALA for both the treated and untreated plots. Foliage specimens consisted of all above ground parts of the plants with no pods included in the sample. A minimum of weight of 1 kg was collected for both sample pod and foliage specimens.

Residues of fenhexamid in sugar snap peas (field and protected cropping) for each site are below.

Site 2 – Queensland – Sugar snap peas (Protected Cropping) – Cancelled site

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	Fenhexamid (as received basis) (mg/kg)	% Moisture	Fenhexamid (as dry basis) Total Residues (mg/kg)[1]
FI007	Pods	T1	3 DALA[2]	Untreated Control	Nil	< LOD	-	-
FI008	Pods	T2	0 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	0.46	-	-
FI009	Pods	T2	1 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	0.36	-	-
FI010	Pods	T2	3 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	0.37	-	-
FI011	Foliage	T2	3 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	8.44	84.2	53.2
FI012	Foliage	T1	3 DALA	Untreated Control	Nil	< LOD	84.0	< LOD

DALA = Days After Last Application

[1]LOD = Limit of Detection = 0.003 mg/kg

[1]LOQ = Limit of Quantitation = 0.01 mg/kg

Note [2]: See Deviation D-PER14211-03

Note [3]: Fenhexamid results for foliage samples are corrected for the moisture content. Fenhexamid results for pods samples are calculated on "as received" basis only

Site 3 – Tasmania – Sugar snap peas (Field)

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	Fenhexamid (as received basis) (mg/kg)	% Moisture	Fenhexamid (as dry basis) Total Residues (mg/kg)[1]
FI013	Pods	T1	Commercial Harvest (1 DALA)	Untreated Control	Nil	< LOD	-	-
FI014	Foliage	T1	3 DALA	Untreated Control	Nil	0.049 (0.048)	85.1	0.33 (0.32)
FI015	Pods	T2	0 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	1.50	-	-
FI016	Pods	T2	1 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	1.27	-	-
FI017	Pods	T2	3 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	1.22	-	-
FI018	Foliage	T2	3 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	11.5	85.6	79.7

DALA = Days After Last Application

[1]LOD = Limit of Detection = 0.003 mg/kg

[1]LOQ = Limit of Quantitation = 0.01 mg/kg

Note [2]: Fenhexamid results for foliage samples are corrected for the moisture content. Fenhexamid results for pods samples are calculated on "as received" basis only.

Note [3]: Results in brackets are duplicate analyses

Site 4 – Queensland – Sugar snap peas (Protected Cropping)

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	Fenhexamid (as received basis) (mg/kg)	% Moisture	Fenhexamid (as dry basis) Total Residues (mg/kg)[1]
FI019	Pods	T1	Commercial Harvest (1 DALA)	Untreated Control	Nil	≤ LOD	-	-
FI020	Foliage	T1	3 DALA	Untreated Control	Nil	≤ LOD	82.7	< LOD
FI021	Pods	T2	0 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	1.28	-	-
FI022	Pods	T2	1 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	1.27	-	-
FI023	Pods	T2	3 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	0.72	-	-
FI024	Foliage	T2	3 DALA	Fenhexamid (Teldor 500 SC Fungicide)	500	8.84	83.7	54.26

DALA = Days After Last Application

[1]LOD = Limit of Detection = 0.003 mg/kg

[1]LOQ = Limit of Quantitation = 0.01 mg/kg

Note [2]: Fenhexamid results for foliage samples are corrected for the moisture content. Fenhexamid results for pods samples are calculated on "as received" basis only

PER14353 Residue Study

GLP Study Title: Determination of residues of iprodione in chillies and capsicums.

This study was conducted at five field sites as follows:

Study Commencement Date	02/12/14				
Test Site	1	2	3	4	5
Locations	Bowen, QLD	Bowen, QLD	Bundaberg, QLD	Bundaberg, QLD	Carabooda, WA
Crop	Chilli	Capsicum	Chilli	Capsicum	Capsicum
Field Phase Start Dates	12/06/15	15/05/15	27/05/15	07/05/15	10/03/15
Field Phase Completion Dates	14/07/15	22/06/15	26/06/15	05/06/15	15/04/15

The chillies and capsicums to be treated received two applications of iprodione at 21 and 7 Days Before Harvest (DBH) at anominal rate of 500 g a.i./ha; the actual application rate was between 470.2 and 517.2 g a.i./ha.

Treated plots of chilli or capsicum fruit were collected at 0, 3, 7 and 10 Days After Last Application (DALA). The untreated control was sampled at commercial harvest, coinciding with 7 DALA of the treated plots. A minimum of 24 chilli fruit or 12 capsicum fruit were collected to achieve a minimum weight of 2 kg, except for Site 3 where specimens were between 1.1 and 1.5 kg.

Residues of iprodione in chillies and capsicums for each site are below

Site 1 – North Queensland, Chilli

Specimen ID	**Specimen Type**	**Treatment Type**	**Sample Timing**	**Test Item**	**Rate of Active**	**Iprodione (as received) (mg/kg)**
FI001	Chilli Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD
FI002	Chilli Fruit	T2	0 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.22
FI003	Chilli Fruit	T2	3 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.18
FI004	Chilli Fruit	T2	7 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.10
FI005	Chilli Fruit	T2	10 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.11

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.004 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg

Site 2 – North Queensland, Capsicum

Specimen ID	Specimen Type	Treatment Type	Sample Timing	Test Item	Rate of Active	Iprodione (as received) (mg/kg)
FI006	Capsicum Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD (< LOD)
FI007	Capsicum Fruit	T2	0 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.12 (0.11)
FI008	Capsicum Fruit	T2	3 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.29 (0.25)
FI009	Capsicum Fruit	T2	7 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.24 (0.22)
FI010	Capsicum Fruit	T2	10 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.052 (0.073)

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.004 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg
Note: Results in brackets indicate duplicate analysis conducted

Site 3 – Bundaberg, Chilli

Specimen ID	Specimen Type	Treatment Type	Sample Timing	Test Item	Rate of Active	Iprodione (as received) (mg/kg)
FI011	Chilli Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD (< LOD)
FI012	Chilli Fruit	T2	0 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.50 (0.60)
FI013	Chilli Fruit	T2	3 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.25 (0.35)
FI014	Chilli Fruit	T2	7 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.29 (0.38)
FI015	Chilli Fruit	T2	10 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.16 (0.19)

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.004 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg
Note: Results in brackets indicate duplicate analysis conducted

Site 4 – Bundaberg, Capsicum

Specimen ID	Specimen Type	Treatment Type	Sample Timing	Test Item	Rate of Active	Iprodione (as received) (mg/kg)
FI016	Capsicum Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD
FI017	Capsicum Fruit	T2	0 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.20
FI018	Capsicum Fruit	T2	3 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.15
FI019	Capsicum Fruit	T2	7 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.17
FI020	Capsicum Fruit	T2	10 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.092

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.004 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg

Site 5 – Western Australia, Capsicum

Specimen ID	Specimen Type	Treatment Type	Sample Timing	Test Item	Rate of Active	Iprodione (as received) (mg/kg)
FI021	Capsicum Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD
FI022	Capsicum Fruit	T2	0 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.21
FI023	Capsicum Fruit	T2	3 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.14
FI024	Capsicum Fruit	T2	7 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.13
FI025	Capsicum Fruit	T2	10 DALA	Iprodione (Chief Aquaflo Fungicide)	500 g a.i./ ha or 50 g a.i./100 L	0.17

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.004 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg

PER14454 Residue Study

GLP Study Title: Determination of residues of mancozeb & metalaxyl-M in chillies and capsicums.

This study was conducted at two field sites as follows:

Study Commencement Date	02/12/14	
Test Site	1	2
Locations	Bowen, QLD	Wanneroo, WA
Crop	Chilli	Capsicum
Field Phase Start Dates	19/06/15	17/03/15
Field Phase Completion Dates	14/07/15	15/04/15

The chillies and capsicums to be treated received two applications of mancozeb and metalaxyl-M (Ridomil Gold MZ WG Systemic and Protective Fungicide) at 14 and 7 days before harvest (DBH) at a nominal rate of 1600 g a.i./ha (mancozeb) and 100 g a.i./ha (metalaxyl-M); the actual application rate for mancozeb was between 1507.1 and 1568.7 g a.i./ha while metalaxyl-M was between 100.1 and 104.1 g a.i./ha.

Treated plots of chilli or capsicum fruit were collected at 0, 3, 7 and 10 Days After Last Application (DALA). The untreated control was sampled at commercial harvest, coinciding with 7 DALA of the treated plots. A minimum of 24 chilli fruit or 12 capsicum fruit were collected to achieve a minimum weight of 2 kg.

Residues of mancozeb and metalaxyl-M in chillies and capsicums for each site are below.

Site 1 – Queensland, Chilli (mancozeb)

Specimen ID	Specimen Type	Treatment Type	Sample Timing	Test Item	Rate of Active	Mancozeb (as CS_2) (mg/kg)	mancozeb (as received) total residues (mg/kg)
FI001	Chilli Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD	< LOD
FI002	Chilli Fruit	T2	0 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.76	1.34
FI003	Chilli Fruit	T2	3 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.41	0.72
FI004	Chilli Fruit	T2	7 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.38	0.67
FI005	Chilli Fruit	T2	10 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.18	0.32

DALA = Days After Last Application; Note: Conversation factor to convert CS_2 to mancozeb = 1.75
[1]LOD = Limit of Detection = 0.1 mg/kg
[1]LOQ = Limit of Quantitation = 0.2 mg/kg

Site 1 – Queensland, Chilli (metalaxyl-M)

Specimen ID	Specimen Type	Treatment Type	Sample Timing	Test Item	Rate of Active	metalaxyl (as received) total residues (mg/kg)
FI001	Chilli Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD
FI002	Chilli Fruit	T2	0 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.037
FI003	Chilli Fruit	T2	3 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.007*
FI004	Chilli Fruit	T2	7 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	< LOD
FI005	Chilli Fruit	T2	10 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	< LOD

DALA = Days After Last Application;
[1]LOD = Limit of Detection = 0.1 mg/kg
[1]LOQ = Limit of Quantitation = 0.2 mg/kg
Note: Results marked with * are between LOD and LOQ, as the reported values are less than the LOQ, by definition, their accuracy and precision cannot be verified.

Site 2 – Western Australia, Capsicum (mancozeb)

Specimen ID	Specimen Type	Treatment Type	Sample Timing	Test Item	Rate of Active	Mancozeb (as CS_2) (mg/kg)	Mancozeb (as received) Total residues (mg/kg)
FI006	Capsicum Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD	< LOD
FI007	Capsicum Fruit	T2	0 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.67	1.18
FI008	Capsicum Fruit	T2	3 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.50	0.88
FI009	Capsicum Fruit	T2	7 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.53	0.93
FI010	Capsicum Fruit	T2	10 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.46	0.81

DALA = Days After Last Application; Note: Conversation factor to convert CS_2 to mancozeb = 1.75
[1]LOD = Limit of Detection = 0.1 mg/kg
[1]LOQ = Limit of Quantitation = 0.2 mg/kg

Site 2 – Western Australia, Capsicum (metalaxyl-M)

Specimen ID	Specimen Type	Treatment Type	Sample Timing	Test Item	Rate of Active	Metalaxyl (as received) Total Residues (mg/kg)
FI006	Capsicum Fruit	T1	Commercial Harvest (7 DALA)	Untreated Control	Nil	< LOD
FI007	Capsicum Fruit	T2	0 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.049
FI008	Capsicum Fruit	T2	3 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.010
FI009	Capsicum Fruit	T2	7 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.007*
FI010	Capsicum Fruit	T2	10 DALA	Mancozeb & metalaxyl-M (Ridomil Gold MZ WG Fungicide)	1600 & 100 g a.i./ha	0.008*

DALA = Days After Last Application;
[1]LOD = Limit of Detection = 0.1 mg/kg
[1]LOQ = Limit of Quantitation = 0.2 mg/kg
Note: Results marked with * are between LOD and LOQ, as the reported values are less than the LOQ, by definition, their accuracy and precision cannot be verified.

PER14456 Residue Study

GLP Study Title: Determination of residues of tebuconazole in beetroot (leaves and roots), spinach and silverbeet.

This study was conducted at three field sites as follows:

Study Commencement Date	02/12/14		
Test Site	1	3	4
Locations	Northdown, TAS	Clyde, VIC	Gatton, QLD
Crop	Silverbeet	Spinach	Beetroot
Field Phase Start Dates	24/03/15	22/01/15	30/06/15
Field Phase Completion Dates	27/05/15	10/03/15	14/08/15

The beetroot, silverbeet and spinach to be treated received two applications of tebuconazole (Folicur 430 SC Fungicide) at a nominal rate of 150.5 g a.i./ha; the actual application rates were between 140.8 and 159.9 g a.i./ha.

Treated plots of beetroot, silverbeet and spinach were collected at 0, 14, 21 and 35 Days After Last Application (DALA), except for Site 1 where sampling occurred at 0 , 14, 20 and 35 DALA. The untreated control was sampled at commercial harvest, coinciding with 35 DALA of the treated plots. A minimum of 12 plants of silverbeet or spinach were collected while a minimum of 12 roots plus leaves were collected to give a minimum of 2 kg of beetroot.

Residues of tebuconazole in beetroot, silverbeet and spinach for each site are below.

Site 1 Tasmania, Silverbeet

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	Tebuconazole Total Residues (as received) (mg/kg)[1]
FI001	Whole Commodity	T1	Commercial Harvest (35 DALA)	Untreated Control	Nil	< LOD
FI002	Whole Commodity	T2	0 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	3.90
FI003	Whole Commodity	T2	14 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.22
FI004	Whole Commodity	T2	21 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.24
FI005	Whole Commodity	T2	35 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.028

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.003 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg

Site 3 Victoria, Spinach

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	Tebuconazole Total Residues (as received) (mg/kg)[1]
FI011	Whole Commodity	T1	Commercial Harvest (35 DALA)	Untreated Control	Nil	< LOD
FI012	Whole Commodity	T2	0 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	9.62
FI013	Whole Commodity	T2	14 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.017
FI014	Whole Commodity	T2	21 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.009*
FI015	Whole Commodity	T2	35 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.004*

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.003 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg
Note: Results marked with * are between LOD and LOQ, as reported values are less than LOQ by definition, their accuracy and precision cannot be verified.

Site 4 Queensland, beetroot leaves and roots

Specimen ID	Specimen Type	Treatment Number	Sample Timing	Test Item	Rate of Active (g a.i./ha)	Tebuconazole (roots) (as received) (mg/kg)[1]	Tebuconazole (leaves) (as received) (mg/kg)[1]	Tebuconazole Total whole commodity residues (as received) (mg/kg)[1]
FI016	Whole Commodity	T1	Commercial Harvest (35 DALA)	Untreated Control	Nil	< LOD	< LOD	< LOD
FI017	Whole Commodity	T2	0 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.20	8.94	9.14
FI018	Whole Commodity	T2	14 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.066	0.87	0.93
FI019	Whole Commodity	T2	21 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.15	0.71	0.87
FI020	Whole Commodity	T2	35 DALA	tebuconazole (Folicur 430 SC Fungicide)	150.5	0.023	0.18	0.20

DALA = Days After Last Application
[1]LOD = Limit of Detection = 0.003 mg/kg
[1]LOQ = Limit of Quantitation = 0.01 mg/kg
Note: Total tebuconazole for the whole commodity is calculated as tebuconazole roots (mg/kg) + tebuconazole leaves (mg/kg). The results were calculated using a computerized spreadsheet that used more decimal places than those displayed. As a result, the calculated values shown may vary slightly if the values are recalculated using displayed parameters

Outputs

PER12712

- **Study Plan (GLP Compliant)**
  A residue Study Plan was prepared;
  1. Determination of residues of buprofezin in leafy lettuce (field and protected cropping)

- **Analytical Report (GLP Compliant)**
  An analytical phase report was received from Eurofins Agroscience Testing Pty Ltd;
  1. Determination of residues of buprofezin in leafy lettuce (field and protected cropping) – Analytical Phase (12/10/15)

- **Final GLP Report (GLP Compliant)**
  A Final GLP Report incorporating the field trial details and analytical report was prepared;
  1. VG14038 PER12712 Final GLP Report

- **Permit Applications**
  Results from PER12712 residue study were submitted in permit applications to the APVMA as detailed below:

Target	Active Ingredient	Applicant	APVMA Number:	Submission Date	Status	Comments
Greenhouse whitefly, silverleaf whitefly and leafhoppers (Cucumbers, zucchini, squash/marrow, choko, eggplant, peppers, capsicum & leafy lettuce)	buprofezin (Applaud insecticide)	Queensland Fruit & Vegetable Growers	DC21-89327474 Application No: 105806 (PER82467)	26-Feb-16	Submitted	PER12712 Submitted a Item 21 with leafy lettuce residue data (VG14038/ PER12712)

PER12846

- **Study Plan (GLP Compliant)**
  A residue Study Plan was prepared;
  1. Determination of residues of abamectin in snow peas (forage) and sugar snap peas (forage)

- **Analytical Report (GLP Compliant)**
  An analytical phase report was received from Eurofins Agroscience Testing Pty Ltd;
  1. Determination of residues of abamectin in snow peas (forage) and sugar snap peas (forage)– Analytical Phase (19/10/15)

- **Final GLP Report (GLP Compliant)**
  A Final GLP Report incorporating the field trial details and analytical report was prepared;
  1. VG14038 PER12846 Final GLP Report

- **Permit Applications**
  Results from PER12846 residue study were submitted in permit applications to the APVMA as detailed below:

Target	Active Ingredient	Applicant	APVMA Number:	Submission Date	Status	Comments
Two spotted mite (snow peas, sugar snap peas & lettuce (hydroponically grown))	abamectin (Vertimec)	Queensland Fruit & Vegetable Growers	DC21-41394374 Application No: 105796 (PER82462)	26-Feb-16	Submitted	PER12846 Submitted a Item 21 with snow pea and sugar snap pea residue data (VG14038/ PER12846)

PER13304

- **Study Plan (GLP Compliant)**
  A residue Study Plan was prepared;
  1. Determination of residues of etoxazole in cucumbers (protected cropping) and zucchini (protected cropping) following a single application

- **Analytical Report (GLP Compliant)**
  An analytical phase report was received from Eurofins Agroscience Testing Pty Ltd;
  1. Determination of residues of etoxazole in cucumbers (protected cropping) and zucchini (protected cropping) following a single application – Analytical Phase (15/10/15)

- **Final GLP Report (GLP Compliant)**
  A Final GLP Report incorporating the field trial details and analytical report was prepared;
  1. VG14038 PER13304 Final GLP Report

- **Permit Applications**
  Results from PER13304 residue study were submitted in permit applications to the APVMA as detailed below:

Target	Active Ingredient	Applicant	APVMA Number:	Submission Date	Status	Comments
Two spotted mite & red spider mite (cucurbits: pumpkin, cucumber, zucchini, squash, chayote (except for root production); Asian cucurbits: Balsam pear, bottle gourd, smooth loofah, angled loofah, snake gourd, wax gourd, pointed gourd, ivy gourd)	etoxazole (Paramite selective miticide)	Queensland Fruit & Vegetable Growers	DC21-52916471 Application No: 105794 (PER82460)	26-Feb-16	Submitted	PER13304 Submitted a Item 21 with cucumbers (protected cropping) and zucchini (protected cropping) residue data (VG14038/ PER13304)

PER14164

- **Study Plan (GLP Compliant)**
  A residue Study Plan was prepared;
  1. Determination of residues of clethodim in cauliflower, broccoli, and Brussels sprouts following a single application

- **Analytical Report (GLP Compliant)**
  An analytical phase report was received from Eurofins Agroscience Testing Pty Ltd;
  1. Determination of residues of clethodim in cauliflower, broccoli and Brussels Sprouts following a single application – Analytical Phase (03/02/16)

- **Final GLP Report (GLP Compliant)**
  A Final GLP Report incorporating the field trial details and analytical report was prepared;
  1. VG14038 PER14164 Final GLP Report

- **Permit Applications**
  Results from PER14164 residue study were submitted in permit applications to the APVMA as detailed below:

Target	Active Ingredient	Applicant	APVMA Number:	Submission Date	Status	Comments
Ryegrass and Winter grass (brassica vegetables: broccoli, Brussels sprouts and cauliflower)	clethodim (Select herbicide)	Queensland Fruit & Vegetable Growers	DC21-31331130 Application No: 105793 (PER82459)	26-Feb-16	Submitted	PER14164 Submitted a Item 21 with broccoli, Brussels sprouts and cauliflower residue data (VG14038/ PER14164)

PER14211

- **Study Plan (GLP Compliant)**
  A residue Study Plan was prepared;
  1. Determination of residues of fenhexamid in sugar snap peas (field and protected cropping)

- **Analytical Report (GLP Compliant)**
  An analytical phase report was received from Eurofins Agroscience Testing Pty Ltd;
  1. Determination of residues of fenhexamid in sugar snap peas (field and protected cropping) – Analytical Phase (15/10/15)
  2. Determnination of residues of fenhexamid in sugar snap peas (field and protected cropping) – Analytcial Phase Addendum (Site 4) (20/06/16)

- **Final GLP Report (GLP Compliant)**
  A Final GLP Report incorporating the field trial details and analytical report was prepared;
  1. VG14038 PER14211 Final GLP Report

- **Permit Applications**
  Results from PER14211 residue study were submitted in permit applications to the APVMA as detailed below:

Target	Active Ingredient	Applicant	APVMA Number:	Submission Date	Status	Comments
Grey Mould and Chocolate Spot (snow peas, sugar snap peas)	fenhexamid (Teldor 500 SC Fungicide)	Queensland Fruit & Vegetable Growers	TBC	TBC (Completion Date: 20/06/16)	TBC not submitted	PER14211 Submitted a Item 21 with snow pea and sugar snap peas residue data (VG14038/ PER14211)

PER14353

- **Study Plan (GLP Compliant)**
  A residue Study Plan was prepared;
  1. Determination of residues of iprodione in chillies and capsicums

- **Analytical Report (GLP Compliant)**
  An analytical phase report was received from Eurofins Agroscience Testing Pty Ltd;
  1. Determination of residues of iprodione in chillies and capsicums – Analytical Phase (23/12/15)

- **Final GLP Report (GLP Compliant)**
  A Final GLP Report incorporating the field trial details and analytical report was prepared;
  1. VG14038 PER14353 Final GLP Report

- **Permit Applications**
  Results from PER14353 residue study were submitted in permit applications to the APVMA as detailed below:

Target	Active Ingredient	Applicant	APVMA Number:	Submission Date	Status	Comments
Sclerotinia rot (peppers including capsicum, chillies, paprika (field and protected cropping) & celeriac)	iprodione (Rovral Aquaflo Fungicide)	Queensland Fruit & Vegetable Growers	DC21-0836476 Application No: 105791 (PER82457)	26-Feb-16	Submitted	PER14353 Submitted a Item 21 with capsicum and chillies residue data (VG14038/ PER14353)

PER14454

- **Study Plan (GLP Compliant)**
  A residue Study Plan was prepared;
  1. Determination of residues of mancozeb & metalaxyl-M in chillies and capsicums

- **Analytical Report (GLP Compliant)**
  An analytical phase report was received from Eurofins Agroscience Testing Pty Ltd;
  1. Determination of residues of mancozeb & metalaxyl-M in chillies and capsicums – Analytical Phase (20/10/15)

- **Final GLP Report (GLP Compliant)**
  A Final GLP Report incorporating the field trial details and analytical report was prepared;
  1. VG14038 PER14454 Final GLP Report

- **Permit Applications**
  Results from PER14454 residue study were submitted in permit applications to the APVMA as detailed below:

Target	Active Ingredient	Applicant	APVMA Number:	Submission Date	Status	Comments
Downy mildew (snow peas, sugar snap peas, field grown capsicums, chillies and paprika)	mancozeb & metalaxyl-M (Ridomil Gold MZ WG systemic and protective fungicide)	Queensland Fruit & Vegetable Growers	DC21-93800527 Application No: 105790 (PER82456)	26-Feb-16	Submitted	PER12399 Submitted a Item 21 with capsicum and chillies residue data (VG14038/ PER14454)

PER14456

- **Study Plan (GLP Compliant)**
  A residue Study Plan was prepared;
  1. Determination of residues of tebuconazole in beetroot (leaves and roots), spinach and silverbeet.

- **Analytical Report (GLP Compliant)**
  An analytical phase report was received from Eurofins Agroscience Testing Pty Ltd;
  1. Determination of residues of tebuconazole in beetroot (leaves and roots), spinach and silverbeet – Analytical Phase (15/10/15)

- **Final GLP Report (GLP Compliant)**
  A Final GLP Report incorporating the field trial details and analytical report was prepared;
  1. VG14038 PER14456 Final GLP Report

- **Permit Applications**
  Results from PER14456 residue study were submitted in permit applications to the APVMA as detailed below:

Target	Active Ingredient	Applicant	APVMA Number:	Submission Date	Status	Comments
Sclerotinia rot (beetroot, beetroot leaves, chichory, endive, radish, silverbeet and spinach)	tebuconazole (Folicur 430 SC Fungicide)	Queensland Fruit & Vegetable Growers	DC21-88908033 Application No: 105795 (PER82461)	26-Feb-16	Submitted	PER14456 Submitted a Item 21 with capsicum and chillies residue data (VG14038/ PER14456)

Outcomes

The key outcome from this project is the renewal of approval from the APVMA for use of the listed pesticide uses under the APVMA minor-use permits and eventual registration of the uses.

A total of eight studies were conducted during 2014-16 throughout Australia. Results from these trials have been submitted in permit renewal applications to the APVMA as detailed below:

Problem	Crop	Product	Active Ingredient	Permit Application
Greenhouse whitefly, silverleaf whitefly and leafhoppers	Cucumbers, zucchini, squash/marrow, choko, eggplant, peppers, capsicum & leafy lettuce	Applaud insecticide	buprofezin	Renewal of PER12712
Two spotted mite	Snow peas, sugar snap peas & lettuce (hydroponically grown)	Vertimec	abamectin	Renewal of PER12846
Two spotted mite & red spider mite	Cucurbits: pumpkin, cucumber, zucchini, squash, chayote (except for root production); Asian cucurbits: Balsam pear, bottle gourd, smooth loofah, angled loofah, snake gourd, wax gourd, pointed gourd, ivy gourd	Paramite selective miticide	etoxazole	Renewal of PER13304
Ryegrass and winter grass	brassica vegetables: broccoli, Brussels sprouts and cauliflower	Select herbicide	clethodim	Renewal of PER14164
Sclerotinia rot	peppers including capsicum, chillies, paprika (field and protected cropping) & celeriac	Rovral Aquaflo Fungicide	iprodione	Renewal of PER14353
Grey mould and chocolate spot	snow peas, sugar snap peas	Teldor 500 SC Fungicide	fenhexamid	Renewal of PER14211
Downy mildew	snow peas, sugar snap peas, field grown capsicums, chillies and paprika	Ridomil Gold MZ WG systemic and protective fungicide	mancozeb & metalaxyl-M	Renewal of PER12399 (replacing PER14454)
Sclerotinia rot	beetroot, beetroot leaves, chichory, endive, radish, silverbeet and spinach	Folicur 430 SC Fungicide	tebuconazole	Renewal of PER14456

It is anticipated that the proposed uses will not present any additional risks to either the environment or operator safety, provided users following existing label statements with respect to personal protective equipment, environmental precautions and proper product storage and disposal.

Evaluation and Discussion

With APVMA approval of the minor-use permit applications that have been submitted, this project will provide growers with effective pesticide options for the control of various pests and diseases.

A variation to this project was generated to allow further time to complete site 4 for PER14211 (fenhexamid/snow peas and sugar snap peas/grey mould and chocolate spot). The additional time is requested following lesser amounts of test item being applied at application 2, indicating a considerable under dose at this application timing.

Results generated during the project were reviewed at various stages by the HIA R&D Manager and Peracto project team members, to ensure that the intended outcomes of the trials were achieved while planning the next steps of the project.

Based on residue results from this project, the current temporary MRLs in place for the various active ingredients are adequate for use in their respective crops.

Recommendations

None to report

Scientific Refereed Publications

None to report

Intellectual Property/Commercialisation

No commercial IP generated

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