

Food Residues Survey Programme Final Report

Results for 1 July 2017 - 30 June 2019 for plant based foods

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1 Summary

The Food Residues Survey Programme has completed a survey covering two financial years: 1 July 2017 to 30 June 2018 (Year 1) and 1 July 2018 to 30 June 2019 (Year 2). This survey was completed to:

- verify that agricultural chemical (agrichemical) use on plant based foods in New Zealand follows Good Agricultural Practices (GAP) and
- that food safety risks are managed.

The agrichemicals analysed includes insecticides, herbicides and fungicides. The survey samples are commodities available to the New Zealand public. A breakdown of the types of samples collected from Year 1 and Year 2 are listed in Table 2 in accordance to Codex Classification of plant foods.

As this survey was conducted over two years, an interim report was published in 2019 covering Year 1's detections and non-compliant results. The report is on the MPI website at:

<https://www.mpi.govt.nz/dmsdocument/32848-frsp-201718-plant-based-foods-survey-interim-report-covering>.

This final report covers all detections and non-compliant results for Year 2 and provides a summary of the findings for both years. A total of 591 samples were collected and analysed for more than 500 agrichemicals and their metabolites. All analytes tested for each sample is listed in Appendix 2.

The survey has a rate of compliance at greater than 99.9% which is the same as the rate of compliance for the last few surveys. A total of 49 out of 311,469 results reported exceeded the relevant Maximum Residue Levels (MRLs) for the samples collected from 1 July 2017 to 30 June 2019. The non-compliant results were from 37 out of 591 samples tested.

New Zealand Food Safety conducted dietary risk assessments for consumers of all ages, including children, to identify if there were any food safety risks associated with the non-compliant results. The dietary risk assessments concluded that none of the survey samples exceeding the relevant MRLs, resulted in any food safety concerns to consumers of all ages.

The New Zealand Environmental Protection Authority (EPA) reviewed their health based guidance values which determine the amounts of organophosphates and carbamates considered safe through food consumption. To ensure registered agrichemicals under the Agricultural Compounds and Veterinary Medicines (ACVM) Act do not exceed the revised health based guidance values, New Zealand Food Safety revised the use patterns of the organophosphate agrichemicals in 2015. New Zealand Food Safety has set new maximum residue levels for certain agrichemicals, removed certain crops from labels, restricted off label use and changed withholding periods for approved crops.

However, some growers remain unaware of the changes to the maximum residue levels and of the phase out period, and continued to apply organophosphate insecticides on crops that are no longer permitted under the revised label use. Non compliances due to the use of organophosphates were identified in Year 1 and 2. As no food safety issues were identified with the non-compliances, New Zealand Food Safety has focused on educating growers on the use of organophosphates.

New Zealand Food Safety is working with Vegetables New Zealand to reach their members and provide education support regarding the change in the use of organophosphates. More information about the controls on use of organophosphate chemicals being phased out is available at the New Zealand Food Safety website at: <https://www.mpi.govt.nz/dmsdocument/10253/send>. We will continue to monitor future plant based food surveys for organophosphate and carbamate residues.

2 Legal framework

TABLE 1: NEW ZEALAND LEGISLATION AND INTERNATIONAL STANDARDS

Primary Legislation (Act)	Activity	Secondary Legislation (Regulations)	Tertiary Legislation (Specifications or Notices)	Description
Food Act 2014	Maximum Residue Levels	Food Regulations 2015	Food Notice: Maximum Residue Levels for Agricultural Compounds (New Zealand MRL Notice)	The standard for maximum (and default) residue levels of residues in food intended for domestic consumption
Agricultural Compounds and Veterinary Medicines Act 1997	Registration of agrichemical products	-	-	This Act provides for the registration and label conditions of agrichemicals.
Hazardous Substances and New Organisms Act 1996	Import, manufacture and use of agrichemicals.	-	-	This Act provides for the import, manufacture and use of hazardous substances which include agrichemicals.
Codex Alimentarius	Maximum Residue Limits	-	Codex Maximum Residue Limits for Pesticides and Extraneous Maximum Residue Limits (Codex MRL)	The legal basis for maximum residue levels of residues in foods imported from trading countries.
Australia New Zealand Food Standards Code	Maximum Residue Limits	-	Australia New Zealand Food Standards Code- Schedule 20: Maximum residue limits (Australia MRL)	The legal basis for maximum residue levels of residues in foods imported from Australia

3 Programme Design

The food residue survey programme (FRSP) aims to provide assurance that all plant based foods available to the New Zealand public have been produced according to Good Agricultural Practice (GAP). FRSP conducts periodic surveys to collect and test selected plant based foods for agrichemical residues. The 2017-2019 plant based foods survey collected 591 samples of plant based foods from 1 July 2017 to 30 June 2019. The survey planned to acquire 60 samples from each of ten Codex classified groups of plant foods. Table 2 provides a list of the sampled commodities grouped under the Codex classification.

The commodities sampled were plant based foods available to the New Zealand consumer. Some commodities sampled had a short season or were available only in small quantities, making it necessary to collect them over two years. Foods were randomly sampled from New Zealand retailers, importers or wholesalers based on market availability. Table 3 provides a further breakdown of samples collected from domestic and imported sources over both years.

Samples were collected and submitted to an accredited laboratory for residue testing. The weight and unit of samples collected follow Codex sampling guidelines. An excerpt of the sampling guidelines is provided in Appendix 1.

All detected agrichemical residues above the analytical reporting limit of the test method are reported by the laboratory to MPI. The reported results are rounded to two decimal places and compared against the relevant MRLs detailed in Table 1 above.

All detections of agrichemical residues from domestic food are compared to the New Zealand MRL Notice. Under the Trans-Tasman Mutual Recognition Act 1997, a product produced in, or imported into New Zealand and then legally sold, may be sold in Australia, and vice versa. Therefore, FRSP samples imported from Australia are compared to the Australia MRLs. All other imported foods are compared to either the Codex MRL, or the New Zealand MRL Notice. If more than one applicable MRL for the residue/food combination is found, the higher MRL applies to the imported food sample. More information about relevant MRLs can be found: <https://www.mpi.govt.nz/processing/agricultural-compounds-and-vet-medicines/maximum-residue-levels-for-agricultural-compounds/>. Where no commodity/MRL combination is specifically set under the above standards, then the New Zealand default MRL of 0.1 mg/kg applies.

For reported results exceeding the applicable MRLs, the lab reconfirms the agrichemical residue result before New Zealand Food Safety performs a dietary exposure assessment. New Zealand Food Safety determines if there is a food safety risk associated with the food type, by conducting the dietary exposure of non-compliant results based on dietary intakes of New Zealand population by age groups. If a non-compliant sample presents a food safety risk, New Zealand Food Safety will undertake food recalls of affected batches of produce, a systematic review of the growing or import practices and other stringent follow up actions, as appropriate. Non-compliant samples exceeding the MRL but not posing a food safety risk, are followed up with the grower or importer, ranging from written notification of their results to telephone interviews. This provides an opportunity to reinforce Good Agricultural Practices and reiterate the grower's legal obligation to meet the relevant MRLs for agrichemical residues in their respective commodities.

3.1 SURVEY EXCLUSION

A small percentage (0.4%) of the results were not able to be reported due to technical failures. They are excluded from the data analysis and this report. There were also 9 (1.5%) samples collected that were unsuitable for testing, for example, where two samples were taken from the same lot, and these were also excluded from this report.

4 Sampling and Testing

TABLE 2: SAMPLES COLLECTED AND TESTED FROM 1 JULY 2017 TO 30 JUNE 2019

Codex classification	Commodities sampled	Number of samples collected from 1 July 2017 to 30 June 2019
Berries and small fruits	blackberry, blueberry, boysenberry, raspberry, strawberry	60
Brassica vegetables (except brassica leafy vegetables)	broccoli, cabbage, Brussels sprout	58
Citrus	orange, mandarin, tangelo, lime, grapefruit, lemon	60
Fruiting vegetables, other than cucurbits	chilli peppers, sweet peppers, sweet corn on cob, white and brown mushrooms	58
Leafy vegetables (including brassica leafy vegetables)	endive, spinach (whole), kailan, pak-choi, mustard greens, sowthistle (puha), watercress, silver beet, kale, choisum, water spinach	54
Legume vegetables	beans with pods, butter beans, broad bean, peas in pods, snow peas	60
Pome fruits	apples, pears, quince	61
Root and tuber vegetables	carrots, potatoes, sweet potato (kumara), turnip, swede	60
Stalk and stem vegetables	asparagus, rhubarb, globe artichoke, witloof chicory	60
Stone fruits	cherries, apricot, peach, plums, nectarine, greengage	60
Total		591

TABLE 3: BREAKDOWN OF SAMPLES COLLECTED BY COUNTRIES FROM 1 JULY 2017 TO 30 JUNE 2019

Codex classification	Samples from New Zealand	Samples from Imported source	Country of origin
Berries and small fruits	56	4	Australia
Brassica vegetables	58	0	Not Applicable (NA)
Citrus	41	19	Australia, United States
Fruiting vegetables, other than cucurbits	57	1	Australia
Leafy vegetables	54	0	NA
Legume vegetables	45	15	Australia, Zambia, Zimbabwe
Pome fruits	56	5	Australia, United States
Root and tuber vegetables	60	0	NA
Stalk and stem vegetables	55	5	United States
Stone fruits	53	7	United States
Total	535	56	NA

5 Results

1. In Year 1, the rate of compliant results was 99.9%. There were 16 non-compliant results out of 179 306 reported results. The residue detections and non-compliant results for all samples collected for the period are published at the link below:
<https://www.mpi.govt.nz/dmsdocument/32848-frsp-201718-plant-based-foods-survey-interim-report-covering>.
2. In Year 2, the rate of compliant results was 99.9%. There were 32 non-compliant results out of 132 163 reported results. The residue detections and non-compliant results for all samples collected in Year 2 are listed in Table 5 to Table 16 of this report.
3. A total of 49 non-compliant results from 26 active ingredients used in insecticide, fungicide, herbicide, nematicide and bird repellent products were found in the survey samples from Year 1 and Year 2. The details of these agrichemicals found in the commodity groups sampled are summarised in Tables 4 and 5.
4. Although the overall rate of compliant results is 99.9%, all ten Codex commodity groups had varying levels of compliance. The samples collected from the Citrus and Root and Tuber vegetables commodity groups had residue detections but were 100% compliant. All other commodity groups had residue detections and had less than 100% compliance.
5. Seventeen out of 49 non-compliant results were from Leafy vegetables samples. The commodity group 'Leafy vegetables' is made up of a large number of plant species. However, in New Zealand most of the 'leafy vegetable' plant species are commercially considered minor crops. Usually the production volumes are not high enough to justify agrichemical manufacturers developing label claims and support for specific MRLs for these minor crops. In such cases, minor crop producers have the challenge of finding the appropriate application rates and withholding period that will ensure compliance with the default New Zealand MRL of 0.1 mg per kg.
6. Some growers that New Zealand Food Safety followed up with had applied label directions for a specific named crop (on the label) to a different crop, resulting in non-compliant residue levels. For example, the registered fludioxonil product had label directions for blackcurrants which may have been followed when the product was applied to another berry crop, blackberries. However, as the applicable fludioxonil MRLs for blackcurrants and blackberries are 0.8 mg per kg and 0.1 mg per kg respectively, use of the application rate for blackcurrants is likely to result in non-compliant residues on blackberries.
7. Organophosphate insecticides, unlike most registered agrichemical products in the example above, have restricted on-label use for **specific** crops only. Eleven non-compliant results were from the use of acephate, methamidophos and diazinon found in berries, brassica vegetables, leafy vegetables, fruiting vegetables, pome fruit and legume vegetables samples. Ten of these non-compliant samples were the result of off-label uses which are no longer permitted for acephate, methamidophos and diazinon. While food safety risk assessments did not find any food safety risk from dietary exposure of these non-compliant organophosphate residues, New Zealand Food Safety will continue to monitor organophosphate residues in future surveys.
8. The New Zealand EPA has reviewed their health based guidance values which determined the amount of organophosphates and carbamates considered safe through food consumption. In 2015, New Zealand Food Safety reviewed and restricted organophosphate

insecticides to on-label use of registered products, to ensure that the use of registered agrichemicals on crops do not exceed the revised health based guidance values. New Zealand Food Safety has implemented tighter controls on use patterns and removed certain crops from labels. New Zealand Food Safety has also set phase out periods for methamidophos, diazinon and fenamiphos. The New Zealand MRLs for these active ingredients have also been reduced to reflect these new restrictions on use. For more information about the New Zealand Food Safety reassessment and consequential label changes, please go to the link: <https://www.mpi.govt.nz/dmsdocument/19490/loggedin>.

9. During this survey, New Zealand Food Safety experienced some uncertainties in tracing three samples for follow up, as the growers New Zealand Food Safety contacted did not believe that the samples collected from distributors/retailers belonged to them. In the process of tracing a non-compliant sample back to the growers, New Zealand Food Safety came across single batches of a commodity carrying multiple labels. It is common practice for each business in the horticulture distribution chain to have their own labelling and coding system for invoicing. Information relating to product traceability may have been removed or covered over by labels applied by the next business in the supply chain. As a result, those samples were followed up but had no conclusive outcome.
10. Similar to Year 1, there were detections in Year 2 samples that had no applicable MRLs listed in Table 17. No applicable MRLs could be due to one of two reasons:
 - a. the detected analyte was traced to a chemical product that was not applied to a commodity as an agrichemical. Examples of such chemicals are 2-phenylphenol and Quaternary Ammonium Compounds (QACs) or
 - b. some analytes in the residues test screen were individual components of the MRL-compliance residue definition or were only required for dietary intake risk assessment (and not part of the MRL-compliance residue definition).

TABLE 4: REPORTED RESULTS BY COMMODITIES FROM 1 JULY 2017 TO 30 JUNE 2019

Codex classification	Number of substances reported	Number of detections	Number of non-compliant results
Berries and small fruits	31657	164	10
Brassica vegetables (except brassica leafy vegetables)	30503	39	1
Citrus	31562	94	0
Fruiting vegetables, other than cucurbits	30573	88	8
Leafy vegetables (including brassica leafy vegetables)	28455	75	17
Legume vegetables	31618	63	7
Pome fruits	32179	156	1
Root and tuber vegetables	31678	56	0
Stalk and stem vegetables	31578	17	2
Stone fruits	31666	225	3
Total	311469	977	49

TABLE 5: NON-COMPLIANT RESULTS BY COMMODITIES

Name of residue (total non-compliant results)	Berries and other small fruits	Brassica vegetables	Fruiting vegetables	Leafy vegetables	Legume vegetables	Pome fruit	Stem and stalk vegetable	Stone fruit
Abamectin(1)			1					
Acephate (2)	1			1				
Bifenthrin (2)				1	1			
Boscalid (1)	1							
Bromacil (1)							1	
Carbendazim (1)				1				
Chlorothalonil (3)				3				
Chlorpyrifos (1)				1				
Cyhalothrin (1)				1				
Cypermethrin (3)				2	1			
Cyprodinil (4)	3							1
Diazinon (2)			1			1		
Dichlorvos (1)	1							
Difenoconazole (1)				1				
Diuron (1)							1	

Name of residue (total non-compliant results)	Berries and other small fruits	Brassica vegetables	Fruiting vegetables	Leafy vegetables	Legume vegetables	Pome fruit	Stem and stalk vegetable	Stone fruit
Fluazifop-P-butyl (sum of residues expressed as fluazifop) (2)					2			
Fludioxonil (3)	3							
Indoxacarb (1)			1					
Iprodione (2)					2			
Methamidophos (7)		1	1	4	1			
Methiocarb (1)								1
Oxathiapiprolin (1)				1				
Procymidone (2)	1			1				
Pymetrozine (1)			1					
Pyrimethanil (1)								1
Spirotetramat (sum of residues expressed as spirotetramat) (3)			3					
Total	10	1	8	17	7	1	2	3

6 Conclusion

11. Overall, the 2017-2019 survey for agrichemical residues on plant foods follows the previous FRSP survey trend of a low rate of non-compliant residues. The overall rate of compliance based on the samples collected over Year 1 and Year 2 is 99.9%.
12. The New Zealand MRL Notice is reviewed and updated regularly. It is recommended that domestic growers update and review their spray plans regularly to reflect any MRL and label changes. Current approved labels and registration conditions can be found on the MPI website: <https://eatsafe.nzfsa.govt.nz/web/public/acvm-register>
13. Where off-label use is allowed as a condition of registration, the grower is responsible for ensuring that the residues in the harvested crop are MRL compliant. Growers can undertake activities such as pooling resources with sector groups, residue testing of harvested crops or consulting appropriate technical agrichemical specialists. The approved label directions for a named crop cannot be assumed to apply to different crops, as a specific MRL may have been required to support the use pattern.
14. New Zealand growers and importers need to be aware of, and comply with, the various off-label restrictions and phase out periods that apply for a number of organophosphate insecticides.

7 Result Tables

These result tables are for samples collected for Year 2. For results of samples collected in Year 1, please refer to the published report titled '2017-2019 Plant based foods survey interim report' (<https://www.mpi.govt.nz/dmsdocument/32848-frsp-201718-plant-based-foods-survey-interim-report-covering>)

Residue detections exceeding the MRLs are indicated in red in each commodity group.

TABLE 6: BERRIES AND OTHER SMALL FRUITS

Detections found in domestic samples. .

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
506	Blackberries	acephate	0.02	0.01
455	Blackberries	captan	0.07	10
490	Blackberries	captan	0.55	10
520	Blackberries	captan	0.05	10
490	Blackberries	carbendazim	0.08	5
554	Blackberries	chlorothalonil	0.36	10
506	Blackberries	cyprodinil	0.06	0.1
455	Blackberries	fenpyroximate	0.04	0.1
506	Blackberries	fludioxonil	0.13	0.1
554	Blackberries	fludioxonil	0.04	0.1
554	Blackberries	folpet	0.13	15
554	Blackberries	iprodione	1.9	10
455	Blackberries	metalaxyl	0.05	2
506	Blackberries	methoxyfenozide	0.03	0.1
554	Blackberries	pirimicarb (sum of residues expressed as pirimicarb)	0.01	1
455	Blackberries	propiconazole	0.04	0.1
554	Blackberries	spinosad	0.02	0.1
365	Blueberries	azoxystrobin	0.01	0.1
456	Blueberries	captan	0.94	10
585	Blueberries	captan	0.06	10
425	Blueberries	carbendazim	0.01	5
365	Blueberries	cyprodinil	0.6	0.5
449	Blueberries	cyprodinil	0.02	0.5
456	Blueberries	cyprodinil	0.12	0.5
527	Blueberries	cyprodinil	0.02	0.5
365	Blueberries	fludioxonil	0.26	0.5
449	Blueberries	fludioxonil	0.05	0.5

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
456	Blueberries	fludioxonil	0.05	0.5
456	Blueberries	methomyl	0.01	0.5
365	Blueberries	spirotetramat (sum of residues expressed as spirotetramat)	0.04	0.7
505	Boysenberry	boscalid	0.07	0.1
505	Boysenberry	cyprodinil	0.14	0.1
505	Boysenberry	fludioxonil	0.12	0.1
462	Boysenberry	methomyl	0.3	0.5
479	Boysenberry	methomyl	0.06	0.5
505	Boysenberry	pyraclostrobin	0.02	0.1
462	Boysenberry	spinosad	0.02	0.1
479	Boysenberry	spinosad	0.02	0.1
498	Raspberries, Red, Black	captan	2.9	10
498	Raspberries, Red, Black	cyprodinil	0.02	0.1
498	Raspberries, Red, Black	fludioxonil	0.02	0.1
498	Raspberries, Red, Black	pirimicarb (sum of residues expressed as pirimicarb)	0.04	1
563	Raspberries, Red, Black	triforine	0.02	10
538	Strawberry	abamectin	0.01	0.02
538	Strawberry	captan	0.01	10
551	Strawberry	captan	0.17	10
447	Strawberry	carbendazim	0.03	5
420	Strawberry	chlorothalonil	0.01	10
420	Strawberry	clofentezine	0.07	0.1
436	Strawberry	clofentezine	0.01	0.1
420	Strawberry	cyprodinil	0.32	1
447	Strawberry	cyprodinil	0.15	1
551	Strawberry	cyprodinil	0.36	1
544	Strawberry	cyprodinil	0.01	1
544	Strawberry	fludioxonil	0.01	1
551	Strawberry	fludioxonil	0.2	1
420	Strawberry	fludioxonil	0.15	1
447	Strawberry	fludioxonil	0.09	1

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
436	Strawberry	fenhexamid	1.2	3
551	Strawberry	fenhexamid	0.01	3
420	Strawberry	fenpyroximate	0.01	0.1
544	Strawberry	iprodione	0.01	10
420	Strawberry	metalaxyl	0.02	2
436	Strawberry	methomyl	0.11	0.1
420	Strawberry	methomyl	0.02	0.1
420	Strawberry	simazine	0.01	0.1

TABLE 7: BERRIES AND OTHER SMALL FRUITS (IMPORTED)

Detections found in Australian samples

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	FSANZ MRL (mg/kg)
354	Strawberry	captan	1.7	10
357	Strawberry	captan	0.1	10
398	Strawberry	captan	0.69	10
405	Strawberry	captan	0.73	10
354	Strawberry	cyprodinil	0.05	5
357	Strawberry	cyprodinil	0.07	5
398	Strawberry	cyprodinil	0.13	5
354	Strawberry	fenhexamid	0.32	10
405	Strawberry	fenhexamid	0.03	10
354	Strawberry	flubendiamide	0.03	0.3
405	Strawberry	flubendiamide	0.02	0.3
354	Strawberry	fludioxonil	0.06	5
357	Strawberry	fludioxonil	0.07	5
398	Strawberry	fludioxonil	0.09	5
354	Strawberry	indoxacarb	0.1	2
398	Strawberry	iprodione	1.1	10
398	Strawberry	methomyl	0.45	3
354	Strawberry	myclobutanil	0.05	2
357	Strawberry	myclobutanil	0.02	2
398	Strawberry	myclobutanil	0.03	2
357	Strawberry	penthiopyrad	0.09	5
354	Strawberry	penthiopyrad	0.02	5
357	Strawberry	pirimicarb (sum of residues expressed as pirimicarb)	0.03	3
357	Strawberry	pyrimethanil	0.31	5
354	Strawberry	trifloxystrobin (sum of residues expressed as trifloxystrobin)	0.03	2

TABLE 8: BRASSICA VEGETABLES (EXCEPT BRASSICA LEAFY VEGETABLES)

Detections in domestic samples

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
617	Broccoli	chlorothalonil	0.18	5
403	Broccoli	chlorothalonil	0.04	5
421	Broccoli	chlorothalonil	0.02	5
350	Broccoli	chlorothalonil	0.02	5
590	Broccoli	chlorpyrifos	0.02	0.1
590	Broccoli	cyhalothrin	0.03	0.2
581	Broccoli	deltamethrin	0.01	0.05
620	Broccoli	dimethomorph	0.02	0.1
590	Broccoli	indoxacarb	0.04	0.5
604	Broccoli	methamidophos	1.3	1
432	Broccoli	oxyfluorfen	0.01	0.01
355	Brussels sprouts	carbendazim	0.2	0.1
579	Brussels sprouts	chlorantraniliprole	0.02	0.3
413	Brussels sprouts	chlorothalonil	0.02	5
355	Brussels sprouts	chlorpyrifos	0.03	0.1
413	Brussels sprouts	difenoconazole	0.04	0.2
373	Brussels sprouts	difenoconazole	0.04	0.2
579	Brussels sprouts	difenoconazole	0.01	0.2
579	Brussels sprouts	methamidophos	0.01	1
413	Brussels sprouts	pirimicarb (sum of residues expressed as pirimicarb)	0.02	0.5
349	Cabbage	carbendazim	0.03	0.1
376	Cabbage	carbendazim	0.04	0.1
393	Cabbage	chlorothalonil	0.07	5
607	Cabbage	dimethomorph	0.02	0.1
608	Cabbage	imidacloprid	0.02	0.02 ¹
429	Cabbage	metalaxyl	0.01	0.05
607	Cabbage	metalaxyl	0.01	0.05
607	Cabbage	procymidone	0.02	0.1
429	Cabbage	procymidone	0.01	0.1
406	Cabbage, Red	imidacloprid	0.01	0.02 ²
406	Cabbage, Red	iprodione	0.01	0.1
406	Cabbage, Red	procymidone	0.03	0.1
601	Cabbage, Red	thiamethoxam	0.02	0.1

¹ The laboratory is unable to report the sum of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety as defined in the New Zealand MRL Notice. Only the parent is reported in this instance. This is for reference only.

² See Note 2.

TABLE 9: FRUITING VEGETABLES, OTHER THAN CUCURBITS

Detections in domestic samples

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
599	Peppers, Chilli	abamectin	0.16	0.1
412	Peppers, Chilli	azoxystrobin	0.09	0.1
358	Peppers, Chilli	azoxystrobin	0.02	0.1
599	Peppers, Chilli	indoxacarb	0.12	0.1
599	Peppers, Chilli	lufenuron	0.06	0.1
599	Peppers, Chilli	methoxyfenozide	0.04	0.1
599	Peppers, Chilli	milbemycin A4	0.01	0.1
599	Peppers, Chilli	spinosad	0.08	0.1
599	Peppers, Chilli	spiromesifen	0.02	0.1
412	Peppers, Chilli	sulfoxaflor	0.62	1.0
358	Peppers, Chilli	sulfoxaflor	0.39	1.0
615	Peppers, Sweet	etoxazole	0.02	0.1
615	Peppers, Sweet	fipronil	0.02	0.1
615	Peppers, Sweet	lufenuron	0.04	0.1
606	Peppers, Sweet	methamidophos	0.19	0.01
404	Peppers, Sweet	propamocarb	0.01	0.1
615	Peppers, Sweet	pymetrozine	0.06	0.1
606	Peppers, Sweet	pymetrozine	0.01	0.1
615	Peppers, Sweet	spiromesifen	0.15	1
606	Peppers, Sweet	spirotetramat (sum of residues expressed as spirotetramat)	0.15	0.1
404	Peppers, Sweet	sulfoxaflor	0.04	1.0

TABLE 10: FRUITING VEGETABLES, OTHER THAN CUCURBITS (IMPORTED)

Detections in Australian samples

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	Applicable MRL (mg/kg)
458	Sweet corn (corn-on-the-cob)	spirotetramat (sum of residues expressed as spirotetramat)	0.02	0.1

TABLE 11: LEAFY VEGETABLES (INCLUDING BRASSICA LEAFY VEGETABLES)

Detections in domestic samples

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
394	Choisum	carbendazim	0.02	0.1
466	Choisum	chlorothalonil	0.28	0.1
466	Choisum	cyhalothrin	0.02	0.1
465	Kailan	boscalid	0.03	0.1

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
461	Kailan	chlorpyrifos	0.34	0.1
465	Kailan	metalaxyl	0.01	0.1
465	Kailan	oxathiapiprolin	0.01	0.1
461	Kailan	permethrin	0.07	0.1
461	Kailan	pirimiphos-methyl	0.11	10
352	Kale	chlorothalonil	0.03	0.1
391	Kale	spirotetramat (sum of residues expressed as spirotetramat)	0.03	0.1
588	Mustard greens	methamidophos	0.03	0.01
427	Pak-choi or Paksoi	bifenthrin	0.16	0.1
390	Pak-choi or Paksoi	chlorothalonil	0.1	0.1
596	Pak-choi or Paksoi	chlorothalonil	0.02	0.1
390	Pak-choi or Paksoi	cyhalothrin	0.13	0.1
390	Pak-choi or Paksoi	cyproconazole	0.03	0.1
381	Pak-choi or Paksoi	difenoconazole	0.13	0.1
390	Pak-choi or Paksoi	dimethomorph	0.02	0.1
390	Pak-choi or Paksoi	imidacloprid	0.02	0.1 ³
390	Pak-choi or Paksoi	iprodione	0.01	5
596	Pak-choi or Paksoi	methamidophos	0.17	0.01
596	Pak-choi or Paksoi	permethrin	0.02	0.1
596	Pak-choi or Paksoi	pirimiphos-methyl	0.02	10
392	Silver beet	sulfoxaflor	0.4	5
535	Sowthistle	boscalid	0.03	0.1
535	Sowthistle	fluopyram	0.01	0.1
535	Sowthistle	methabenzthiazuron	0.01	0.1
452	Spinach	boscalid	0.02	0.1
587	Spinach	chlorantraniliprole	0.13	7
443	Spinach	chlorantraniliprole	0.04	7
443	Spinach	chloridazon	0.01	0.1
366	Spinach	chlorothalonil	0.37	0.1
443	Spinach	chlorpyrifos	0.02	0.1
587	Spinach	clothianidin	0.01	0.1

³ The laboratory is unable to report the sum of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety as defined in the New Zealand MRL Notice. Only the parent is reported in this instance. This is for reference only.

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
379	Spinach	cypermethrin	0.27	0.1
356	Spinach	cypermethrin	0.17	0.1
443	Spinach	methamidophos	0.01	0.01
366	Spinach	pirimiphos-methyl	0.04	10
443	Spinach	procymidone	0.04	1
452	Spinach	pymetrozine	0.03	0.1
443	Spinach	sulfoxaflor	0.08	5
591	Water spinach	imidacloprid	0.01	0.1 ⁴
467	Water spinach	linuron	0.05	0.1
591	Water spinach	spinetoram	0.28	0.1
442	Watercress	carbendazim	0.02	0.1

TABLE 12: LEGUME VEGETABLES

Detections in domestic samples

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
575	Beans with pod	boscalid	0.06	1.5
553	Beans with pod	boscalid	0.02	1.5
468	Beans with pod	iprodione	0.47	0.1
480	Beans with pod	iprodione	0.08	0.1
561	Beans with pod	metalaxyl	0.04	0.1
480	Beans with pod	metalaxyl	0.02	0.1
476	Beans with pod	metalaxyl	0.01	0.1
441	Beans with pod	methamidophos	0.03	0.01
545	Beans with pod	methomyl	0.02	0.1
575	Beans with pod	procymidone	0.85	2
553	Beans with pod	procymidone	0.03	2
575	Beans with pod	pyraclostrobin	0.02	0.4
480	Beans with pod	triforine	0.04	0.1
512	Broad bean	piperonyl butoxide	0.01	8
515	Beans with pod	boscalid	0.09	1.5
530	Beans with pod	boscalid	0.06	1.5
526	Beans with pod	boscalid	0.02	1.5
524	Beans with pod	carbendazim	0.01	2
540	Beans with pod	iprodione	0.19	0.1
526	Beans with pod	procymidone	0.79	2
500	Beans with pod	procymidone	0.41	2
530	Beans with pod	procymidone	0.28	2
515	Beans with pod	procymidone	0.12	2
540	Beans with pod	procymidone	0.014	2
515	Beans with pod	pyraclostrobin	0.01	0.4
463	Peas with pod	carbendazim	0.02	0.1
445	Peas with pod	chlorothalonil	0.022	0.1

⁴ The laboratory is unable to report the sum of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety as defined in the New Zealand MRL Notice. Only the parent is reported in this instance. This is for reference only.

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
463	Peas with pod	chlorothalonil	0.018	0.1
463	Peas with pod	cypermethrin	0.16	0.1
463	Peas with pod	myclobutanil	0.03	0.1

TABLE 13: LEGUME VEGETABLES (IMPORTED)

Detections in imported samples from Australia and Zimbabwe

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	Applicable MRL (mg/kg)
397	Beans with pod	bifenthrin	0.04	0.03
469	Beans with pod	boscalid	0.06	3
348	Beans with pod	boscalid	0.02	3
353	Beans with pod	boscalid	0.01	3
430	Peas with pod	chlorantraniliprole	0.02	2
353	Beans with pod	dimethoate (sum of residues expressed as dimethoate)	0.04	2
374	Beans with pod	dimethoate (sum of residues expressed as dimethoate)	0.05	2
360	Beans with pod	fluazifop-p-butyl (sum of residues expressed as fluazifop)	0.04	0.1
397	Beans with pod	fluazifop-p-butyl (sum of residues expressed as fluazifop)	0.17	0.1
433	Beans with pod	fluazifop p-butyl (sum of residues expressed as fluazifop)	0.19	0.1
448	Beans with pod	lprodione	0.02	2
433	Beans with pod	methomyl	0.02	1
353	Beans with pod	permethrin	0.01	0.5
360	Beans with pod	permethrin	0.08	0.5
446	Beans with pod	permethrin	0.14	0.5
374	Beans with pod	permethrin	0.02	0.5
448	Beans with pod	permethrin	0.01	0.5
360	Beans with pod	tebuconazole	0.2	0.5
446	Beans with pod	tebuconazole	0.02	0.5
353	Beans with pod	tebuconazole	0.01	0.5

TABLE 14: STALK AND STEM VEGETABLES

Detections in domestic samples

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
416	Asparagus	bromacil	0.13	0.1

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
416	Asparagus	diuron	0.33	0.1
416	Asparagus	metalaxyl	0.06	0.2

TABLE 15: STONE FRUITS

Detections in domestic samples

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
549	Apricot	captan	1	10
509	Apricot	captan	0.87	10
478	Apricot	captan	0.05	10
474	Apricot	captan	0.01	10
567	Apricot	carbaryl	1.3	2
509	Apricot	chlorothalonil	0.02	10
509	Apricot	chlorpyrifos	0.03	1
478	Apricot	cyprodinil	0.03	0.02
567	Apricot	fluopyram	0.09	0.7
549	Apricot	iprodione	0.56	10
567	Apricot	iprodione	0.08	10
567	Apricot	methoxyfenozide	0.03	0.4
549	Apricot	pirimicarb (sum of residues expressed as pirimicarb)	0.02	1
534	Apricot	tebuconazole	0.06	1
474	Apricot	tebuconazole	0.04	1
567	Apricot	tebuconazole	0.13	1
567	Apricot	trifloxystrobin (sum of residues expressed as trifloxystrobin)	0.03	0.3
502	Cherries	boscalid	0.53	3
532	Cherries	boscalid	0.06	3
564	Cherries	boscalid	0.05	3
550	Cherries	boscalid	0.02	3
494	Cherries	captan	0.04	10
564	Cherries	captan	0.04	10
502	Cherries	chlorothalonil	0.01	10
552	Cherries	fluopyram	0.18	0.7
550	Cherries	fluopyram	0.08	0.7
564	Cherries	fluopyram	0.07	0.7
502	Cherries	imidacloprid	0.02	0.1 ⁵
552	Cherries	imidacloprid	0.01	0.1 ⁶
514	Cherries	iprodione	0.35	10
494	Cherries	iprodione	0.32	10
564	Cherries	iprodione	0.27	10

⁵ The laboratory is unable to report the sum of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety as defined in the New Zealand MRL Notice. Only the parent is reported in this instance. This is for reference only.

⁶ See Note 6

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
552	Cherries	iprodione	0.25	10
532	Cherries	iprodione	0.08	10
502	Cherries	iprodione	0.96	10
494	Cherries	methiocarb	1.1	0.1
564	Cherries	methoxyfenozide	0.05	0.4
564	Cherries	pyraclostrobin	0.01	1
502	Cherries	pyraclostrobin	0.47	1
514	Cherries	pirimicarb (sum of residues expressed as pirimicarb)	0.18	1
564	Cherries	pyrimethanil	1.2	0.1
532	Cherries	pyraclostrobin	0.03	1
532	Cherries	tebuconazole	0.02	1
552	Cherries	tebuconazole	0.11	1
564	Cherries	tebuconazole	0.09	1
550	Cherries	trifloxystrobin (sum of residues expressed as trifloxystrobin)	0.02	0.3
552	Cherries	trifloxystrobin (sum of residues expressed as trifloxystrobin)	0.1	0.3
564	Cherries	trifloxystrobin (sum of residues expressed as trifloxystrobin)	0.03	0.3
475	Nectarine	boscalid	0.01	0.05
537	Nectarine	boscalid	0.02	0.05
475	Nectarine	captan	0.18	10
507	Nectarine	captan	0.02	10
569	Nectarine	captan	0.07	10
537	Nectarine	captan	1.6	10
537	Nectarine	chlorothalonil	0.03	10
537	Nectarine	iprodione	0.91	10
533	Nectarine	iprodione	7.5	10
569	Nectarine	iprodione	0.52	10
569	Nectarine	pirimicarb (sum of residues expressed as pirimicarb)	0.06	1
475	Nectarine	tebufenozide	0.05	0.5
537	Nectarine	spinetoram	0.04	0.2
473	Peach	captan	0.38	10
548	Peach	captan	0.32	10
510	Peach	captan	1.8	10
556	Peach	captan	0.1	10
556	Peach	carbaryl	1.4	2
548	Peach	chlorpyrifos	0.05	1
568	Peach	fluopyram	0.05	0.7
547	Peach	iprodione	3.6	10

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	New Zealand MRL (mg/kg)
548	Peach	iprodione	2.4	10
556	Peach	iprodione	0.92	10
568	Peach	iprodione	0.41	10
510	Peach	iprodione	0.21	10
568	Peach	tebuconazole	0.12	1
548	Peach	tebuconazole	0.09	1
510	Peach	tebuconazole	0.04	1

TABLE 16: STONE FRUITS (IMPORTED)

Detections in imported samples from the United States

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	Applicable MRL (mg/kg)
369	Cherries	boscalid	0.07	3
369	Cherries	fluopyram	0.01	0.7
369	Cherries	imidacloprid	0.06	0.1 ⁷
369	Cherries	pyraclostrobin	0.02	3
369	Cherries	spinosad	0.01	0.2
369	Cherries	spirotetramat (sum of residues expressed as spirotetramat)	0.04	3
369	Cherries	triflumizole	0.03	4
385	Nectarine	fludioxonil	0.03	0.1
385	Nectarine	indoxacarb	0.01	1
385	Nectarine	spinetoram	0.01	0.3
399	Peach	chlorantraniliprole	0.09	1
399	Peach	fludioxonil	1	5
362	Peach	fludioxonil	0.26	5
399	Peach	methoxyfenozide	0.04	2
362	Peach	phosmet	0.02	10
380	Plum, American	fludioxonil	0.34	5
368	Plums (including Prunes)	azoxystrobin	0.04	2
368	Plums (including Prunes)	fludioxonil	0.5	5

TABLE 17: DETECTIONS WITH NO APPLICABLE MRLS

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	Notes
492	Water spinach	benzalkonium chloride (sum of BDM-C10:C16)	0.08	The product with the active ingredient benzalkonium chloride was not registered as an agrichemical.
456	Blueberries	benzalkonium chloride (sum of BDM-C10:C16)	0.02	
435	Asparagus	benzalkonium chloride (sum of BDM-C10:C16)	0.08	

⁷ The laboratory is unable to report the sum of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety as defined in the New Zealand MRL Notice. Only the parent is reported in this instance. This is for reference only

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	Notes
402	Rhubarb	benzalkonium chloride (sum of BDM-C10:C16)	0.03	
399	Peach	benzalkonium chloride (sum of BDM-C10:C16)	0.01	
442	Watercress	benzalkonium chloride (sum of BDM-C10:C16)	0.05	
567	Apricot	didecyldimethylammonium chloride congener (DDAC)	0.04	The product with the active ingredient DDAC was not registered as an agrichemical.
353	Beans with pod	didecyldimethylammonium chloride congener (DDAC)	0.01	
430	Peas with pod	didecyldimethylammonium chloride congener (DDAC)	0.06	
400	Peas with pod	didecyldimethylammonium chloride congener (DDAC)	0.02	
599	Peppers, Chilli	didecyldimethylammonium chloride congener (DDAC)	0.02	
442	Watercress	didecyldimethylammonium chloride congener (DDAC)	0.05	
353	Beans with pod	dimethoate	0.02	
374	Beans with pod	dimethoate	0.01	
360	Beans with pod	fluazifop	0.04	
397	Beans with pod	fluazifop	0.17	
433	Beans with pod	fluazifop	0.19	No applicable MRL for components of the residues definition
353	Beans with pod	omethoate	0.02	
374	Beans with pod	omethoate	0.03	
606	Peppers, Sweet	spirotetramat-enol-glucoside	0.02	
369	Cherry, Sweet	spirotetramat-mono-hydroxy	0.09	
549	Apricot	tetrahydrophthalimide (THPI)	1.6	
509	Apricot	THPI	0.18	
567	Apricot	THPI	0.03	
478	Apricot	THPI	0.02	
474	Apricot	THPI	0.01	No applicable MRL. THPI is a metabolite of captan, but it is not part of the residue definition for MRL compliance.
520	Blackberries	THPI	0.13	
455	Blackberries	THPI	0.2	

Sample ID	Commodity	Compound Name	Compound Amount (mg/kg)	Notes
490	Blackberries	THPI	0.38	
456	Blueberries	THPI	0.19	
585	Blueberries	THPI	0.03	
494	Cherries	THPI	0.15	
514	Cherries	THPI	0.04	
532	Cherries	THPI	0.01	
502	Cherries	THPI	0.01	
537	Nectarine	THPI	0.23	
569	Nectarine	THPI	0.21	
475	Nectarine	THPI	0.07	
507	Nectarine	THPI	0.02	
510	Peach	THPI	0.51	
548	Peach	THPI	0.23	
473	Peach	THPI	0.19	
556	Peach	THPI	0.03	
566	Plums (including Prunes)	THPI	0.02	
583	Plums (including Prunes)	THPI	0.03	
354	Strawberry	THPI	0.88	
357	Strawberry	THPI	0.11	
398	Strawberry	THPI	0.86	
405	Strawberry	THPI	0.37	
538	Strawberry	THPI	0.03	
551	Strawberry	THPI	0.27	
585	Blueberries	THPI	0.03	
474	Apricot	THPI	0.01	
567	Apricot	THPI	0.033	

8 Appendices

APPENDIX 1 - SAMPLING GUIDELINES FOR RESIDUES TESTING

Extracted table from Codex document number CAC/GL 33-1999 “Recommended methods of sampling for the determination of pesticide residues for compliance with MRLs”

CAC/GL 33

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Table 4. Plant products: description of primary samples and minimum size of laboratory samples

Commodity classification	Examples	Nature of primary samples to be taken	Minimum size of each laboratory sample
Class A, primary food commodities of plant origin			
1. All fresh fruits , type 1, groups 001-008 All fresh vegetables , type 2, groups 009-019, except group 015 (dry pulses)			
1.1 small sized fresh products units generally < 25 g	berries peas olives	whole units, or packages, or units taken with a sampling device	1 kg
1.2 medium sized fresh products units generally 25-250 g	apples oranges	whole units,	1 kg (at least 10 units)
1.3 large sized fresh products units generally > 250 g	cabbages cucumbers grapes(bunches)	whole units	2 kg (at least 5 units)
2. Pulses , type 2, group 015 Cereal grains , type 3, group 020 Tree nuts , type 4, group 022 Oilseeds , type 4, group 023 Seeds for beverages and sweets , type 4, group 024	soya beans rice, wheat except coconuts coconuts peanuts		1 kg 1 kg 1 kg 5 units 500 g 500 g
3. Herbs , type 5, group 027 (for dried herbs see: <i>Class D</i> , type 12, in section 5 of this Table)	fresh parsley others, fresh	whole units	0.5 kg 0.2 kg
Spices , type 5, group 028	dried	whole units or taken with a sampling device	0.1 kg

APPENDIX 2 - LIST OF ANALYTES SCREENED AND LIMIT OF REPORTING (milligram per kilogram) USED FOR THE 2017-2019 PLANT BASED FOODS SURVEY

The list of all possible chemical residues that are reported by an International Accreditation New Zealand (IANZ) accredited laboratory. The limit of reporting for each chemical is also included.

Compound Name	Limit of reporting (mg/kg)
2-Aminobenzimidazole	<0.010
2-phenylphenol	<0.010
Abamectin	<0.010
Acephate	<0.010
Acetamiprid	<0.010
Acetamiprid-N-desmethyl	<0.010
Acetochlor	<0.010
Acibenzolar acid	<0.010
Acibenzolar-S-methyl	<0.010
Acrinathrin	<0.010
Alachlor	<0.010
Aldicarb	<0.010
Aldicarb-sulfone	<0.010
Aldicarb-sulfoxide	<0.010
Aldrin	<0.010
Allidochlor	<0.010
Ametoctradin	<0.010
Ametryn	<0.010
Anilofos	<0.010
Anthraquinone	<0.010
Atrazine	<0.010
Azaconazole	<0.010
Azamethiphos	<0.010
Azinphos-ethyl	<0.010
Azinphos-methyl	<0.010
Azoxystrobin	<0.010
BDM-C10	<0.010
BDM-C12	<0.010
BDM-C14	<0.010
BDM-C16	<0.010
Benalaxyl	<0.010
Bendiocarb	<0.010
Benfluralin	<0.010
Benodanil	<0.010
Benoxacor	<0.010
Bensulfuron-methyl	<0.010
Bensulide	<0.010
Bentazone	<0.010
Bifenazate	<0.010

Compound Name	Limit of reporting (mg/kg)
Bifenox	<0.010
Bifenthrin	<0.010
Bioresmethrin	<0.010
Bitertanol	<0.010
Bixafer	<0.010
Boscalid	<0.010
Bromacil	<0.010
Bromobutide	<0.010
Bromophos	<0.010
Bromophos-ethyl	<0.010
Bromopropylate	<0.010
Bupirimate	<0.010
Buprofezin	<0.010
Butachlor	<0.010
Butafenacil	<0.010
Butamifos	<0.010
Cadusafos	<0.010
Cafenstrole	<0.010
Captan	<0.010
Carbaryl	<0.010
Carbendazim	<0.010
Carbetamide	<0.010
Carbofuran	<0.010
Carboxin	<0.010
Carfentrazone-ethyl	<0.010
Carpropamid	<0.010
Chlorantraniliprole	<0.010
Chlorbufam	<0.010
Chlordane-cis	<0.010
Chlordane-trans	<0.010
Chlorfenapyr	<0.010
Chlorfenvinphos	<0.010
Chloridazon	<0.010
Chlorimuron-ethyl	<0.010
Chlorobenzilate	<0.010
Chlorothalonil	<0.010
Chlorotoluron	<0.010
Chloroxuron	<0.010
Chlorpropham	<0.010
Chlorpyrifos	<0.010
Chlorpyrifos-methyl	<0.010
Chlorsulfuron	<0.010
Chlorthal-dimethyl	<0.010
Chlorthiophos	<0.010
Chlozolate	<0.010

Compound Name	Limit of reporting (mg/kg)
Chromafenozide	<0.010
Cinidon-ethyl	<0.010
Clethodim	<0.010
Clodinafop-propargyl	<0.010
Clofentezine	<0.010
Clomazone	<0.010
Cloquintocet-mexyl	<0.010
Clothianidin	<0.010
Coumaphos	<0.010
Coumaphos-oxon	<0.010
Cyanazine	<0.010
Cyanophos	<0.010
Cyantraniliprole	<0.010
Cyazofamid	<0.010
Cyclanilide	<0.010
Cycloate	<0.010
Cyclosulfamuron	<0.010
Cyflufenamid	<0.010
Cyfluthrin	<0.010
Cyhalofop-butyl	<0.010
Cyhalothrin	<0.010
Cymoxanil	<0.010
Cypermethrin	<0.010
Cyproconazole	<0.010
Cyprodinil	<0.010
Cyromazine	<0.010
Daimuron	<0.010
DDAC	<0.010
DDD-2,4	<0.010
DDD-4,4	<0.010
DDE-2,4	<0.010
DDE-4,4	<0.010
DDT-2,4	<0.010
DDT-4,4	<0.010
Deltamethrin	<0.010
Demeton-S	<0.010
Demeton-S-methyl	<0.010
Demeton-s-methyl-sulfoxide	<0.010
Demeton-S-sulfone	<0.010
Demeton-S-sulfoxide	<0.010
Desmedipham	<0.010
Diallate	<0.050
Diazinon	<0.010
Dichlobenil	<0.010
Dichlofenthion	<0.010

Compound Name	Limit of reporting (mg/kg)
Dichlofluanid	<0.010
Dichlorvos	<0.010
Diclobutrazol	<0.010
Diclocymet	<0.010
Diclofop-methyl	<0.010
Dicloran	<0.010
Diclosulam	<0.010
Dicofol-2,4	<0.010
Dicofol-4,4	<0.010
Dicrotophos	<0.010
Dicyclanil	<0.010
Dieldrin	<0.010
Diethofencarb	<0.010
Difenoconazole	<0.010
Diflubenzuron	<0.010
Diflufenican	<0.010
Dimepiperate	<0.010
Dimethenamid	<0.010
Dimethoate	<0.010
Dimethomorph	<0.010
Dimethylvinphos	<0.010
Dioxabenzofos	<0.010
Dioxathion	<0.050
Diphenamid	<0.010
Diphenylamine	<0.010
Disulfoton	<0.010
Disulfoton-sulfone	<0.010
Disulfoton-sulfoxide	<0.010
Dithiopyr	<0.010
Diuron	<0.010
Dodine	<0.010
Edifenphos	<0.010
Emamectin Benzoate	<0.010
Endosulfan sulfate	<0.010
Endosulfan-alpha	<0.010
Endosulfan-beta	<0.010
Endrin	<0.010
Endrin ketone	<0.010
EPN	<0.010
Epoxiconazole	<0.010
EPTC	<0.010
Esprocarb	<0.010
Ethalfuralin	<0.010
Ethametsulfuron-methyl	<0.010
Ethiofencarb	<0.010

Compound Name	Limit of reporting (mg/kg)
Ethion	<0.010
Ethiprole	<0.010
Ethofumesate	<0.010
Ethoprophos	<0.010
Ethoxyquin	<0.010
Ethoxysulfuron	<0.010
Ethychlozate	<0.010
Etobenzanid	<0.010
Etoxazole	<0.010
Etridiazole	<0.010
Etrimfos	<0.010
Famoxadone	<0.010
Famphur	<0.010
Fenamidone	<0.010
Fenamiphos	<0.010
Fenamiphos-sulfone	<0.010
Fenamiphos-sulfoxide	<0.010
Fenarimol	<0.010
Fenbuconazole	<0.010
Fenchlorphos	<0.010
Fenhexamid	<0.010
Fenitrothion	<0.010
Fenobucarb	<0.010
Fenothiocarb	<0.010
Fenoxanil	<0.010
Fenoxaprop	<0.010
Fenoxaprop-ethyl	<0.010
Fenoxycarb	<0.010
Fenpiclonil	<0.010
Fenpropathrin	<0.010
Fenpropidin	<0.010
Fenpropimorph	<0.010
Fenpyrazamine	<0.010
Fenpyroximate	<0.010
Fensulfothion	<0.010
Fenthion	<0.010
Fenthion-ethyl	<0.010
Fenthion-oxon	<0.010
Fenthion-oxon-sulfone	<0.010
Fenthion-oxon-sulfoxide	<0.010
Fenthion-sulfone	<0.010
Fenthion-sulfoxide	<0.010
Fentrazamide	<0.010
Fenvalerate	<0.010
Ferimzone	<0.010

Compound Name	Limit of reporting (mg/kg)
Fipronil	<0.010
Fipronil-sulfide	<0.010
Fipronil-sulfone	<0.010
Flamprop	<0.010
Flamprop-methyl	<0.010
Flazasulfuron	<0.010
Florasulam	<0.010
Fluacrypyrim	<0.010
Fluazifop	<0.010
Fluazifop-P-butyl	<0.010
Fluazinam	<0.010
Flubendazole	<0.010
Flubendiamide	<0.010
Flucythrinate	<0.010
Fludioxonil	<0.010
Flufenacet	<0.010
Flumiclorac-pentyl	<0.010
Flumioxazin	<0.010
Fluometuron	<0.010
Flupicolide	<0.010
Fluopyram	<0.010
Fluquinconazole	<0.010
Fluridone	<0.010
Fluroxypyr	<0.010
Flusilazole	<0.010
Fluthiacet-methyl	<0.010
Flutolanil	<0.010
Flutriafol	<0.010
Fluvalinate	<0.010
Fluxapyroxad	<0.010
Folpet	<0.010
Fonofos	<0.010
Forchlorfenuron	<0.010
Formetanate hydrochloride	<0.010
Fosthiazate	<0.010
Fuberidazole	<0.010
Furalaxyl	<0.010
Furametpyr	<0.010
Furathiocarb	<0.010
Halauxifen-methyl	<0.010
Halosulfuron-methyl	<0.010
Haloxyfop-etotyl	<0.010
Haloxyfop-methyl	<0.010
HCH-alpha	<0.010
HCH-beta	<0.010

Compound Name	Limit of reporting (mg/kg)
HCH-delta	<0.010
Heptachlor	<0.010
Heptachlor-endo-epoxide	<0.010
Heptachlor-exo-epoxide	<0.010
Heptenophos	<0.010
Hexachlorobenzene	<0.010
Hexaconazole	<0.010
Hexaflumuron	<0.010
Hexazinone	<0.010
Hexythiazox	<0.010
Imazalil	<0.010
Imazamethabenz-methyl	<0.010
Imazosulfuron	<0.010
Imidacloprid	<0.010
Imidacloprid-olefin	<0.010
Inabenfide	<0.010
Indanofan	<0.010
Indoxacarb	<0.010
Iodocarb	<0.010
Iodofenphos	<0.010
Iodosulfuron-methyl	<0.010
Ioxynil	<0.010
Ipconazole	<0.010
Iprobenfos	<0.010
Iprodione	<0.010
Iprovalicarb	<0.010
Isazofos	<0.010
Isofenphos	<0.010
Isofenphos-methyl	<0.010
Isoprocarb	<0.010
Isoprothiolane	<0.010
Isoproturon	<0.010
Isopyrazam	<0.010
Isoxathion oxon	<0.010
Karbutilate	<0.010
Kresoxim-methyl	<0.010
Lactofen	<0.010
Lenacil	<0.010
Leptophos	<0.010
Lindane	<0.010
Linuron	<0.010
Lufenuron	<0.010
Maldison (Malathion)	<0.010
Mandipropamid	<0.010
Mefenacet	<0.010

Compound Name	Limit of reporting (mg/kg)
Mefenpyr-diethyl	<0.010
Mepanipyrim	<0.010
Mepronil	<0.010
Mesotrione	<0.010
Metalaxyl	<0.010
Metamitron	<0.010
Metconazole	<0.010
Methabenzthiazuron	<0.010
Methacrifos	<0.010
Methamidophos	<0.010
Methidathion	<0.010
Methiocarb	<0.010
Methiocarb-sulfone	<0.010
Methiocarb-sulfoxide	<0.010
Methomyl	<0.010
Methomyl-oxime	<0.010
Methoxychlor	<0.010
Methoxyfenozide	<0.010
Metobromuron	<0.010
Metolachlor	<0.010
Metominostrobin-(E)	<0.010
Metominostrobin-(Z)	<0.010
Metosulam	<0.010
Metrafenone	<0.010
Metribuzin	<0.010
Metsulfuron-methyl	<0.010
Mevinphos	<0.010
Milbemycin A3	<0.010
Milbemycin A4	<0.010
Mirex	<0.010
Molinate	<0.010
Monocrotophos	<0.010
Monolinuron	<0.010
Myclobutanil	<0.010
Napropamide	<0.010
Nicotine	<0.10
Nitrofen	<0.010
Nitrothal-isopropyl	<0.010
Norflurazon	<0.010
Novaluron	<0.010
Octhilinone	<0.010
Omethoate	<0.010
Oryzalin	<0.010
Oxabetrinil	<0.010
Oxadiazon	<0.010

Compound Name	Limit of reporting (mg/kg)
Oxadixyl	<0.010
Oxamyl	<0.010
Oxathiapiprolin	<0.010
Oxycarboxin	<0.010
Oxyfluorfen	<0.010
Paclobutrazol	<0.010
Parathion	<0.010
Parathion-methyl	<0.010
Penconazole	<0.010
Pencycuron	<0.010
Pendimethalin	<0.010
Pentachlorobenzene	<0.010
Penthiopyrad	<0.010
Permethrin	<0.010
Phenmedipham	<0.010
Phenothrin	<0.010
Phenthoate	<0.010
Phorate	<0.050
Phorate-sulfone	<0.010
Phorate-sulfoxide	<0.010
Phosalone	<0.010
Phosmet	<0.010
Phosphamidon	<0.010
Phoxim	<0.010
Picolinafen	<0.010
Piperonyl butoxide	<0.010
Piperophos	<0.010
Pirimicarb	<0.010
Pirimicarb-desmethyl	<0.010
Pirimicarb-desmethylformamido	<0.010
Pirimiphos-methyl	<0.010
Pretilachlor	<0.010
Prochloraz	<0.010
Prochloraz-desimidazole-formylamino	<0.010
Procymidone	<0.010
Profenofos	<0.010
Promecarb	<0.010
Prometryn	<0.010
Propachlor	<0.010
Propamocarb	<0.010
Propanil	<0.010
Propaphos	<0.010
Propaquizafop	<0.010
Propargite	<0.010
Propazine	<0.010

Compound Name	Limit of reporting (mg/kg)
Propetamphos	<0.010
Propham	<0.010
Propiconazole	<0.010
Propoxur	<0.010
Propyzamide	<0.010
Proquinazid	<0.010
Prosulfocarb	<0.010
Prothiofos	<0.010
Pymetrozine	<0.010
Pyraclofos	<0.010
Pyraclostrobin	<0.010
Pyraflufen-ethyl	<0.010
Pyrasulfotole	<0.010
Pyrazophos	<0.010
Pyrethrins	<0.010
Pyributicarb	<0.010
Pyridaben	<0.010
Pyridaphenthion	<0.010
Pyrifenox	<0.010
Pyriftalid	<0.010
Pyrimethanil	<0.010
Pyrimidifen	<0.010
Pyriminobac-methyl-(E)	<0.010
Pyriminobac-methyl-(Z)	<0.010
Pyriproxyfen	<0.010
Pyroquilon	<0.010
Pyroxsulam	<0.010
Quinalphos	<0.010
Quinoclamine	<0.010
Quinoxifen	<0.010
Quintozone	<0.010
Quizalofop-ethyl	<0.010
Rimsulfuron	<0.010
Saflufenacil	<0.010
Sebuthylazine	<0.010
Sethoxydim	<0.010
Simazine	<0.010
Simeconazole	<0.010
Simetryn	<0.010
Spinetoram	<0.010
Spinosad	<0.010
Spiromesifen	<0.010
Spiromesifen-enol	<0.010
Spirotetramat	<0.010
Spirotetramat-enol	<0.010

Compound Name	Limit of reporting (mg/kg)
Spirotetramat-enol-glucoside	<0.010
Spirotetramat-keto-hydroxy	<0.010
Spirotetramat-mono-hydroxy	<0.010
Spiroxamine	<0.010
Sulfentrazone	<0.010
Sulfoxaflor	<0.010
Sulprofos	<0.010
Tebuconazole	<0.010
Tebufenozide	<0.010
Tebufenpyrad	<0.010
Tebuthiuron	<0.010
Tecnazene	<0.010
Teflubenzuron	<0.010
Tefluthrin	<0.010
Temephos	<0.010
Tepraloxymid	<0.010
Terbacil	<0.010
Terbufos	<0.010
Terbufos-sulfone	<0.010
Terbufos-sulfoxide	<0.010
Terbumeton	<0.010
Terbuthylazine	<0.010
Terbutryn	<0.010
Tetrachlorvinphos	<0.010
Tetraconazole	<0.010
Tetradifon	<0.010
Thenylchlor	<0.010
Thiabendazole	<0.010
Thiacloprid	<0.010
Thiamethoxam	<0.010
Thiazopyr	<0.010
Thidiazuron	<0.010
Thiobencarb	<0.010
Thiocyclam hydrogenoxalate	<0.050
Thiometon	<0.010
THPI (Tetrahydrophthalimide)	<0.010
Tiadinil	<0.010
Tolclofos-methyl	<0.010
Tolyfluanid	<0.010
Topramezone	<0.010
Tralkoxydim	<0.010
Transfluthrin	<0.010
Triadimefon	<0.010
Triadimenol	<0.010
Tri-allate	<0.010

Compound Name	Limit of reporting (mg/kg)
Triasulfuron	<0.010
Triazophos	<0.010
Tribenuron-methyl	<0.010
Tribufos	<0.010
Trichlorfon	<0.010
Tricyclazole	<0.010
Trifloxystrobin acid	<0.010
Trifloxystrobin	<0.010
Trifloxysulfuron sodium	<0.010
Triflumizole	<0.010
Triflumuron	<0.010
Trifluralin	<0.010
Triflusulfuron-methyl	<0.010
Triforine	<0.010
Triticonazole	<0.010
Uniconazole	<0.010
Vamidothion	<0.010
Vinclozolin	<0.010
XMC	<0.010
Zoxamide	<0.010