Food Authority

NSW GOVERNMENT

Pesticides in berries survey

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Summary

One hundred samples, each weighing 250-grams, of packaged berries — 80 blueberries and 20 raspberries — were purchased from retail outlets in Sydney on 3rd and 4th November 2025, coinciding with an on-farm compliance campaign by NSW Environment Protection Authority (EPA) officers in berry growing areas of northern NSW.

Samples underwent testing for pesticides in fresh produce at the National Measurement Institute (NMI) laboratory in Melbourne. NMI is accredited by the National Association of Testing Authorities (NATA) for this testing. The analytical suite comprised 218 pesticides including thiometon and its two metabolites (thiometon sulfone and thiometon sulfoxide).

Test results showed that all samples complied with the Australia New Zealand Food Standards Code (the Code).

- One or more pesticide was detected in 95 samples (77 blueberry and 18 raspberry).
- No pesticides were detected in 5 samples (3 blueberry and 2 raspberry).
- There were no detections of any pesticides that were not included in the Food Standards Code.
- No pesticide was found in excess of the maximum residue limit (MRL) specified in the Food Standards Code.
- Thiometon was not detected in any sample.

Background

The NSW Food Authority administers the NSW *Food Act 2003* (the Act). The objectives of the Act include ensuring food is both safe and suitable for human consumption.

Pesticides are agricultural chemicals used to treat pests and diseases during production, growing and storing of produce. These include insecticides, fungicides and herbicides (weed control) that may be used during growing of produce; and insecticides, fungicides or fumigants that may be used during or after packing produce (FSANZ, 2025).

The Australia New Zealand Food Standards Code (The Code) prescribes the limits for pesticide residues in food in Standard 1.4.2 Agvet Chemicals. The purpose of Standard 1.4.2 and Schedules 20 - 22 is to set out the maximum residue limits (MRLs) and extraneous residue limits (ERLs) for agvet chemicals that are permitted in foods for sale. Limits prescribed in the Code constitute mandatory requirements applying to all food products of a particular class whether produced domestically or imported. A residue is within the legal limits if it is at or below the established MRL for a commodity. Where an MRL has not been established for a commodity, any detectable residue is considered unacceptable.

MRLs are not health standards. Large safety margins are used in setting MRLs and foods with pesticide residues above the MRL do not automatically represent a food safety risk. Provided the dietary exposure of the chemical falls within reference health standards (e.g. acceptable daily intake for chronic toxicity or acute reference dose for acute toxicity), an MRL exceedance may reflect poor or non-compliant pesticide use practices.

The NSW Environment Protection Authority (EPA) regulates the use of pesticides in NSW under the *Pesticides Act 1999*. The NSW Department of Primary Industries and Regional Development (DPIRD) and the Food Authority do not regulate pesticide use or conduct environmental monitoring on-farm. DPIRD provides advice on crop protection for primary producers.

Results of the analyte screen

Five samples, 3 blueberry and 2 raspberry, were found to contain no pesticides. The remaining 95 samples were each found to contain one or more pesticides that are included in the Code's list of allowed pesticides within levels that are allowed by the Code.

Thiometon (and its metabolites) was not found in any sample.

Table 1. Data summary

Test result	Interpretation of test result	Number of samples with the test result
Below the limit of reporting	The pesticide residue was either completely absent or present at a concentration too low to be quantified by the method of analysis used. **Result complies with the Food Standards Code.**	5 *(3 blueberry, 2 raspberry)*
Less than or equal to the MRL	The pesticide residue is below or equal to the established MRL for a commodity. The quantified residue is within the legal limits (below or at the MRL). **Result complies with the Food Standards Code.**	95 *(77 blueberry, 18 raspberry)*
Greater than the MRL	The pesticide residue is above the established MRL for a commodity. This result usually indicates misuse of a pesticide or failure in Good Agricultural Practice (GAP). **Result does not comply with the Food Standards Code.**	0
Unsupported use	The pesticide residue has been detected in a commodity for which an MRL has not been established. Where an MRL has not been established, any detectable residue is considered unacceptable. **Result does not comply with the Food Standards Code.**	0
Thiometon detection	Thiometon is not registered for use in Australia and does not have an MRL established in the Food Standards Code. Any detection of thiometon, thiometon-sulfone or thiometon-sulfoxide is unacceptable. **Result does not comply with the Food Standards Code.**	0

Conclusion and recommendation

All samples were found to comply with the Food Standards Code.

The Food Authority recommends that consumers ensure all fresh fruit and vegetables are washed with cool tap water immediately before eating.

Next steps

The Food Authority will continue to monitor produce by evaluating selected publicly available data, conducting targeted surveys, participating in National surveys and sharing data with key partners.

Appendix 1. Analyte list

Table 2: Analyte list

Group	Compound	Limits of Reporting (mg/kg)
Organochlorines	Aldrin	0.02
Organochlorines	BHC - Total	0.02
Organochlorines	BHC ά	0.02
Organochlorines	BHC β	0.02
Organochlorines	BHC δ	0.02
Organochlorines	Chlordane	0.02
Organochlorines	DDD - o.p.	0.02
Organochlorines	DDD - p.p.	0.02
Organochlorines	DDE - o.p.	0.02
Organochlorines	DDE - p.p.	0.02
Organochlorines	DDT - o.p.	0.02
Organochlorines	DDT - p.p.	0.02
Organochlorines	DDT - Total	0.02
Organochlorines	Dicofol	0.02
Organochlorines	Dieldrin	0.02
Organochlorines	Endosulfan - Sulphate	0.02
Organochlorines	Endosulfan - Total	0.02
Organochlorines	Endosulfan ά	0.02
Organochlorines	Endosulfan β	0.02
Organochlorines	Endrin	0.05
Organochlorines	HCB	0.01
Organochlorines	Heptachlor	0.01
Organochlorines	Heptachlor Epoxide	0.01
Organochlorines	Lindane	0.02

Group	Compound	Limits of Reporting (mg/kg)
Organochlorines	Methoxychlor	0.05
Organochlorines	Nonachlor	0.05
Organochlorines	Trichlorfon	0.02
Organophosphates	Acephate	0.01
Organophosphates	Azinphos ethyl	0.02
Organophosphates	Azinphos methyl	0.02
Organophosphates	Bromophos ethyl	0.05
Organophosphates	Carbophenothion	0.05
Organophosphates	Chlorfenvinphos	0.05
Organophosphates	Chlorpyrifos	0.01
Organophosphates	Chlorpyrifos methyl	0.01
Organophosphates	Chlorthal dimethyl	0.02
Organophosphates	Coumaphos	0.01
Organophosphates	Demeton-S-Methyl	0.01
Organophosphates	Diazinon	0.02
Organophosphates	Dichlorvos	0.02
Organophosphates	Dimethoate	0.02
Organophosphates	Dioxathion	0.05
Organophosphates	Ethion	0.05
Organophosphates	Fenamiphos	0.01
Organophosphates	Fenchlorphos	0.05
Organophosphates	Fenitrothion	0.02
Organophosphates	Fenthion	0.01
Organophosphates	Formothion	0.05
Organophosphates	Malathion	0.02
Organophosphates	Methacrifos	0.05

Group	Compound	Limits of Reporting (mg/kg)
Organophosphates	Methamidophos	0.01
Organophosphates	Methidathion	0.01
Organophosphates	Mevinphos	0.02
Organophosphates	Monocrotophos	0.01
Organophosphates	Omethoate	0.02
Organophosphates	Parathion ethyl	0.02
Organophosphates	Parathion methyl	0.02
Organophosphates	Phorate	0.02
Organophosphates	Phosalone	0.05
Organophosphates	Phosmet	0.02
Organophosphates	Phosphamidon	0.05
Organophosphates	Pirimiphos methyl	0.02
Organophosphates	Profenofos	0.01
Organophosphates	Prothiofos	0.01
Organophosphates	Temephos	0.05
Organophosphates	Terbufos	0.05
Organophosphates	Triazophos	0.05
Herbicides	Atrazine	0.01
Herbicides	Bromacil	0.01
Herbicides	Carfentrazone Ethyl	0.02
Herbicides	Chlorpropham	0.02
Herbicides	Clethodim	0.02
Herbicides	Dimethenamid	0.01
Herbicides	Diuron	0.05
Herbicides	Ethofumesate	0.01
Herbicides	Fluazifop-p-butyl	0.01

Group	Compound	Limits of Reporting (mg/kg)
Herbicides	Fluometuron	0.01
Herbicides	indaziflam	0.01
Herbicides	Isoxaben	0.01
Herbicides	Linuron	0.01
Herbicides	Methabenzthiazuron	0.01
Herbicides	Metolachlor	0.01
Herbicides	Metribuzin	0.01
Herbicides	Molinate	0.05
Herbicides	Napropamide	0.01
Herbicides	Norflurazon	0.01
Herbicides	Oxyfluorfen	0.01
Herbicides	Pendimethalin	0.01
Herbicides	Propachlor	0.02
Herbicides	Propazine	0.01
Herbicides	Propyzamide	0.01
Herbicides	Pyroxasulfone	0.01
Herbicides	Saflufenacil	0.01
Herbicides	Sethoxydim	0.02
Herbicides	Simazine	0.01
Herbicides	Trifluralin	0.01
Acaricides	Buprofezin	0.01
Acaricides	Clofentezine	0.01
Acaricides	Disulphoton	0.01
Acaricides	Etoxazole	0.01
Acaricides	Fenpyroximate	0.01
Acaricides	Hexythiazox	0.01

Group	Compound	Limits of Reporting (mg/kg)
Acaricides	Propargite	0.01
Acaricides	Pyridaben	0.02
Acaricides	Tebufenpyrad	0.02
Acaricides	Tetradifon	0.02
Insecticides	Acetamiprid	0.01
Insecticides	Carbofuran	0.01
Insecticides	Chlorantaniliprole	0.01
Insecticides	Clothianidin	0.01
Insecticides	Cyantraniliprole	0.01
Insecticides	Emamectin	0.01
Insecticides	Fenoxycarb	0.02
Insecticides	Fipronil	0.01
Insecticides	Flubendiamide	0.02
Insecticides	Imidacloprid	0.01
Insecticides	Indoxacarb	0.01
Insecticides	Methomyl	0.02
Insecticides	Methoxyfenozide	0.02
Insecticides	Novaluron	0.05
Insecticides	Pymetrozine	0.01
Insecticides	Pyriproxyfen	0.01
Insecticides	Spinetoram	0.01
Insecticides	Spinosad	0.01
Insecticides	Spirotetramat	0.01
Insecticides	Sulfoxaflor	0.01
Insecticides	Tebufenozide	0.02
Insecticides	Thiacloprid	0.02

Group	Compound	Limits of Reporting (mg/kg)
Insecticides	Thiamethoxam	0.01
Insecticides	Vamidothion	0.05
Carbamates	Aldicarb (sulphone & sulphoxide)	0.01
Carbamates	Carbaryl	0.01
Carbamates	Methiocarb	0.05
Carbamates	Pirimicarb	0.02
Synthetic Pyrethroids	Bifenthrin	0.01
Synthetic Pyrethroids	Bioresmethrin	0.02
Synthetic Pyrethroids	Cyfluthrin	0.01
Synthetic Pyrethroids	Cyfluthrin β	0.01
Synthetic Pyrethroids	Cyhalothrin	0.01
Synthetic Pyrethroids	Cyhalothrin λ	0.01
Synthetic Pyrethroids	Cypermethrin	0.01
Synthetic Pyrethroids	Cypermethrin ά	0.01
Synthetic Pyrethroids	Deltamethrin	0.02
Synthetic Pyrethroids	Esfenvalerate	0.01
Synthetic Pyrethroids	Fenvalerate	0.01
Synthetic Pyrethroids	Fluvalinate	0.01
Synthetic Pyrethroids	Permethrin	0.02
Synthetic Pyrethroids	Phenothrin	0.02
Synthetic Pyrethroids	Pyrethrins	0.02
Synthetic Pyrethroids	tau-Fluvalinate	0.02
Fungicides	Azoxystrobin	0.01
Fungicides	Benalaxyl	0.01
Fungicides	Bitertanol	0.05
Fungicides	Boscalid	0.01

Group	Compound	Limits of Reporting (mg/kg)
Fungicides	Captan	0.05
Fungicides	Carbendazim	0.01
Fungicides	Chlorothalonil	0.01
Fungicides	Cyazofamid	0.01
Fungicides	Cyproconazole	0.01
Fungicides	Cyprodinil	0.01
Fungicides	Diclofluanid	0.02
Fungicides	Dicloran	0.02
Fungicides	Difenoconazole	0.01
Fungicides	Dimethomorph	0.01
Fungicides	Diphenylamine	0.02
Fungicides	Epoxiconazole	0.01
Fungicides	Fenarimol	0.05
Fungicides	Fenbuconazole	0.01
Fungicides	Fenhexamid	0.02
Fungicides	Fenpyrazamine	0.01
Fungicides	Fludioxonil	0.02
Fungicides	Fluopicolide	0.01
Fungicides	Fluopyram	0.01
Fungicides	Fluquinconazole	0.01
Fungicides	Flusilazole	0.01
Fungicides	Flutolanil	0.01
Fungicides	Flutriafol	0.01
Fungicides	Fluxapyroxad	0.01
Fungicides	Furalaxyl	0.01
Fungicides	Hexaconazole	0.05

Group	Compound	Limits of Reporting (mg/kg)
Fungicides	Imazalil	0.05
Fungicides	Iprodione	0.01
Fungicides	Kresoxim methyl	0.02
Fungicides	Mandestrobin	0.01
Fungicides	Mandipropamid	0.01
Fungicides	Metalaxyl	0.01
Fungicides	Metrafenone	0.01
Fungicides	Myclobutanil	0.02
Fungicides	Oxadixyl	0.01
Fungicides	Oxycarboxin	0.05
Fungicides	Paclobutrazol	0.01
Fungicides	Penconazole	0.02
Fungicides	Penthiopyrad	0.01
Fungicides	Piperonyl butoxide	0.01
Fungicides	Prochloraz	0.05
Fungicides	Procymidone	0.01
Fungicides	Propamocarb	0.02
Fungicides	Propiconazole	0.01
Fungicides	Proquinazid	0.01
Fungicides	Pyraclostrobin	0.01
Fungicides	Pyrimethanil	0.01
Fungicides	Quintozene	0.01
Fungicides	Tebuconazole	0.01
Fungicides	Tetraconazole	0.01
Fungicides	Thiabendazole	0.01
Fungicides	Tolcophos methyl	0.01

Group	Compound	Limits of Reporting (mg/kg)
Fungicides	Tolylfluanid	0.05
Fungicides	Triadimefon	0.05
Fungicides	Triadimenol	0.01
Fungicides	Trifloxystrobin	0.01
Fungicides	Vinclozolin	0.02
Plant Growth Regulators	Benzyladenine	0.005
Plant Growth Regulators	Forchlorfenuron	0.01
Plant Growth Regulators	Uniconazole	0.01
Other	Chlorfenapyr	0.02
Phenols	O-Phenylphenol	0.02
Insecticide (Acaricide)	Thiometon	0.01
Insecticide (Acaricide)	Thiometon sulfone* Thiometon sulfoxide*	0.01

* Metabolites of Thiometon, reported together, summed with Thiometon result.

Definitions

FSANZ Food Standards Code

www.foodstandards.gov.au/food-standards-code/legislation#chapter1

Standard 1.1.2 Definitions used throughout the Code	
agvet chemical	means an agricultural chemical product or a veterinary chemical product, within the meaning of the Agvet Code. *Note* The Agvet Code is the Agricultural and Veterinary Chemicals Code set out in the Schedule to the *Agricultural and Veterinary Chemicals Code Act 1994* (Cth). See subsection 4(1) of the FSANZ Act.
Standard 1.4.2 Agvet chemicals 1.4.2—3 Definitions and interpretation *Note* In this Code (see section 1.1.2—2):	
agvet chemical	means an agricultural chemical product or a veterinary chemical product, within the meaning of the Agvet Code. *Note* The Agvet Code is the Code set out in the Schedule to the *Agricultural and Veterinary Chemicals Code Act 1994* (Cth). See subsection 4(1) of the FSANZ Act.
extraneous residue limit or ERL	for an agvet chemical in a food, means the amount identified in Schedule 21 for the permitted residue of that agvet chemical in that food.
maximum residue limit or MRL	for an agvet chemical in a food, means the amount identified in Schedule 20 for the permitted residue of that agvet chemical in that food.
(1) In this Standard:	
permitted residue	of an *agvet chemical, means a chemical that is identified in Schedule 20 or Schedule 21 as being a permitted residue in relation to the agvet chemical.

More information

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