



National Residue Survey 2018–19

Macadamia



The National Residue Survey (NRS) is an operational unit within the Australian Government Department of Agriculture, and since 1992 has been funded by industries through levies or contracted by direct funding.

The NRS is an essential part of Australia's pesticide and veterinary medicine residue management framework providing verification of good agricultural practice in support of chemical control-of-use legislation and guidelines.

NRS programs monitor the levels of, and associated risks from, pesticides and veterinary medicine residues and contaminants in Australian food products. The programs help to facilitate and encourage ongoing access to domestic and export markets. NRS supports Australia's primary producers and food processors who provide quality animal, grain and horticulture products which meet both Australian and relevant international standards.

The macadamia residue monitoring program

The macadamia residue monitoring program is a cooperative arrangement between the National Residue Survey, the Australian Macadamia Society and macadamia processing plants. Since 1996, the program has been funded by the NRS component of the statutory levy on macadamia production.

Key points

- In 2018–19, the overall compliance rate against Australian standards was 100 percent.
- The macadamia industry has an unbroken record of 100 percent compliance since program commencement in 1996.
- Australian macadamia producers continue to demonstrate a high degree of good agricultural practice.
- The National Residue Survey is certified to ISO 9001 Quality Management System.

The program involves the testing of Australian macadamia for a range of chemical residues and environmental contaminants, which ensures the macadamia industry can meet quality assurance and market access requirements for domestic and international markets.

Sample collection

Samples are collected at macadamia processing plants in accordance with NRS procedures. The program involves the collection of 100 to 150 samples of macadamia nut from eight processing plants located in northern New South Wales and Queensland. Once collected, samples are freighted to the contract laboratory for analysis. All data collected

is entered into the NRS Information Management System and residue testing reports are automatically generated for the macadamia processing plants.

Analytical screens

Analytical screens are developed in consultation with the industry and take into account Australian registered chemicals, chemical residue profiles and overseas market requirements.

Macadamia samples are screened for a range of different insecticides, herbicides, fungicides and environmental contaminants, as outlined in Table 1.

TABLE 1 Analytical screens for macadamia program

Analytical screen	Chemical group	Analyte
Multi-residue pesticide screen	Insecticides	94 analytes including acephate, abamectin, bifenthrin, diazinon, malathion, pyrethrins and spinosad
	Fungicides	55 analytes including azoxystrobin, boscalid, captan, iprodione, fludioxonil and propiconazole
	Herbicides	46 analytes including atrazine, bromacil, clopyralid, isoxaben, norflurazon and simazine
	Organochlorines	aldrin, chlordane, DDT, dieldrin, endosulfan, endrin, HCB, HCH, heptachlor, lindane and mirex
	Physiological Modifier	diphenylamine
Specific herbicides	Herbicides	amitrole, diclofop, diquat, fenoxaprop, flamprop, fluazifop, glufosinate, glyphosate, haloxyfop, paraquat and quizalofop
Metals	Elements	arsenic, cadmium, copper, lead and mercury



TABLE 2 Compliance rates for the past 10 years against Australian standards

Years	Samples collected	Compliance rates (%)
2009–10	185	100
2010–11	186	100
2011–12	141	100
2012–13	92	100
2013–14	126	100
2014–15	112	100
2015–16	135	100
2016–17	129	100
2017–18	123	100
2018–19	128	100

Results

In 2018–19, a total of 128 macadamia samples were collected for analysis. The results were compared with the Australian standards and where appropriate, relevant international standards.

A summary of macadamia compliance rates against Australian standards over the past 10 years is provided in Table 2. The results highlight excellent compliance with Australian standards and demonstrate the strong commitment of the macadamia industry to good agricultural practices. The consistently excellent compliance rates help maintain the reputation and integrity of Australian macadamia nuts in international and domestic markets. The yearly summary datasets for the macadamia program are located on the department's website <http://agriculture.gov.au/ag-farm-food/food/nrs/nrs-results-publications>

Laboratory selection and performance

The NRS contracts laboratories to analyse animal and plant product samples for pesticide/veterinary medicine residues and environmental contaminants.

Laboratories are selected through the Australian Government tendering process on the basis of their proficiency and value for money. Laboratories must be accredited to international standard ISO/IEC 17025 at commencement of testing.

Contracted laboratories are proficiency tested by the NRS to ensure the validity of their analytical results and technical competence.

The NRS has been accredited by the National Association of Testing Authorities as a proficiency test provider since July 2005.



International export markets

The NRS maintains a database of maximum residue limits (MRLs) established for Australia and major export markets for industries supported by the NRS. All analysis results are checked for compliance against Australian standards and relevant international MRLs.

The Australian MRL standard can be accessed at <https://www.legislation.gov.au/Details/F2019C00435> and MRL requirements for international export markets can be found at <http://agriculture.gov.au/ag-farm-food/food/nrs/databases>.



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