



Australian Government

**Department of Agriculture
and Water Resources**

National Residue Survey 2017–18

Grains



The National Residue Survey (NRS) is an operational unit within the Australian Government Department of Agriculture and Water Resources, 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 residue monitoring programs monitor the levels of, and associated risks from, pesticides and veterinary medicine residues 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, grains and horticulture products which meet both Australian and relevant international standards.

Grains program overview

Since 1993, the NRS grains program has been funded by the NRS component of the statutory levy on grains.

The program involves the sampling and testing of Australian export and domestic traded grains for a range of pesticides and environmental contaminants. Representative samples are collected at export out-turn and domestic receipt.

The program covers cereal grains (barley, maize, oat, sorghum, triticale, wheat, wheat durum), pulses (chickpea, cowpea, faba bean, field pea, lentil, lupin,

Key points

- In 2017–18, the overall compliance rate against Australian standards was 99.2 per cent.
- Australian primary producers and grains handlers continue to demonstrate a high degree of good agricultural practice.
- The National Residue Survey is certified to ISO 9001 Quality Management System.

mung bean, navy bean, pigeon pea, vetch), and oilseeds (canola, linseed, safflower, soybean, sunflower). The milled fractions of wheat, wheat durum, soybean and maize are included in the milled grains program.

Sample collection

On average, approximately 6000 grain samples are collected per annum at bulk export terminals, container export packers, oilseed crushers, feed mills, flour mills, feedlots and food processors. A breakdown of samples collected per crop group and sample program in 2017–18 is provided in Table 1. Once collected, grain 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 program participants.

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.

Grain samples are screened for a range of different insecticides, herbicides, fungicides and environmental contaminants, as outlined in Table 2.

Results

In 2017–18, a total of 5,857 samples was collected for analysis. The results were compared with the Australian standards and where appropriate, relevant international standards.

A summary of compliance rates against Australian standards for bulk export, container export and domestic trade programs over the past five years is provided in Table 3. The results highlight an excellent compliance status against Australian standards and demonstrate the strong commitment of the grains industry to good agricultural practice. The consistently high compliance rates help maintain the reputation and integrity of Australian grains in international and domestic markets.

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.

TABLE 1 Summary of samples collected per crop group and program in 2017–18

Crop group	Bulk export program	Container export program	Domestic trade program
Cereals	2,549	1,494	657
Oilseeds	254	68	197
Pulses	145	467	26
Total	2,948	2,029	880

TABLE 2 Analytical screens for the grains program

Chemical screen	Chemical group	Analyte
Multi-residue pesticide screen	Insecticides	abamectin, acephate, acetamiprid, aldicarb, amitraz, azamethiphos, azinphos-methyl, bifentazate, bifenthrin, bioresmethrin, buprofezin, cadusafos, carbaryl, carbofuran, chlorantraniliprole, chlorfenapyr, chlorfenvinphos, chlorpyrifos, chlorpyrifos-methyl, clofentezine, clothianidin, cyfluthrin, cyhalothrin, cypermethrin, deltamethrin, diafenthiuron, diazinon, dichlorvos, dicofol, diflubenzuron, dimethoate, disulfoton, emamectin, esfenvalerate, ethion, ethoprophos, etoxazole, fenamiphos, fenbutatin oxide, fenitrothion, fenoxycarb, fenpyroximate, fenthion, fenvalerate, fipronil, hexythiazox, imidacloprid, indoxacarb, malathion (maldison), methacrifos, methamidophos, methidathion, methiocarb, methomyl, methoprene, methoxychlor, methoxyfenozide, mevinphos, monocrotophos, omethoate, parathion, parathion-methyl, permethrin, phenothrin, phorate, phosmet, piperonyl butoxide, pirimicarb, pirimiphos-methyl, profenofos, propargite, prothiofos, pymetrozine, pyrethrins, pyriproxyfen, spinetoram, spinosad, spirotetramat, sulfoxaflor, tau-fluvalinate, tebufenozide, tebufenpyrad, terbufos, tetradifon, thiacloprid, thiamethoxam, thiodicarb, triazofos, trichlorfon, triflumuron
	Fungicides	azoxystrobin, benalaxyl, benomyl, bitertanol, boscalid, bupirimate, captan, carbendazim, chlorothalonil, cyproconazole, cyprodinil, difenoconazole, dimethomorph, dithianon, dodine, epoxiconazole, etridiazole, fenarimol, fenhexamid, fluazinam, fludioxonil, fluquinconazole, flusilazole, flutriafol, fluxapyroxad, hexaconazole, imazalil, ipconazole, iprodione, kresoxim-methyl, metalaxyl, myclobutanil, oxadixyl, penconazole, prochloraz, procymidone, propiconazole, prothioconazole, pyraclostrobin, pyrimethanil, quinoxifen, spiroxamine, tebuconazole, thiabendazole, tolclofos-methyl, triadimefon, triadimenol, trifloxystrobin, triticonazole, vinclozolin
	Herbicides	2,2-DPA, 2,4-D, atrazine, bromacil, bromoxynil, carfentrazone-ethyl, chlorpropham, chlorsulfuron, clorthal-demethyl, clethodim, clodinafop-propargyl, clopyralid, cyanazine, dicamba, dichlobenil, diflufenican, diuron, ethofumesate, flumetsulam, imazamox, imazapic, imazapyr, imazaquin, imazethapyr, iodosulfuron-methyl, ioxynil, isoxaben, linuron, MCPA, methabenthiuron, metolachlor, metosulam, metribuzin, metsulfuron-methyl, napropamide, norflurazon, oryzalin, oxyfluorfen, pendimethalin, picloram, propachlor, propyzamide, saflufenacil, sethoxydim, simazine, tralkoxydim, triasulfuron, triclopyr, trifluralin
	Contaminants	aldrin and dieldrin, chlordane, DDT, endrin, endosulfan, HCB, HCH, heptachlor, lindane, mirex
Specific herbicides	Herbicides	amitrole, dichlorprop-P, diclofop-methyl, diquat, fenoxaprop-ethyl, flamprop-M-methyl, fluazifop-p-butyl, glufosinate, glyphosate, haloxyfop, paraquat, quizalofop-ethyl, quizalofop-p-tefuryl

TABLE 3 Compliance rates against Australian standards over the past five years

Years	Bulk export program		Container export program		Domestic trade program	
	Samples collected	Compliance rates (%)	Samples collected	Compliance rates (%)	Samples collected	Compliance rates (%)
2013–14	3,351	99.7	1,802	98.9	984	97.9
2014–15	3,452	99.9	2,034	98.8	753	97.5
2015–16	2,900	99.8	2,284	98.9	1,006	96.1
2016–17	4,166	99.8	3,755	99.0	892	97.3
2017–18	2,948	99.8	2,029	99.0	880	97.4

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.

Australian MRL standard can be accessed at <https://www.legislation.gov.au/Details/F2018C00574> 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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