



# National Residue Survey 2022–23

## Pome fruit



Image courtesy of Horticulture Innovation Australia

The National Residue Survey (NRS) operates within the Australian Government Department of Agriculture, Fisheries and Forestry, and since 1992 has been funded by industries through levies and direct contracts.

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. The 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.

### Pome fruit program overview

The pome fruit program is a cooperative arrangement between the National Residue Survey, Apple & Pear Australia Ltd. (APAL) and the Australian pome fruit industry. Since 1998, the pome fruit program has been funded by the NRS component of the statutory levy on apple and pear production.

The program involves testing of pome fruit for a range of pesticides, environmental contaminants, and microorganisms, which ensures industry can meet quality assurance and market access requirements for domestic and international markets. The program is into its fifth season of offering patulin testing for apple and pear juice.

### Key points

- In 2022–23, the overall compliance with Australian standards was 97.75%.
- Australian pome fruit producers continue to demonstrate a high degree of good agricultural practice.
- The National Residue Survey's quality management system (QMS) is certified to ISO standard 9001:2015.

## Sample collection

Each year, up to 400 pome fruit samples are collected from packing sheds, markets, and growers throughout Australia in accordance with NRS procedures. Once collected, samples are freighted to the contract laboratory for analysis. All sample data is entered into the NRS Information Management System and residue testing result reports are automatically generated for program participants.

## Analytical screens

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

Apple and pear samples are screened for a range of different insecticides, herbicides, fungicides, environmental contaminants, and microorganisms, as shown in Table 1.

## Results

In 2022–23, a total of 222 pome fruit and juice samples were collected for residue analysis. The results were compared with Australian standards and where appropriate, relevant international standards. All 199 fruit samples were subjected to a multi-residue screen and the 23 juice samples were tested for patulin.

119 samples were tested for metals in addition to the multi-residue screen. The results indicated detections only of lead and copper. These low-level detections help reinforce the high-quality status of Australian pome fruits.

In addition to the multi-residue screen and metal screen, 110 pome fruit samples were tested for microorganisms and food pathogens. None of the samples had contaminants detected above the Limit of Reporting (LOR).



Images courtesy of Horticulture Innovation Australia

The results show excellent compliance with Australian food safety standards and demonstrate the strong commitment of the pome fruit industry to good agricultural practice.

A summary of compliance rates against the Australian MRL standards for pesticide residues over the past 5 years is provided in Table 2. The results highlight consistent compliance with Australian standards and help maintain the reputation and integrity of Australian pome fruit in domestic and international markets.

The 2022-23 financial year datasets for the pome fruit program are located on the department’s website [agriculture.gov.au/nrs-results-publications](https://agriculture.gov.au/nrs-results-publications)

**Table 1.** Analytical screens for the pome fruit program

| Analytical screen                 | Chemical group         | Analyte/<br>microorganisms   |
|-----------------------------------|------------------------|--|
| Multi-residue pesticide screen    | Insecticide            | Over 90 analytes including acephate, abamectin, bifenthrin, diazinon, malathion, pyrethrin and spinosad  |
|                                   | Fungicides             | Over 55 analytes including azoxystrobin, boscalid, captan, iprodione, fludioxonil and propiconazole  |
|                                   | Herbicides             | Over 45 analytes including atrazine, bromacil, clopyralid, isoxaben, norflurazon and simazine  |
|                                   | Organochlorines        | aldrin and dieldrin, chlordane, DDT, endosulfan, endrin, HCB, lindane (gamma HCH), heptachlor and mirex  |
|                                   | Physiological modifier | diphenylamine  |
| Metals                            | Elements               | arsenic, cadmium, copper, lead and mercury   |
| Microorganisms and food pathogens | Bacteria               | thermotolerant coliforms, <i>Escherichia coli</i> , <i>Listeria</i> species, <i>Salmonella</i> species, coagulase-positive <i>Staphylococcus</i> species |
| Contaminants                      | Mycotoxin              | patulin  |

**Table 2.** Rates of pesticide compliance with Australian standards over the past 5 years

| Years   | Apple program     |                      | Pear program      |                      |
|---------|-------------------|----------------------|-------------------|----------------------|
|         | Samples collected | Compliance rates (%) | Samples collected | Compliance rates (%) |
| 2018-19 | 245               | 98.4                 | 77                | 98.7                 |
| 2019-20 | 290               | 99.7                 | 75                | 100                  |
| 2020-21 | 271               | 96.3                 | 85                | 92.9                 |
| 2021-22 | 208               | 99.0                 | 54                | 98.1                 |
| 2022-23 | 167               | 97.0                 | 32                | 100                  |

### 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 procurement process based on 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 information on maximum residue limits (MRLs) that apply to Australia and major export markets for industries supported by the NRS. All analysis results are checked for compliance with Australian standards and relevant international MRLs.

For the Australian MRL standard see [legislation.gov.au/Details/F2023L01350](https://legislation.gov.au/Details/F2023L01350)

For MRL standards for some international export markets see links at [agriculture.gov.au/nrs-databases](https://agriculture.gov.au/nrs-databases)

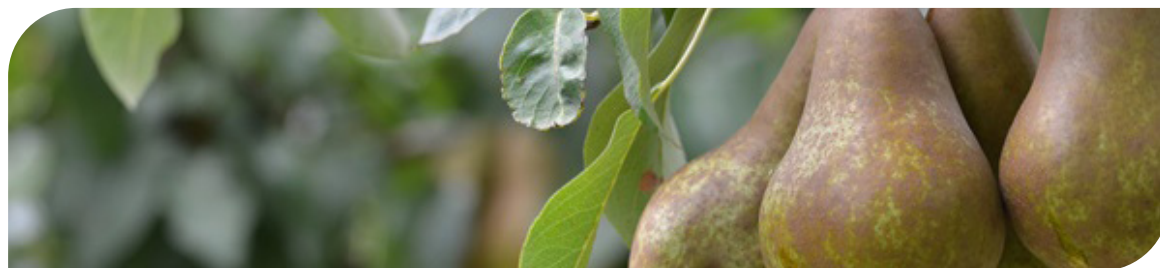


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