



Pesticide Breaches and Australian Imported Food 2017-2019



**Friends of
the Earth
Australia**

Pesticide Breaches and Australian Imported Food 2017-2019

Anthony Amis | March 2020

Graphic design Somerset Bean

www.pesticides.australianmap.net



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Foreword

This report summarises information pertaining to pesticide residues on food items imported into Australia between 2017-19. The only easily accessible source of information on food imports from AQIS (Australian Quarantine and Inspection Service) Failing Food Reports, whose monthly reports are available online.

www.agriculture.gov.au/import/goods/food/inspection-compliance/failing-food-reports

Initially Friends of the Earth (FoE) was going to look at a decade of data from individual Failing Food reports from 2010 to 2019, but a few weeks after accessing 2010 and 2011 data, the 84 remaining reports for the years 2010-16 were “**oddly**” removed from the Department of Agriculture (DoA) website. A request was made to the DoA for copies of the reports that had been freely available, but no response from the DoA was offered. Instead FoE reviewed data that remained online and these were from the years 2017-2019.

In terms of this report, data from the 36 monthly Failing Food Reports for the years 2017-2019 was entered into an excel spreadsheet and extrapolations of data based on date, food types, country of origin, company names, pesticides and amounts was then collated. This provided the ‘backbone’ of data used to generate the final results. The data provides a useful insight into pesticide regimes employed in the source country of origin highlighting which pesticides are commonly used and which are most problematic in terms of breaching Australian quarantine law.

FoE was interested in determining what pesticides were being tested for on imported foods, which pesticides are the most frequently detected, which foods are most “**risky**” in terms of pesticides, which countries are most “**risky**” in terms of imported food with pesticide traces and what food exporting companies are the most frequent “**offenders**” of exporting food to Australia, with “**illegal**” levels of pesticide residue.

FoE was also interested in better understanding what pesticide residues consumers could be exposed to by eating imported foods and what type of pesticide regimes are employed in the growing and production of food imported into Australia.

It is highly likely that consumers of many of the foodstuffs in this report, may be exposed to these chemicals on a regular basis at varying levels.

FoE hopes that this report will help shed some light on some of these matters.

Main Findings Summary

- There was a total 400 pesticide detections at or above MRLs' between 2017-19, with a total of 47 different pesticides breaching MRLs.
- There was a total 254 separate food consignment MRL breaches between 2017-19. Many consignments had multiple detections of pesticides, the most being 10 different pesticides.
- China was the country with the most pesticide breaches (148), followed by India (93), Vietnam (44) and Thailand (35). These 4 countries represented 80% of the pesticide breaches. 37% from China alone.
- The most commonly detected, of the 47 pesticides breaching MRLs were: Carbendazim (53), Chlorpyrifos (52), Difenconazole (37), Cyhalothrin (31), Tebuconazole (23), Cypermethrin (21), Profenofos (19) and Acephate (19). These 8 pesticides represent 63.75% of all pesticide detections breaching MRLs.
- 201 of the pesticide breaches were insecticides, with 199 of the pesticides being fungicides. No herbicides were detected by AQIS over the 3 year period. (Only 4 herbicides were tested for by the Department of Agriculture). The most frequently used pesticide in the world, Glyphosate was not tested for.
- China dominated fungicide MRL breaches, whilst India dominated insecticide MRL breaches. This highlights the issue that fungicides seem to be more problematic on fruits grown in South East Asian countries.
- 132 companies exported food to Australia which breached pesticide MRLs over the 3 year period. The highest number of pesticide breaches were associated with Chinese based Zhangzhou Xinmingxing Trading Co Ltd (China) 28, Innovative Cuisine (India) 24 and Vadilal Industries Limited (India) 24.
- In terms of consignment breaches the highest number were associated with Vadilal Industries Limited (India) 19, Innovative Cuisine (India) 17 and Global Gourmet (India) 10. Repeat offenders, appear to be still allowed to export produce into Australia.
- Chinese based companies dominated the list of companies breaching MRLs with ~39% of companies being Chinese.
- Food types with the most MRL breaches included: Jujube/Chinese Dates (mainly grown in China, but also Korea) 69, Red Chilli (mainly grown in Thailand and Vietnam) 40, Lychees (China/Vietnam) 35, Spinach (China/India) 28, Longan (Thailand/Vietnam) 17, Okra (India) 17, Green Chillies (India/Vietnam) 14, Indian Flat Beans (India) 13.
- China had the most pesticide breaches for Carbendazim (F*), Tebuconazole (F), Cypermethrin (I*), Procymidone (F), Propiconazole (F), Thiabendazole (F) and other pesticides. (*F=Fungicide, *I=Insecticide)
- The highest breaching sample was a Lychee Sample from China, where the fungicide Iprodione was detected 100 times over the MRL. The export company involved was Zhangzhou Xinmingxing Trading.
- The highest breaching foods in terms of % over MRLs were 5 samples of Lychees all from the same company in China Zhangzhou Xinmingxing Trading. Difenconazole and Thiabendazole (both fungicides) were the pesticides most problematic with these Lychee shipments. The highest level of combined MRLs was almost 80 times over the combined MRLs for one of these Lychee consignments.
- 235 (~59% of all pesticides) of the pesticides breaching MRLs are defined by the Pesticide Action Network as being **"Bad Actors"**, pesticides known to be carcinogens, reproductive or developmental toxins, cholinesterase inhibitors, groundwater contaminants or pesticides with high acute toxicity. www.pesticideinfo.org/Docs/ref_toxicity7.html#BadActor

Background

The Australian Quarantine and Inspection Service (AQIS), part of the Department of Agriculture and Water Resources, conduct a range of tests on imported foods and the results are compiled in monthly Failing Food reports.

www.agriculture.gov.au/import/goods/food/inspection-compliance/surveys

These tests in 2017 included:

3380 Chemical Tests for: Fluoroquinolones (farmed fish and prawns), Fruit and veg residue screen, Malachite Green (farmed fish), Nitrofurans (farmed prawns, honey), Pesticides (meat), Quinolones (farmed fish).

8788 Contaminant Tests for: Aflatoxins (nuts), Arsenic (cereal grains, cereal flours and processed flours), Buprofezin (rice), Domoic Acid (bivalve molluscs), Erucic Acid (edible plant oils), Histamine (fish), Hydrocyanic acid (cassava chips), Inorganic Arsenic (seaweed, Hijiki), Iodine (brown algae), Lead (cereal grains, cereal flours, processed cereals, canned and preserved fruit), PSP Toxin (bivalve molluscs), Tin (canned fruit).

10,795 Microbial agent tests for: *Bacillus cereus* (bean curd, tofu), Coagulase-positive staphylococci (processed meats and cooked crustaceans), *Escherichia coli* (processed meats, water, seafood, and cheese), *Listeria monocytogenes* (cheese, ready-to-eat seafood, processed meats), *Listeria monocytogenes*-enumerated (cheese, RTE finfish, slow cured ham), *Salmonella* (Processed meats, seafood, dried coconut, dried chilli and pepper, sesame seeds, cheese), Standard plate count (cooked crustaceans), *Vibrio cholerae* (cooked prawns).

74 Microbial agent tests for: Allergen – Dairy (coconut drinks and coconut powders), C4 adulteration (honey), Moisture content (honey), Reducing sugar content (honey).

This report only focuses on the results of Chemical Tests (Fruit & Veg Residue Screen) for the years 2017, 2018 & 2019 which represent a fraction of all the chemical, contaminant and microbial agent tests conducted on imported food each year. In 2017 this fraction was ~10.8%

“FSANZ advise the Department of Agriculture on food that could pose a medium or high risk to public health. The Minister for Agriculture may then classify this food as ‘risk food’, as defined in the Imported Food Control Order 2001. Food not classified as risk food is ‘surveillance food’... Surveillance food is referred for inspection and analysis at a rate of 5% of consignments.”

According to the Department of Agriculture website, ***“food is inspected and tested under the Imported Food Inspection Scheme. The type and rate of tests depends on whether the food is defined as “risk” food or “surveillance” food”.***

Surveillance food where pesticide tests are carried out include:

- ***Fruit: fresh, chilled, frozen or dried***
- ***Fruit and vegetable juices and concentrates***
- ***Leguminous vegetables: fresh, chilled, frozen or dried***
- ***Vegetables: fresh or chilled, uncooked or cooked by steaming or boiling—frozen.”***

(Pesticide tests are also apparently carried out on meat products but information on pesticide breaches on meat products could not be located during the writing of this report).

In regards to the pesticide tests, in 2018 108 pesticides were tested for, the majority being insecticides. Many herbicides, including Glyphosate, the world’s most frequently used herbicide, are not tested for at all.

In terms of breaches, according to the Department of Agriculture, ***“If the failing food is a surveillance food, we can apply a holding order. This will refer all future consignments of that food for inspection. A holding order remains in place until a history of compliance can be demonstrated, usually after five consecutive passes.”***

In 2018, ***“...62.6% (61.7% in 2017) of food inspections were on food from 10 countries; food from China, Italy and India were subject to the most inspections”***

(These were however defined as risk foods. It could not be determined if the same figures applied to Surveillance foods in 2017/18).

This suggests that there will be a bias towards increased testing for food from China, India and Italy, possibly tilting the results of this report towards greater numbers of pesticide detections of non-compliant food from China and India.

Holding orders (if there were any) on food items that breached MRLs were not investigated in this report.

Maximum Residue Limits (MRLs)

*MRL (Maximum Residue Limit): According to Food Standards Australia. ***“A maximum residue limit (MRL) is the highest amount of an agricultural or veterinary (agvet) chemical residue that is legally allowed in a food product sold in Australia whether it is produced domestically or imported. MRLs help enforcement agencies monitor whether an agvet chemical has been used as directed to control pests and diseases in food production.”***

Australian MRLs can be seen here:
www.legislation.gov.au/Series/F2015L00468

During the research for this report, it became clear that many food items that breached MRLs did so, because there was no specific MRL for that particular food item

~50% of pesticides breaching MRLs in this report, have specific MRLs for the pesticide and food type in question, the remaining 50% have no specific MRL for the pesticide and food type, meaning no residues are allowed.

To clarify, many pesticides (eg Difenconazole) have ***“specific”*** MRLs, covering a list of different food types, but food types that aren't specifically listed, come under the following ***“umbrella”*** statement, in this case Difenconazole: ***“All foods except animal food commodities 0.2mg/kg”***. Residues above that level therefore, are a breach to the MRL.

However, approximately half of the listed pesticides in this report, (eg Acephate for example), do not have MRLs for many imported food types and don't have the ***“umbrella”*** statement. This means that any residue of Acephate on the unlisted imported food, are regarded as a breach to the MRL, because no MRLs for that food type have been published in the MRL statement. Any amount above zero therefore is regarded as a breach.

Pesticides which mostly do not have MRLs for specific imported foods highlighted in this report include (meaning zero residues allowable): Carbendazim, Chlorpyrifos, Cyhalothrin, Cypermethrin, Acephate, Procymidone, Monocrotophos, Thiamethoxam, Dimethoate, Propargite, Hexaconazole, Methamidophos, Azinphos Methyl, Cyprodinil, DDT, Dichlorovos.

Pesticides which generally do have MRLs that allow some residues: Difenconazole, Tebuconazole, Profenofos, Propiconazole, 2-Phenylphenol, Paclobutrazol, Thiabendazole, Azoxystrobin, Iprodione, Metalaxyl, Bifenthrin, Deltamethrin, Indoxacarb, Fenvalerate, Dimethomorph, Myclobutanil, Carbaryl, Triadimefon, Triaimenol, Methomyl, Permethrin, Tebufenozide, Pyraclostrobin, Fludioxonil, Phosmet, Pyrimethanil, Hexythiazox

Generally speaking, many MRLs are not specifically listed for a range of pesticide residues for food types particularly those from South East Asia. Any residues are therefore prohibited on these food types.

Acceptable Daily Intake (ADIs)

A point of clarification should be made in terms of the differences between MRLs and ADIs. MRLs are generally the amount of chemical remaining on food products when a pesticide is used according to label instructions and not at a level that will ***“impact”*** on human health.

ADIs however are an estimate of the amount of a particular pesticide that can be ingested daily over a lifetime without appreciable health risk to the consumer. The ADI levels are determined by (usually) chronic animal experiments which determine a No Observed Adverse Effect Level (NOAEL). The NOAEL is then multiplied by an uncertainty factor (usually 100) and that level becomes the ADI. The ADI is an acceptable daily intake per kilogram of body weight. The lowest ADI for pesticides listed in this report is Profenofos: 0.0001 mg/kg-bwd.

Main Findings

There was a total 400 pesticide detections at or above MRLs between 2017-19, with a total of 47 different pesticides breaching MRLs.

The 47 detected pesticides represent ~43.5% of the 108* pesticides tested for under Surveillance Food testing. (*Buprofezin was detected twice, although not listed under Surveillance Food testing chemical tests. According to the Department of Agriculture 2018: *"Buprofezin testing commenced in response to evidence of non-compliance in a specific pathway. In 2018 one test and one non-compliant sample."*)

There was a total 254 separate pesticide "consignment" MRL breaches between 2017-19. (The difference in the number of pesticide breaches and consignment breaches is that many food consignments recorded multiple pesticide detections. The most breaches being 10 separate pesticides on a sample of Lychees imported from China in June 2019 and 9 separate pesticides breaching MRLs for Jujube imported from Korea in December 2018).

The highest number of average pesticide detections breaching MRLs per sample was Korea 4.3, followed by Vietnam 2.32 and China 1.94, indicating that these countries have the most multiple pesticide detections per sample.

China was the country with the most pesticide breaches (148), followed by India (93), Vietnam (44) and Thailand (35). These 4

countries represented 80% of the pesticide breaches, 37% from China alone.

China was also the country with the most consignment breaches (75), followed by India (74), Thailand (26) and Vietnam (19). These 4 countries represented 76.38% of consignment breaches, with 58.66% from China and India alone.

The most commonly detected, of the 47 pesticides breaching MRLs were: Carbendazim (53), Chlorpyrifos (52), Difenconazole (37), Cyhalothrin (31), Tebuconazole (23), Cypermethrin (21), Profenofos (19) and Acephate (19). These 8 pesticides represent 63.75% of all pesticide detections breaching MRLs.

~26% of all MRL breaches were for two pesticides: Carbendazim and Chlorpyrifos.

25 of the 47 detected pesticides had breaches to the MRLs, 3 times or less.

201 of the pesticide breaches were insecticides, with 199 of the pesticides being fungicides. No herbicides were detected by AQIS over the 3 year period. (Only 4 herbicides were tested for).

China dominated fungicide MRL breaches, whilst India

dominated insecticide MRL breaches. This highlights the issue that fungicides seem to be more problematic in terms of residues on some foods, particularly fruits grown in South East Asian countries.

132 companies exported food to Australia which breached MRLs over the 3 year period. The highest number of pesticide breaches were associated with Chinese based Zhangzhou Xinmingxing Trading Co Ltd (China) 28, Innovative Cuisine (India) 24 and Vadilal Industries Limited (India) 24.

In terms of consignment breaches the highest number were associated with Vadilal Industries Limited (India) 19, Innovative Cuisine (India) 17 and Global Gourmet (India) 10. This indicates that these companies are “*serial offenders*”.

Chinese based companies dominated the list of companies breaching MRLs with ~39% of companies being Chinese.

Food types with the most MRL breaches included: Jujube/Chinese Dates (mainly grown in China, but also Korea) 69, Red Chilli (mainly grown in Thailand and Vietnam) 40, Lychees (China/Vietnam) 35, Spinach (China/India) 28, Longan (Thailand/Vietnam) 17, Okra (India) 17, Green Chillies (India/Vietnam) 14, Indian Flat Beans (India) 13, Other 167.

In terms of food consignments the highest number of breaches were for: Jujube/Chinese Dates 22, Spinach (China/India) 22, Red Chilli (China/Vietnam) 18, Longan (Thailand/Vietnam) 14 and Okra (India) 12.

China had most pesticide breaches for Carbendazim (F*), Tebuconazole (F), Cypermethrin (I*), Procymidone (F), Propiconazole (F), Thiabendazole (F) and other pesticides.

(*F=Fungicide, *I=Insecticide)

The highest breaching sample was a Lychee Sample from China, where the fungicide Iprodione was detected 100 times over the MRL. The export company involved was Zhangzhou Xinmingxing Trading.

The highest breaching foods in terms of % over MRLs were 5 samples of Lychees all from the same company in China Zhangzhou Xinmingxing Trading. Difenconazole and Thiabendazole (both fungicides) were the pesticides most problematic with these Lychee shipments.

235 (~59% of all pesticides) of the pesticides breaching MRLs are defined by the Pesticide Action Network as being “*Bad Actors*”, pesticides known to be carcinogens, reproductive or developmental toxins, cholinesterase inhibitors, groundwater contaminants or pesticides with high acute toxicity.

www.pesticideinfo.org/Docs/ref_toxicity7.html#BadActor

The Most Frequently Detected Pesticides

Carbendazim (Fungicide): 53 Import Breaches to Maximum Residue Limits 2017-2019

		Possible Carcinogen			Suspected Endocrine Disruptor
Acceptable Daily Intake: 0.03mg/kg-bwd					
Carbendazim was detected mainly on Chinese dates/Jujube from China and Longan imported from Thailand. ~72% of MRL breaches for Carbendazim came from China and Thailand.					

Carbendazim is a broad spectrum, systemic fungicide for the control of certain fungal diseases.

Carbendazim is a possible human carcinogen. It has been linked to infertility, testicular damage and liver tumours in laboratory animals. Carbendazim was banned in Europe in 2009. It has been banned in Australia for a number of uses.

The main metabolite of Carbendazim is Benomyl, which initially was marketed under the name Benlate. Benlate was withdrawn from the US market in 2001 after its manufacturer DuPont defended itself against hundreds of law suits concerning serious health issues including a child being born with no eyes. In 2000 Benlate runoff from Ecuadorian banana plantations caused \$10 million dollars damage, which DuPont had to compensate.

Between 2006 & 2009 controversy over the role Carbendazim played in fish abnormalities and a possible cancer cluster on the Sunshine Coast gained national media attention in Australia.

In 2010, home gardener use was restricted in Australia for Carbendazim, as was its use in grape, citrus and stonefruit farms. Further health and media controversy followed with a residues detected in Brazilian orange juice concentrate imported into the United States in 2011.

In August 2012, the APVMA announced further restrictions. The new bans included stopping its use for strawberries and on farms including pasture, clover and sugarcane setts.

Carbendazim is still registered for use in Australia on Macadamias, Chickpeas, Faba Beans, Lentils and Vetch.

Carbendazim is very cheap and is effective, so it is used widely in China each harvesting season to control fungal diseases involving Ascomycetes, Basidiomycetes, and Fungi imperfecti species.

The highest level of Carbendazim detected were in Lychees imported from China in August 2019. Carbendazim was detected at 1.8mg/kg, followed by a detection of 1.7mg/kg for grapes from India in June 2018 and 1.2mg/kg from Rosella Leaves imported from Thailand in March 2019.

The average level of Carbendazim detected on 10 breaching import samples of Jujube products from China was 0.4242mg/kg. The average level of Carbendazim detected on 10 samples of Longan from Thailand was 0.0726mg/kg. The Average level of Carbendazim detected in 53 breaches to MRL for 22 food types was 0.3222mg/kg



Chinese Dates/Jujube

Chlorpyrifos (OP Pesticide): 52 Import Breaches to Maximum Residue Limits 2017-2019

PAN* Bad Actor (*Pesticide Action Network)	Moderate Toxicity		Cholinesterase Inhibitor	Developmental or Reproductive Toxin	Suspected Endocrine Disruptor
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Acceptable Daily Intake: 0.03mg/kg-bwd

Chlorpyrifos was found mainly on Spinach imported from India and Chillies imported from Vietnam. ~44% of MRL breaches for Chlorpyrifos came from India.

Chlorpyrifos is a broad spectrum, non-systemic organophosphorous insecticide with contact, stomach and respiratory action. It acts by inhibiting the enzyme, acetyl cholinesterase (AChE), which is important for the transmission of nerve signals.

Chlorpyrifos is used to kill insects, including scale, aphids, mealy bugs, leaf rollers, cutworms, grasshoppers, weevils, army worms, cockroaches, grubs, moths, flies, termites, ants, mites, spiders, mosquitos, lice etc. It is used as an insecticide on grain, cotton, field, fruit, nut and vegetable crops, and well as on lawns and ornamental plants.

There are approximately 135 products containing Chlorpyrifos, which are registered by the APVMA. The chemical has been under a review process in Australia since 1996.

Chlorpyrifos targets the nervous system of insects, but it is also moderately toxic to humans. It is very toxic to birds and insects, including bees.

Chlorpyrifos has been linked to adverse brain development in unborn children and reduced IQ, loss of memory and attention deficit disorders in children. It has also been associated with measurable cognitive deficits and developmental delays in children exposed during early fetal and infant development. Some scientists believe that no level of chlorpyrifos is safe.

OP pesticides, such as chlorpyrifos can impair the brain's prefrontal cortex, by shrinking. Behavioural problems can then occur as well as later life learning and social problems.

Workers exposed to chlorpyrifos can experience vomiting, muscle cramps, twitching, tremors and weakness.

Chlorpyrifos was used to control insect infestations of homes and commercial buildings. These uses were banned in the United States in 2000 and in Europe, later in decade. South Africa banned this application in 2010. Singapore restricted its use as a termite control in 2009.

In 2010, India barred Dow from commercial activity for 5 years after India's Central Bureau of Investigation found Dow guilty of bribing Indian officials in 2007 to allow the sale of chlorpyrifos.

Chlorpyrifos has not been permitted for agricultural use in Sweden at all (usage as a pest controllant is an exception - the last approval ran out in August 2008). A number of restrictions have occurred in a number of countries, most notably Hawaii which in June 2018 signed a bill banning chlorpyrifos in manufacturing, distribution and use. Hawaii was the first US state to enact such bans. In May 2019 the Californian also announced that they would ban Chlorpyrifos.

The highest level of Chlorpyrifos detected were in Lychees imported from China in June 2019 and Split Mung beans from Myanmar in July 2019. Chlorpyrifos was detected in both samples at 0.33mg/kg, followed by a detection of 0.3mg/kg for Mangosteens from Thailand in July 2019 and 0.28mg/kg from 2 imports of Spinach from India in December 2018 and April 2019.

The average level of Chlorpyrifos detected on 14 breaching import samples of Spinach products from India was 0.1272mg/kg. The average level of Chlorpyrifos detected on 7 samples of Chilli from Vietnam was 0.0719mg/kg. The average level of Chlorpyrifos detected in 52 breaches to MRL for 23 food types was 0.1271mg/kg



Indian Spinach

Difenconazole (Fungicide): 37 Import Breaches to Maximum Residue Limits 2017-2019

**Possible
Carcinogen**

**Suspected
Endocrine
Disruptor**

Acceptable Daily Intake: 0.01mg/kg-bwd

Difenconazole was found most commonly on Chillies imported from Vietnam and Jujube/Chinese dates imported from China. ~81 % of MRL breaches for Difenconazole came from China and Vietnam.

Difenconazole is a widely used broad spectrum fungicide.

Difenconazole is moderately toxic to humans, mammals, birds and most aquatic organisms. It has a role as an environmental contaminant, a xenobiotic, an EC 1.14.13.70 (sterol 14alpha-demethylase) inhibitor and an antifungal agrochemical. There is limited evidence that difenoconazole can cause damage to the nervous system or immune system in test animals. Difenconazole has caused liver tumours in mice (at high doses), but not in rats.

The highest level of Difenconazole detected was in Lychees imported from China in June 2019 at 0.84mg/

kg and 0.73mg/kg. Followed by a detection of 0.39mg/kg on Pandan Leaves from Thailand in January 2018 and 0.37mg/kg on Sliced Red Dates from China in August 2019.

The average level of Difenconazole detected on 13 breaching import samples of Chilli products from Vietnam was 0.0924mg/kg. The average level of Difenconazole detected on 10 samples of Jujube from China was 0.2107mg/kg. The Average level of Difenconazole detected on 37 breaches to MRL for 9 food types was 0.2002mg/kg.

Cyhalothrin (Insecticide): 31 Import Breaches to Maximum Residue Limits 2017-2019

**Moderate
Acute
Toxicity**

**Suspected
Endocrine
Disruptor**

**Acceptable Daily Intake: γ -Cyhalothrin: 0.0005 mg/kg-bwd
 λ -Cyhalothrin: 0.001 mg/kg-bwd**

Cyhalothrin was found most often on Oranges imported from Egypt and Jujube/Chinese dates imported from China. ~81 % of MRL breaches for Cyhalothrin came from Egypt and China.

Cyhalothrin is an organic compound that is used as a pesticide. It is a pyrethroid, a class of synthetic insecticides that mimic the structure and insecticidal properties of the naturally occurring insecticide pyrethrin which comes from the flowers of chrysanthemums.



Egyptian Oranges

Tebuconazole (Fungicide): 23 Import Breaches to Maximum Residue Limits 2017-2019

	Moderate Acute Toxicity	Possible Carcinogen			Suspected Endocrine Disruptor
Acceptable Daily Intake: 0.03mg/kg-bwd					
<p>Tebuconazole was found most often on dates/jujabe from China. ~56% of all Tebuconazole detections were from Chinese Jujabe. Indian Chilli represented ~22% of Tebuconazole breaches.</p>					

Tebuconazole is a member of the triazole group of fungicides. It has been shown to exert hepatotoxicity (liver damage) in rodent studies. Due to its potential endocrine disrupting potential, it was listed as being potentially removed from the EU market in 2009.

Cypermethrin (Insecticide): 21 Import Breaches to Maximum Residue Limits 2017-2019

		Possible Carcinogen			Suspected Endocrine Disruptor
Acceptable Daily Intake: α-Cypermethrin: 0.05 mg/kg-bwd β-Cypermethrin: 0.05 mg/kg-bwd ζ-Cypermethrin: 0.07 mg/kg-bwd Cypermethrin: 0.05 mg/kg-bwd					
<p>Cypermethrin was found most regularly on dates and lychees from China and flat beans from India.</p>					

Cypermethrin is a synthetic pyrethroid used as an insecticide in large-scale commercial agricultural applications as well as in consumer products for domestic purposes. It is possible that long term exposure to cypermethrin may cause liver changes. Some changes in rabbits were observed which were fed Cypermethrin, to the cortex of the thymus, liver, adrenal glands, lungs and skin.



Indian Flat Beans

Acephate (OP Insecticide): 19 Import Breaches to Maximum Residue Limits 2017-2019

PAN* Bad Actor (*Pesticide Action Network)	Slight Acute Toxicity	Carcinogen	Cholinesterase Inhibitor		Suspected Endocrine Disruptor
Acceptable Daily Intake: 0.003mg/kg-bwd					
Acephate detections were dominated by India ~74%. Okra accounted for ~53% of all MRL breaches.					

Acephate is an organophosphate foliar and soil insecticide of moderate persistence with residual systemic activity of about 10–15 days at the recommended use rate. It is used primarily for control of aphids, including resistant species, in vegetables and in horticulture.

Acephate is a cholinesterase inhibitor in humans; which causes an overstimulation in the nervous system. Poisoning at high levels can causing nausea, dizziness, confusion, and at very high exposures (e.g., accidents or major spills), respiratory paralysis and death. A degradant of Acephate is Methamidophos. Acephate may be a CARCINOGEN in humans since it has been shown to cause liver cancer in animals.



Profenofos (OP Insecticide): 19 Import Breaches to Maximum Residue Limits 2017-2019

PAN* Bad Actor (*Pesticide Action Network)	Moderate Acute Toxicity		Cholinesterase Inhibitor		
Acceptable Daily Intake: 0.0001mg/kg-bwd					
Profenofos breaches mainly came from India ~47%. Main foods, Beans and Spinach from India and Chillies from Vietnam.					

Profenofos is one of the most widely used insecticides in the world. It has been linked to genetic changes in mice (genotoxic) and spermatogonial changes as well. The World Health Organisation classified Profenofos as being moderately toxic in 2009, with the US EPA reporting Profenofos to be toxic to mammals in 2015.

Procymidone (Fungicide): 14 Import Breaches to Maximum Residue Limits 2017-2019

PAN* Bad Actor (*Pesticide Action Network)		Carcinogen			Suspected Endocrine Disruptor
Acceptable Daily Intake: 0.03mg/kg-bwd					
Procymidone breaches came mainly from China ~71%. Strawberry products from China accounted for ~43% of all breaches.					

Procymidone is a pesticide. It is often used for killing unwanted ferns and nettles, and as a dicarboximide fungicide for killing fungi, for example as seed dressing, pre-harvest spray or post-harvest dip of lupins, grapes, stone fruit, strawberries. Procymidone is a known endocrine disruptor, interfering with the sexual differentiation of male rats.

The California Office Of Environmental Health Hazard Assessment consider Procymidone to be a carcinogen, listed on the 2012 Priority List for the Development of Proposition 65 NSRLs for Carcinogens and MADLs for Chemicals Causing Reproductive Toxicity

Propiconazole (Fungicide): 13 Import Breaches to Maximum Residue Limits 2017-2019

PAN* Bad Actor (*Pesticide Action Network)	Moderate Toxicity	Possible Carcinogen		Developmental Reproductive Toxin	Suspected Endocrine Disruptor
Acceptable Daily Intake: 0.07mg/kg-bwd					
Propiconazole breaches mainly from China and Vietnam ~77%. Dates/Jujube from China and Chillies from Vietnam.					

Propiconazole is a fungicide in the conazole class. It has been linked to developmental toxicity. Liver hypertrophy and tumours were observed in mice, uterine lumen dilation in rats. It is also known as being weakly embryotoxic.

Thiabendazole (Fungicide): 12 Import Breaches to Maximum Residue Limits 2017-2019

PAN* Bad Actor (*Pesticide Action Network)		Carcinogen		Developmental Reproductive Toxin	
Acceptable Daily Intake: 0.3mg/kg-bwd					
Thiabendazole breaches 66.67% China, 33.33% South Africa. 50% Chinese Dates, 33% South African Apricot products.					

Thiabendazole is a systemic benzimidazole fungicide used to control fruit and vegetable diseases such as mold, rot, blight and stain. It is also active against storage diseases and Dutch Elm disease. In livestock, thiabendazole is also applied to treat roundworms. It has been observed to cause liver and intestinal disorders at high doses. Carcinogenic effects have also been shown at higher doses.

Monocrotophos (OP Insecticide): 7 Import Breaches to Maximum Residue Limits 2017-2019

PAN* Bad Actor (*Pesticide Action Network)	Acute Toxicity		Cholinesterase Inhibitor		
Acceptable Daily Intake: 0.0006*mg/kg-bwd (*JMPR)					
Monocrotophos, banned in Australia 20 years ago and in India in 2018, breached MRLs 7 times. All breaches from India. 71% of breaches were from Okra supplied by the company 'Global Gourmet'. 4 breaches 2017, 1 breach 2018 and 2 2019. 23 children were poisoned and killed by Monocrotophos in India in 2013. www.panap.net/2019/07/pesticide-linked-to-child-deaths-in-india-restricted-at-district-level					

Monocrotophos is an extremely dangerous organophosphate insecticide and listed in Annex III of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. In India it was widely used due to its cheap price. It has also been linked to the deaths of thousands of Indian farmers.

Monocrotophos is acutely toxic to birds and humans, so it has been banned in the U.S., the E.U. and many

other countries, however was recently available in India until 2018. Monocrotophos has known diabetogenic and cardiotoxic effects.

Monocrotophos controls pests on a variety of crops, such as cotton, rice, and sugarcane. It is used to control a wide spectrum of chewing, sucking and boring insects (aphids, caterpillars, *Helicoverpa* spp, mites, moths, jassids, budworm, scale and stem borer, as well as locusts).

Other pesticides

Other pesticides detected breaching MRLs on imported foods coming into Australia included (pesticides highlighted are Pesticide Action Network “**Bad Actors**”

www.pesticideinfo.org/Docs/ref_toxicity7.html#BadActor):

Thiamethoxam(8), Dimethoate(7), Metalaxyl(6), Azoxystrobin(6), Propargite(6), 2-Phenylphenol(5), Iprodione(5), Bifenthrin(4), Hexaconazole(4), Fenvalerate(4), Myclobutanil(3), Paclobutrazol (3), Deltamethrin(3), Indoxacarb(3), Dimethomorph(3), Triadimefon(3), Triadimenol(3), Methamidophos(2),

Carbaryl(2), Buprofezin(2), Permethrin(2), Fludioxonil(2), Methomyl(1), Azinphos Methyl(1), Tebufenozide(1), Pyraclostrobin(1), Chlorothalonil(1), DDT(1), Phosmet(1), Pyrimethanil(1), Parathion Ethyl(1), Hexythiazox(1), Dichlorovos(1), Cyprodinil(1), Phenylphenol(1).

All 35 other pesticides types dominated by China 38% and India 21%. Chinese Jujube 12.7% and Lychees 10.8% dominated this group as well, although the Lychee breaches were from 3 consignments only.

The Most Pesticide Laden Foods Jujube/Red Dates

22 different pesticides detected (in 21 consignments) breached MRLs on Jujube/Red Date imports.

Fungal diseases attacking Chinese grown Jujube over the past decade have included Black Spot, Leaf Spot and Brown Spot. For the writing of this report could not be determined if Jujube are dipped in Carbendazim (or other fungicides) to prolong their “**shelf life**”.

China is the largest producer of Jujube in the world, producing around 9 million tonnes of Jujubes from around 3 million hectares of land. Ninety per cent of Chinese production is concentrated in six Northern provinces: Hebei, Xinjiang, Shandong, Shanxi, Shannxi, and Henan.

China's fresh Jujube export season is typically from August to October with a peak harvesting period of September. Up to 2019 Australia only imported dried Jujubes for human consumption. There is a small, but increasing Jujube industry in Australia, particularly in Western Australia.

Source of Jujube's breaching MRLs: ~87% from China.



The number one product breaching import pesticide MRLs: Dried Jujube/Chinese Dates. Fungicides are the most pressing concern with imported Jujube.

Most frequently detected pesticides: Tebuconazole, Carbendazim, Difenconazole

Red Chillies



13 different pesticides detected (in 17 consignments) breached MRLs on Red Chilli* imports.

[*3 samples of mixed chillies also included]

Green Chillies are generally used in vegetable purposes (also providing Vitamin C), whereas Red Chillies are used more for spices (and provide Vitamin A). Major fungal diseases for chillies worldwide include Anthracnose disease generally caused by *Colletotrichum* species, bacterial wilt caused by *Pseudomonas solanacearum* and *Mosaic Disease* caused by chilli veinal mottle virus (CVMV). Fresh chilli production worldwide totals about 1.7 million hectares and 1.8 million hectares for dried chillies. The major chilli growing countries are China, India, Mexico, Morocco, Pakistan, Thailand and Turkey. Anthracnose disease has caused crop losses of between 10%-80% with the problem particularly bad in Thailand. In Vietnam, Powdery Mildew caused by *Podosphaera xanthii* has recently been observed.

A number of insects can also impact on chilli production. For example in India, Gram Pod Borer, Tobacco caterpillars, various mites, thrips and aphids (although all of the insecticide breaches for Red Chillies in the AQIS data 2017-19 came from Vietnam).

Source of Red Chillies breaching MRLs: ~79% from Vietnam.

Fungicides dominate type of pesticide detected on Red Chillies.

Most frequently detected pesticide: Difenconazole

Lychees



10 different pesticide detections (in 7 consignments) breached MRLs on Lychee imports.

Lychee is a tropical and subtropical fruit, grown mainly in China, India and Vietnam. In China, Lychees are mainly grown in the Guangdong, Guangxi, Fujian, Hainan, Yunnan and Guizhou and Sichuan Province. Since the 1990's small holdings of lychee growers have been replaced with larger corporate orchards.

Lychee's are susceptible to many diseases, including the prevalent Lychee Downy Blight. Losses as high as 60% have been reported during the growing season, if there are successive rainy and overcast days. The use of fungicides is commonplace amongst Lychee growers. Other serious problems (including insect problems): Downy Mildew, Anthracnose, Fruit cracking, Lychee Stink Bugs, Lychee Stem-end borer and Lychee Gall Mite. The bug, *Tessaritoma papillosa* has caused in many countries, including China, where losses of up to 30% in some commercial orchards have been recorded.

Source of Lychees breaching MRLs: ~97% from China.

Most frequently detected pesticides: Thiabendazole, Difenconazole

Spinach



Spinach

6 different pesticides detected (in 22 consignments) breached MRLs on Spinach imports.

Spinach is grown across India, mainly during hot weather months and can generally be harvested 6-8 weeks after harvesting. Spinach is known as “*Palak*” in Hindi.

Most of the spinach in India is grown in Andhra Pradesh, Telangana, Kerala, Tamil Nadu, Uttar Pradesh, Karnataka, Maharashtra, West Bengal and Gujarat.

Caterpillars (Lepidopterous Pests), green peach aphid, potato aphid, leafminers, spinach crown mite and wireworms can be a problem, hence the use of insecticides. The fungicide Carbendazim is also used to control *Cercospora* Leaf spot. Pesticides can also be sprinkled on leaves to prolong its longevity after harvest and cutting. Chlorpyrifos is not allowed on crops in the United States, such as spinach; any chlorpyrifos residue on these crops normally represents chlorpyrifos misuse or spray drift. This is however not the case in India.

Source of Spinach breaching MRLs: ~89% from India.

Most frequently detected pesticide: Chlorpyrifos

Longan



Longan

5 different pesticides detected (in 14 consignments) breached MRLs on Longan imports.

China, Vietnam and Thailand are the world's major growers of Longan. A host of insect pests frequent the growing of Longan, including fruit flies, mealybugs, soft scales and litchi fruit borer.

Brown Spot Fungal Disease and Phytophthora Fruit Rot have been problems in Thailand, amongst Longan growers for some time. Fruit Blotch caused by *Phomopsis* spp. is a problem in China for both Longans and Lychees.

Longan is the third most cultivated fruit crop in Vietnam, growing in over 70,000ha. The eriophyid mite *E. dimorpha* has caused major problems in which has led to massive fruit losses in Vietnam, China and Thailand. The disease is called 'Longan Witches broom'. A number of other insects also cause problems for Longans.

Source of Longan breaching MRLs: ~79% from Thailand.

Most frequently detected pesticide: Carbendazim

Okra



3 different pesticides detections (in 10 consignments) breached MRLs on Okra imports.

Okra, originated in Ethiopia and is known in India as Lady Fingers in English and Bhindi in Hindi. Andhra Pradesh, West Bengal, Odisha, Bihar, Gujarat, Jharkhand, Chhattisgarh, Maharashtra and Assam are the major states coming under the Okra production.

Major losses to Okra crops can occur due to weeds, insects and disease. Insect problems (amongst others) include: Shoot and Fruit Borer, White Fly, Jassids, Aphids, Thrips and Red Mites. White Fly has been found to have knocked out as much as 94% of Okra crops in some locations.

Researchers in India have found that *“farmer’s knowledge was lagging on the recommended pesticide, dosage, safe harvest interval, label claim and personnel protection during spray operation but their knowledge was fair enough on disposal of pesticide containers, mixing and measurement of pesticides”*. There is also little lag time between pesticide application and harvest.

Source of Okra breaching MRLs: ~94% from India.

Most frequently detected pesticides: Acephate, Monocrotophos

Green Chillies



8 different pesticide detections (in 9 consignments) breached MRLs on Green Chilli imports.

Chillies are grown all over India and are regarded as one of the most valuable crops as they are used in a variety of dishes. Green Chillies are generally used in vegetable purposes (providing Vitamin C), whereas red chillies are used more for spices (providing Vitamin A). Green Chillies are more prone to insect attacks, than fungal attacks. Major fungus problems include: Fruit Rot (anthracnose)/die-back disease. 40 fungal diseases have been identified in Green Chilli crops in India. C. capsica are one of the most destructive species.

Source of Green Chillies breaching MRLs: ~71% from India.

Most frequently detected pesticide: Tebuconazole

Indian Flat Beans

6 different pesticide detections (in 8 consignments) breached MRLs on Indian Flat Bean imports. All imports from India.

Indian Beans are one of India's most popular vegetables. Major growing areas include: Uttar Pradesh, Madhya Pradesh, Haryana, West Bengal, Karnataka, Tamil Nadu, Kerala, Andhra Pradesh, Telangana and Maharashtra.

There are a number of varieties of Indian Bean with a number of insect pests. Pests include Jassids, Aphids, Thrips, Mites, Pod Borer and Pulse Beetles.

Most frequently detected pesticide: Cypermethrin