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Fourth quarter analytical results for the 2016 New Zealand Total Diet Study

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1 Introduction

New Zealand Total Diet Studies are undertaken approximately every 5 years with the 2016 study being the eighth of its kind in New Zealand. Its primary focus is to assess exposure to chemical residues, contaminant elements and selected nutrients, from approximately 130 representative foods, across the average diet of different age-sex groups within the New Zealand population.

This report is to present the analytical results from the fourth quarterly sampling period for the 2016 New Zealand Total Diet Study (NZTDS). Samples of national foods were purchased in Christchurch over a six week period. Apart from scanning for any results of possible public health concern, analysis and interpretation of the results has not occurred at this time.

A final comprehensive report including dietary exposure estimates for all specific population groups will be prepared once all data from the 4 quarterly sampling periods has been consolidated. A full risk assessment of any possible risks to human health from overall exposure of consumers to chemicals in the food supply will also be undertaken. It is expected that this report will be published in December 2017.

2 Survey Design

2.1 SAMPLING

Regional foods are sampled in Quarter 1 and Quarter 3 with samples being purchased in Auckland, Napier, Christchurch and Dunedin over a five week period. National foods are sampled in Quarter 2 and 4 with samples being purchased in Christchurch over a six week period.

2.2 RETAIL OUTLETS

Wherever possible, the purchasing of any particular food is carried out over a range of retail outlets in order to represent typical buying habits of the community. Therefore the majority of purchases are made at supermarkets. However, convenience stores, delicatessens, butchers and green grocers are included where appropriate.

2.3 RANGE OF BRANDS / USE BY DATES / BATCH NUMBERS

The most commonly purchased brands, as based on consumer data, are sampled during the NZTDS. A range of use by dates and/or batch numbers within each brand are included to increase the range of products being sampled from within each brand.

Where imported and domestic lines are available for a particular food, a mixture is selected.

2.4 SAMPLING - NATIONAL FOODS

Each national food will be sampled twice throughout the year so that any seasonal variation can be captured.

In this Quarter, samples of each national food were purchased from retail outlets in Christchurch. The samples for each brand were then composited prior to analysis. The different brands were analysed individually for all applicable analytes.

In the quarter two sampling only two samples of taro were able to be obtained, as a result six samples of taro were collected in quarter four to make up the sampling numbers.

2.5 SAMPLE PREPARATION

As the primary purpose of the NZTDS is to estimate dietary exposure to chemical residues, contaminant elements and selected nutrients, foods are analysed on an 'as consumed' basis (i.e. banana, peeled; meat, cooked etc.).

2.6 SAMPLE ANALYSIS

All analyses (agricultural compounds and elements), with the exception of inorganic arsenic, are carried out by R J Hill Laboratories Ltd, Hamilton, New Zealand.

Inorganic arsenic analysis (only in samples exceeding 0.02 mg/kg total arsenic) is undertaken by the Cawthron Institute, Nelson, New Zealand as required.

2.7 ANALYTICAL QUALITY CONTROL

A range of quality control procedures are employed to provide confidence in the methodology and the validity of results. R J Hill Laboratories is an internationally accredited laboratory to ISO 17025; as such they maintain a range of internal quality controls including analysing samples in duplicate, spiked recoveries, internal standardisation and the use of Internationally Certified Reference Materials (CRMs).

In addition all results are scrutinised by an MPI subject matter expert and any unusual findings result in the samples arebeing re-analysed. Transcription errors are minimized as the test results are directly and electronically transferred to the MPI database from the Laboratory Information Management System (LIMS).

3 Analyte List

3.1 ELEMENTS

Eleven elements and two speciated forms of elements are included for analysis in the 2016 NZTDS. Table 1 lists the elements, the analytical methodologies used and the foods which are analysed. It should be noted that Q1 involves analysis of regional foods only and that for some foods not all the elements are analysed (as indicated in the table below).

3.1.1.1 Table 1 - Elements and speciated forms of elements analysed in the 2016 NZTDS

Element	Method of analysis	Foods to be analysed
Aluminium (Al)	ICP-MS	All
Total Arsenic (As)	ICP-MS	All
Inorganic Arsenic (iAs)	HG-AAS	All foods with total arsenic levels above 0.02 mg/kg
Cadmium (Cd)	ICP-MS	All
Fluoride (F)	Ion selective electrode.	All plant based foods (except avocados and mixed plant/dairy foods) and beverages
Iodine (I)	ICP-MS	All

Lead (Pb)	ICP-MS	All
Total Mercury (Hg)	ICP-MS	All
Methylmercury (MeHg)	SPME-GCMS	Only seafood
Selenium (Se)	ICP-MS	All
Sodium (Na)	ICP-OES	All
Tin (Sn)	ICP-MS	All
Zinc (Zn)	ICP-MS	All

ICP-MS = Inductively-coupled plasma mass spectrometry
HG-AAS = Hydride generation-atomic absorption spectrometry
ICP-OES = Inductively-coupled plasma optical emission spectrometry
SPME GCMS – Solid phase micro extraction gas chromatography mass spectrometry

3.2 AGRICULTURAL COMPOUNDS

Testing of foods in the 2016 NZTDS for residues of agricultural compounds is undertaken by way of three separate screens. A multi-residue (MR) screen of 301 compounds that includes organochlorine pesticides, organophosphorus and carbamate pesticides, pyrethroids, fungicides and a number of other agricultural compounds not included in these groups. The MR screen also includes analysis of quaternary ammonium compounds that are used as agricultural compounds but are also commonly used as surface disinfectants.

Two separate screens are also undertaken in subgroupings of the foods:

The first is for carbon disulphide (CS_2) a common chemical marker for nine dithiocarbamate fungicides which is undertaken in all fruits, nuts and vegetables; and in fruit based beverages.

The second is a screen for twenty one phenoxy and aromatic acid herbicides which is undertaken in all cereal grains and vegetables and some vegetable based foods.

3.2.1 Multi-residue screen in the 2016 NZTDS

All foods are analysed for agricultural compound residues by the MR screen method. Table 2 lists the 301 agricultural compound analytes included in this screen.

3.2.1.1 Table 2 - Agricultural compound analytes in the 2016 NZTDS multi-residue screen

2,4' - DDD	Cyfluthrin	Fluvalinate	Procymidone
2,4' - DDE	Cyhalothrin	Fluxapyroxad	Profenofos
2,4' - DDT	Cypermethrin	Folpet	Prometryn
4,4' - DDD	Cyproconazole	Fonofos	Propachlor
4,4' - DDE	Cyprodinil	Furalaxyl	Propamocarb
4,4' - DDT	delta-BHC	Furathiocarb	Propanil
Abamectin	Deltamethrin (including Tralomethrin)	gamma-BHC (Lindane)	Propaphos
Acephate	Demeton-S-methyl	Halfenprox	Propargite
Acetamiprid	Diazinon	Haloxyfop-methyl	Propazine
Acetochlor	Dichlobenil	Heptachlor	Propetamphos
Acrinathrin	Dichlofenthion	Heptachlor epoxide	Propham

Alachlor	Dichlofluanid	Hexachlorobenzene	Propiconazole
Aldicarb	Dichloran	Hexaconazole	Propoxur
Aldicarb sulfone	Dichlorvos	Hexazinone	Propyzamide
Aldicarb sulfoxide	Dicofol	Hexythiazox	Prothiofos
Aldrin	Dicrotophos	Imazalil	Pyraclofos
alpha-bHC	Didecyldimethylammonium chloride (DDAC)	Imidacloprid	Pyraclostrobin
Ametryn	Dieldrin	Indoxacarb	Pyrazophos
Anilazine	Diethofencarb	Iodofenphos	Pyrazoxyfen
Atrazine	Difenoconazole	Iprobenfos	Pyrethrin
Atrazine - desethyl	Diflubenzuron	Iprodione	Pyridaphenthion
Atrazine - desisopropyl	Diflufenican	Isazophos	Pyrifenox
Azaconazole	Dimethenamid	Isofenphos	Pyrimethanil
Azinphos-methyl	Dimethoate	Isoprocarb	Pyriproxyfen
Azoxystrobin	Dimethylvinphos	Kresoxim-methyl	Quinalphos
Benalaxyl	Dimthomorph	Leptophos	Quintozene
Bendiocarb	Dioxabenzofos	Linuron	Quizalofop-ethyl
Benodanil	Diphenylamine	Lufenuron	Sethoxydim
Benoxacor	Disulfoton	Malathion	Simazine
Benzalkonium Chloride (C12)	Diuron	Mepronil	Simetryn
Benzalkonium Chloride (C14)	Dodine	Metalaxyl (Mefenoxam)	Spinetoram
Benzalkonium Chloride (C16)	Edifenphos	Metconazole	Spinosad
Beta-BHC	Emamectin	Methabenzthiazuron	Spiromesifen
Bifenox	Empenthrin	Methacrifos	Spirotetramat
Bifenthrin	Endosulfan I	Methamidophos	Spirotetramat-cis-enol
Bitertanol	Endosulfan II	Methidathion	Spirotetramat-cis-keto-hydroxy
Bixafen	Endosulfan sulfate	Methiocarb	Spirotetramat-enol-glucoside
Boscalid	Endrin	Methomyl	Spirotetramat-mono-hydroxy
Bromacil	Endrin aldehyde	Methoxychlor	Sulfentrazone
Bromophos-ethyl	Endrin ketone	Methoxyfenozide	Sulfotep
Bromopropylate	EPN	Metolachlor	Sulfoxaflor
Bupirimate	Epoxiconazole	Metribuzin	Tebuconazole
Buprofezin	EPTC	Mevinphos	Tebufenozide
Butachlor	Esprocarb	Milbemectin	Tebufenpyrad
Butamifos	Ethion	Molinate	Teflubenzuron

Cadusafos	Ethoprophos	Monocrotophos	Tefluthrin
Captafol	Etoxazole	Myclobutanil	Terbacil
Captan	Etridiazole	Naled	Terbufos
Carbaryl	Etrimfos	Napropamide	Terbumeton
Carbendazim (incl. Benomyl and Thiophanate)	Famphur	Nitrofen	Terbuthylazine
Carbofenothion	Fenamiphos	Nitrothal-isopropyl	Terbuthylazine-desethyl
Carbofuran	Fenarimol	Norflurazon	Terbutryn
Carboxin	Fenchlorphos	Omethoate	Tetrachlorvinphos
Carfentrazone-ethyl	Fenhexamid	Oryzalin	Tetraconazole
Chlorantraniliprole	Fenitrothion	Oxadiazon	Tetradifon
Chlorfenapyr	Fenobucarb	Oxadixyl	Thenylchlor
Chlorfenvinphos	Fenoxaprop-ethyl	Oxamyl	Thiacloprid
Chlorfluazuron	Fenoxycarb	Oxychlordane	Thiamethoxam
Chloridazon	Fenpiclonil	Oxyfluorfen	Thifluzamide
Chlorobenzilate	Fenpropathrin	Paclobutrazol	Thiobencarb
Chlorothalonil	Fenpropimorph	Parathion-ethyl	Thiometon
Chlorpropham	Fenpyroximate	Parathion-methyl	Thiophanate-methyl
Chlorpyrifos	Fensulfothion	Penconazole	Tolclofos-methyl
Chlorpyrifos-methyl	Fenthion	Pencycuron	Tolylfluanid
Chlorthal-dimethyl	Fenvalerate (including Esfenvalerate)	Pendimethalin	Trans-chlordane
Chlortoluron	Fipronil	Permethrin	Triadimefon
Chlozolinate	Fluazifop-butyl	Phenthoate	Triadimenol
cis-Chlordane	Flucythrinate	Phorate	Tri-allate
Clethodim	Fludioxonil	Phosalone	Triazophos
Clofentezine	Flufenoxuron	Phosmet	Trichlorfon
Clomazone	Flumioxazin	Phosphamidon	Trifloxystrobin
Coumaphos	Fluometuron	Piperonyl-butoxide	Triflumuron
Cyanazine	Flusilazole	Pirimicarb	Trifluralin
Cyanophos	Flutolanil	Pirimiphos-methyl	Uniconazole
Cyantraniliprole	Flutriafol	Prochloraz	Vinclozolin
Cyflufenamid			

3.2.2 Carbon disulphide (CS_2) screen in the 2016 NZTDS

A separate screen is run for carbon disulphide (CS_2) in fruits, nuts and vegetables. This analysis is for a common chemical marker for the nine dithiocarbamate fungicides listed in table 3. The screen however is unable to distinguish between the nine chemicals and may also

show false positives from natural sulphur containing compounds present in some plants (such as in brassica vegetables):

3.2.2.1 Table 3 – Dithiocarbamate fungicides detected in the CS_2 residue screen in the 2016 NZTDS

Ferbam	Metiram	Thiram
Mancozeb	Nabam	Zineb
Maneb	Propineb	Ziram

3.2.3 Herbicide screen in the 2016 NZTDS

A phenoxy acid and aromatic acid herbicide screen is run for all cereal grains and vegetables. This analysis covers the twenty one herbicides in table 4.

3.2.3.1 Table 4 – Phenoxy and aromatic acid herbicides analysed in the 2016 NZTDS

Acibenzolar acid	Dichloroprop	Mecoprop
Aminopyralid	Fluazifop	1-Naphthylacetic acid (NAA)
Bentazone	Fluoxypyr	Picloram
4-Chlorophenoxyacetic acid (4-CPA)	Haloxyfop	Quizalofop
Clopyralid	Ioxynil	2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)
Dicamba	MCPA	2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP)
2,4 Dichlorophenoxyacetic acid (2,4-D)	MCPB	Triclopyr

4 Results

4.1 ELEMENTS

For the elements and speciated forms of elements analysed, results are reported per analyte for all foods analysed in this quarter.

All elemental results reported are on a 'foods as consumed' basis.

Elements are naturally occurring and ubiquitous in our environment. As such, if the concentration of a certain element in a food was 'not quantified' it is highly likely that it is present, but at levels less than the limit of quantification. In this report, 'not quantified' results in the following tables are designated as a value of '<LOQ' using the associated limit of quantification given each element, as this can vary dependent on analyte and food matrix type (dry/fatty, fresh, liquid, water).

The tables do not include entries for where samples were 'not analysed' for a particular food/analyte combination.

4.1.1 Aluminium

4.1.1.1 Table 5 - Aluminium content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to one decimal place except for water

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	3.2	3.7	3.9	4.3
Apple-based juice	0.5	<0.1	<0.1	0.2
Bananas	<0.2	<0.2	<0.2	<0.2
Beans, baked, canned	0.2	<0.2	0.2	<0.2
Beer	<0.1	<0.1	<0.1	0.1
Beetroot, canned	<0.2	<0.2	<0.2	<0.2
Biscuits, chocolate	5.3	3.0	2.5	2.3
Biscuits, cracker	1.4	2.5	<1.0	<1.0
Biscuits, plain sweet	<1.0	<1.0	<1.0	<1.0
Bran flake cereal, mixed	2.2	2.2	3.0	1.3
Caffeinated beverage	0.1	<0.1	<0.1	<0.1
Carbonated drink	<0.1	<0.1	<0.1	0.1
Cheese	<1.0	<1.0	<1.0	<1.0
Chicken	<0.2	<0.2	<0.2	<0.2
Chocolate beverage	4.8	1.2	1.2	2.8
Coconut cream, canned	<1.0	<1.0	<1.0	<1.0
Coffee, instant	<0.1	<0.1	<0.1	<0.1
Confectionery	8.5	8.2	<1.0	<1.0
Corn, frozen	<0.2	<0.2	<0.2	<0.2
Cornflakes	<1.0	<1.0	<1.0	<1.0
Dairy dessert	1.4	1.0	1.4	0.4
Fish cakes	2.2	0.5	0.6	0.5
Fish fingers	1.2	1.0	<0.2	2.9
Fish, canned	5.2	0.4	2.4	3.0
Fruit drink	<0.1	<0.1	0.8	<0.1
Honey	1.1	<1.0	1.2	5.6
Hummus	1.6	<0.2	0.5	1.3
Ice cream	<0.2	<0.2	<0.2	<0.2
Infant/Follow-on formula	<1.0	<1.0	<1.0	<1.0
Infant weaning food, cereal based	0.3	0.3	0.5	<0.2
Infant weaning food, custard/fruit dish	0.5	<0.2	<0.2	0.2
Infant weaning food, savoury dish	0.5	1.0	<0.2	0.3
Jam	1.4	<1.0	1.3	<1.0
Milk chocolate	3.6	<1.0	3.9	<1.0
Mixed berries, frozen	1.4	3.4	3.2	3.4
Mixed vegetables, frozen	0.7	0.6	<0.2	0.7
Muesli	<1.0	<1.0	1.1	2.6
Noodles, instant	1.7	<0.2	1.0	0.8
Oats, rolled	<1.0	<1.0	<1.0	<1.0
Oil	<1.0	<1.0	<1.0	<1.0
Orange juice	0.2	<0.1	<0.1	<0.1
Other cereals	<1.0	1.4	1.9	5.1
Pasta, dried	<1.0	<1.0	<1.0	<1.0
Peaches, canned	<0.2	<0.2	<0.2	<0.2
Peanut butter	1.9	<1.0	<1.0	1.9
Peanuts	6.0	<1.0	4.7	<1.0
Peas, frozen	3.6	1.9	1.4	7.5
Pineapple, canned	<0.2	<0.2	<0.2	<0.2
Potato crisps	22.9	<1.0	1.3	<1.0
Prawns/shrimps	1.4	0.9	10.3	1.2
Prunes	<1.0	<1.0	<1.0	4.3
Raisins/sultanas	2.5	1.9	3.2	4.8
Rice, white	<1.0	<1.0	<1.0	<1.0
Salad dressing	<1.0	<1.0	<1.0	1.4
Simmer sauce, bottled	2.5	3.3	2.9	3.8

Snack bars	4.7	1.3	<1.0	1.2
Snacks, flavoured	<1.0	<1.0	<1.0	1.3
Soup, vegetable	0.1	0.2	0.5	0.4
Soya milk	1.1	0.3	0.4	0.2
Spaghetti in sauce, canned	0.3	0.4	0.4	0.4
Sugar	<1.0	<1.0	<1.0	<1.0
Table spreads	<1.0	<1.0	<1.0	<1.0
Taro	<0.2	<0.2	<0.2	<0.2
Taro*	0.4	0.4	-	-
Tea	6.4	9.5	10.6	7.1
Tomato sauce	4.1	0.5	0.6	0.5
Tomatoes in juice, canned	0.3	1.4	1.9	0.8
Water, bottled	0.003	0.004	0.005	<0.003
Wheat biscuit cereal	<1.0	2.9	<1.0	<1.0
Wine, still red	0.2	0.3	0.4	0.4
Wine, still white	1.4	1.2	0.6	0.5
Yeast extract	2.9	2.3	1.3	1.0
Yoghurt	0.29	0.44	0.36	0.50

[#] Additional Taro samples obtained to make up for shortfall in samples in Q2

4.1.2 Arsenic (Total and Inorganic)

4.1.2.1 Table 6 - Total Arsenic content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to three decimal places

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	<0.010	<0.010	0.013	<0.010
Apple-based juice	0.001	<0.001	<0.001	0.019
Bananas	<0.002	0.002	<0.002	<0.002
Beans, baked, canned	<0.002	<0.002	<0.002	<0.002
Beer	<0.001	0.004	<0.001	<0.001
Beetroot, canned	<0.002	<0.002	<0.002	<0.002
Biscuits, chocolate	<0.010	<0.010	<0.010	<0.010
Biscuits, cracker	0.011	<0.010	0.097*	<0.010
Biscuits, plain sweet	<0.010	<0.010	<0.010	<0.010
Bran flake cereal, mixed	0.022*	0.016	0.019	0.010
Caffeinated beverage	<0.001	<0.001	<0.001	0.001
Carbonated drink	<0.001	<0.001	<0.001	<0.001
Cheese	<0.010	<0.009	<0.009	<0.010
Chicken	<0.002	<0.002	<0.002	<0.002
Chocolate beverage	0.002	<0.001	0.001	0.001
Coconut cream, canned	<0.009	<0.009	<0.009	<0.010
Coffee, instant	<0.001	<0.001	<0.001	<0.001
Confectionery	<0.010	<0.010	<0.010	<0.010
Corn, frozen	0.003	0.002	<0.002	<0.002
Cornflakes	<0.010	<0.010	<0.010	<0.010
Dairy dessert	0.002	<0.002	<0.002	<0.002
Fish cakes	0.733*	0.300*	0.197*	0.502*
Fish fingers	0.780*	1.311*	0.511*	0.575*
Fish, canned	1.095*	1.560*	0.232*	0.272*
Fruit drink	<0.001	<0.001	0.008	<0.001
Honey	<0.010	<0.010	<0.010	<0.010
Hummus	<0.002	0.003	<0.002	<0.002
Ice cream	0.002	<0.002	<0.002	<0.002
Infant/Follow-on formula	<0.010	<0.010	<0.010	<0.010
Infant weaning food, cereal based	0.002	<0.002	<0.002	0.010
Infant weaning food, custard/fruit dish	<0.002	<0.002	<0.002	<0.002
Infant weaning food, savoury dish	0.016	0.007	<0.002	<0.002
Jam	<0.010	<0.010	<0.010	<0.010
Milk chocolate	<0.010	<0.010	<0.010	<0.010

Mixed berries, frozen	0.002	<0.002	0.004	<0.002
Mixed vegetables, frozen	<0.002	<0.002	<0.002	<0.002
Muesli	<0.010	<0.010	<0.010	<0.010
Noodles, instant	0.002	<0.002	0.003	0.003
Oats, rolled	<0.010	<0.010	<0.010	<0.010
Oil	<0.010	<0.009	<0.010	0.011
Orange juice	<0.001	<0.001	<0.001	<0.001
Other cereals	0.090*	0.015	0.132*	0.011
Pasta, dried	<0.010	<0.010	<0.010	<0.010
Peaches, canned	<0.002	<0.002	<0.002	<0.002
Peanut butter	<0.009	0.013	<0.010	0.011
Peanuts	0.013	<0.010	0.011	<0.010
Peas, frozen	<0.002	<0.002	<0.002	<0.002
Pineapple, canned	0.002	<0.002	<0.002	<0.002
Potato crisps	<0.010	<0.010	<0.010	<0.010
Prawns/shrimps	0.188*	0.204*	0.197*	0.174*
Prunes	<0.010	<0.010	<0.010	<0.010
Raisins/sultanas	0.013	0.010	0.010	0.015
Rice, white	0.028*	0.022*	0.041*	0.036*
Salad dressing	<0.009	<0.010	<0.009	<0.010
Simmer sauce, bottled	0.003	<0.002	<0.002	<0.002
Snack bars	0.012	<0.010	<0.010	0.011
Snacks, flavoured	0.020*	0.014	0.012	0.015
Soup, vegetable	<0.002	<0.002	<0.002	<0.002
Soya milk	0.006	0.004	0.001	0.001
Spaghetti in sauce, canned	<0.002	<0.002	<0.002	0.012
Sugar	<0.010	<0.010	<0.010	<0.010
Table spreads	<0.010	<0.010	<0.010	<0.010
Taro	0.003	<0.002	<0.002	<0.002
Taro#	0.002	<0.002	-	-
Tea	<0.001	<0.001	<0.001	<0.001
Tomato sauce	<0.002	<0.002	<0.002	<0.003
Tomatoes in juice, canned	<0.002	<0.002	<0.002	<0.002
Water, bottled	<0.001	<0.001	0.009	<0.001
Wheat biscuit cereal	<0.010	0.024*	0.023*	<0.010
Wine, still red	0.001	0.002	0.005	0.002
Wine, still white	0.002	0.003	0.004	0.004
Yeast extract	<0.010	0.044*	0.061*	0.070*
Yoghurt	<0.002	<0.002	<0.002	<0.002

Additional Taro samples obtained to make up for shortfall in samples in Q2

* Samples with >0.02mg/kg Total arsenic that were further analysed for Inorganic arsenic content

4.1.2.2 Table 7 – Inorganic Arsenic content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to two decimal places

Food	Brand 1	Brand 2	Brand 3	Brand 4
Biscuits, cracker	Not analysed	Not analysed	0.06	Not analysed
Bran flake cereal, mixed	<0.02	Not analysed	Not analysed	Not analysed
Fish cakes	<0.02	<0.02	<0.02	<0.02
Fish fingers	0.03	0.04	<0.02	<0.02
Fish, canned	<0.02	0.03	<0.02	<0.02
Other cereals	0.05	Not analysed	0.05	Not analysed
Prawns/shrimps	<0.02	<0.02	0.02	<0.02
Rice, white	0.03	0.03	0.03	0.03
Snacks, flavoured	<0.02	Not analysed	Not analysed	Not analysed
Wheat biscuit cereal	Not analysed	<0.02	<0.02	Not analysed
Yeast extract	Not analysed	0.05	0.06	0.07

4.1.3 Cadmium

4.1.3.1 Table 8 - Cadmium content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to four decimal places for all foods except water

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	0.0146	0.0061	0.0086	0.0078
Apple-based juice	<0.0002	<0.0002	<0.0002	<0.0002
Bananas	0.0024	<0.0004	0.0005	0.0006
Beans, baked, canned	0.0086	0.0053	0.0044	0.0053
Beer	<0.0002	<0.0002	<0.0002	<0.0002
Beetroot, canned	0.0105	0.0137	0.0083	0.0119
Biscuits, chocolate	0.0367	0.0265	0.0237	0.0133
Biscuits, cracker	0.0050	0.0054	0.0279	0.0166
Biscuits, plain sweet	0.0177	0.0192	0.0168	0.0148
Bran flake cereal, mixed	0.0058	0.0055	0.0261	0.0351
Caffeinated beverage	<0.0002	<0.0002	<0.0002	<0.0002
Carbonated drink	<0.0002	<0.0002	<0.0002	<0.0002
Cheese	<0.0020	<0.0020	<0.0020	<0.0020
Chicken	<0.0004	<0.0004	<0.0004	<0.0004
Chocolate beverage	0.0070	0.0079	0.0048	0.0178
Coconut cream, canned	<0.0020	<0.0020	<0.0020	0.0031
Coffee, instant	<0.0002	<0.0002	<0.0002	<0.0002
Confectionery	<0.0020	<0.0020	<0.0020	<0.0020
Corn, frozen	<0.0004	0.0017	0.0012	0.0040
Cornflakes	<0.0020	0.0076	<0.0020	<0.0020
Dairy dessert	0.0034	0.0034	0.0112	0.0004
Fish cakes	0.0064	0.0096	0.0035	0.0077
Fish fingers	0.0055	0.0066	0.0007	0.0043
Fish, canned	0.0174	0.0188	0.0013	0.0023
Fruit drink	<0.0002	<0.0002	0.0020	<0.0002
Honey	<0.0020	<0.0020	<0.0020	<0.0020
Hummus	0.0016	0.0043	0.0024	0.0015
Ice cream	<0.0004	<0.0004	<0.0004	<0.0004
Infant/Follow-on formula	<0.0020	<0.0020	<0.0020	<0.0020
Infant weaning food, cereal based	0.0016	0.0012	0.0011	0.0041
Infant weaning food, custard/fruit dish	<0.0004	<0.0004	<0.0004	0.0013
Infant weaning food, savoury dish	0.0029	0.0064	0.0022	0.0048
Jam	<0.0020	<0.0020	<0.0020	0.0027
Milk chocolate	0.0357	0.0101	0.0178	0.0209
Mixed berries, frozen	0.0177	0.0010	0.0017	0.0013
Mixed vegetables, frozen	0.0072	0.0136	0.0036	0.0016
Muesli	0.0132	0.0173	0.0132	0.0266
Noodles, instant	0.0039	0.0016	0.0084	0.0075
Oats, rolled	0.0023	<0.0020	<0.0020	0.0025
Oil	<0.0020	<0.0020	<0.0020	<0.0019
Orange juice	<0.0002	<0.0002	<0.0002	<0.0002
Other cereals	0.0055	0.0077	0.0244	0.0194
Pasta, dried	0.0132	0.0112	0.0076	0.0023
Peaches, canned	<0.0004	0.0005	0.0007	0.0015
Peanut butter	0.0572	0.1666	0.0400	0.0315
Peanuts	0.0429	0.0420	0.0532	0.1585
Peas, frozen	0.0028	0.0017	0.0005	0.0027
Pineapple, canned	0.0037	0.0006	0.0007	0.0007
Potato crisps	0.0975	0.0847	0.1442	0.0927
Prawns/shrimps	0.0011	0.0005	0.0014	0.0008
Prunes	<0.0020	<0.0020	0.0020	<0.0020
Raisins/sultanas	<0.0020	<0.0020	<0.0020	<0.0020
Rice, white	0.0075	0.0060	<0.0020	0.0049
Salad dressing	<0.0019	0.0031	<0.0019	<0.0020
Simmer sauce, bottled	0.0060	0.0181	0.0168	0.0185

Snack bars	0.0633	0.0098	0.0081	0.009
Snacks, flavoured	<0.0020	<0.0020	<0.0020	0.0057
Soup, vegetable	0.0029	0.0005	0.0079	0.0135
Soya milk	0.0016	0.0020	0.0015	0.0008
Spaghetti in sauce, canned	0.0053	0.0086	0.0087	0.0018
Sugar	<0.0020	<0.0020	<0.0020	<0.0020
Table spreads	<0.0020	<0.0020	<0.0020	<0.0020
Taro	0.0565	0.0291	0.0069	0.0012
Taro#	0.0014	0.0014	-	-
Tea	<0.0002	<0.0002	<0.0002	<0.0002
Tomato sauce	0.0145	0.0178	0.0170	0.0108
Tomatoes in juice, canned	0.0090	0.0110	0.0084	0.0095
Water, bottled	<0.00005	<0.00005	<0.00005	<0.0005
Wheat biscuit cereal	0.0077	0.0080	0.0080	0.0132
Wine, still red	<0.0004	<0.0004	<0.0004	<0.0004
Wine, still white	0.0004	0.0004	<0.0002	<0.0002
Yeast extract	0.0031	0.0094	0.0048	0.0058
Yoghurt	<0.0004	<0.0004	0.0010	0.0007

Additional Taro samples obtained to make up for shortfall in samples in Q2

4.1.4 Fluoride

4.1.4.1 Table 9 - Fluoride content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to two decimal places

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	3.56	4.39	2.35	3.17
Apple-based juice	1.03	<0.17	<0.17	<0.17
Bananas	<0.25	<0.24	<0.24	<0.25
Beans, baked, canned	<0.25	<0.23	<0.24	<0.25
Beer	0.50	0.47	0.40	0.45
Beetroot, canned	<0.25	<0.24	<0.25	<0.24
Biscuits, cracker	<1.20	<1.20	<1.16	<1.17
Biscuits, plain sweet	<1.24	<1.25	<1.22	<1.23
Bran flake cereal, mixed	<1.17	<1.17	<1.17	<1.15
Caffeinated beverage	0.54	<0.17	<0.18	<0.18
Carbonated drink	<0.17	<0.17	<0.18	0.19
Coconut cream, canned	<0.25	<0.25	0.48	<0.25
Coffee, instant	<0.17	<0.17	<0.17	<0.18
Corn, frozen	<0.23	<0.24	<0.24	<0.24
Cornflakes	<1.18	<1.16	<1.16	<1.18
Fruit drink	<0.18	<0.17	<0.17	<0.17
Mixed berries, frozen	<0.25	<0.24	<0.24	<0.24
Mixed vegetables, frozen	<0.24	<0.23	<0.24	<0.24
Muesli	<1.15	<1.16	<1.18	<1.20
Noodles, instant	<0.24	<0.24	<0.24	<0.25
Oats, rolled	<1.23	<1.18	<1.22	<1.16
Orange juice	0.66	<0.18	<0.18	<0.17
Other cereals	<1.22	<1.23	<1.23	<1.16
Pasta, dried	<1.15	<1.18	<1.18	<1.22
Peaches, canned	<0.24	<0.24	<0.24	<0.24
Peas, frozen	<0.24	<0.23	<0.25	<0.25
Pineapple, canned	<0.24	<0.24	<0.24	<0.23
Potato crisps	<1.15	<1.21	<1.18	<1.19
Prunes	<1.14	<1.16	<1.12	<1.16
Raisins/sultanas	<1.00	<1.00	<1.00	<1.00
Rice, white	<1.14	<1.20	<1.18	<1.17
Soup, vegetable	<0.24	<0.24	0.48	<0.24
Soya milk	0.99	1.46	0.27	<0.18
Spaghetti in sauce, canned	<0.24	<0.24	<0.24	<0.24
Taro	<0.24	<0.25	<0.23	<0.25

Taro#	<0.24	<0.23	-	-
Tea	1.12	4.92	5.07	4.57
Tomato sauce	0.29	0.29	<0.24	<0.25
Tomatoes in juice, canned	<0.25	<0.25	<0.25	<0.24
Water, bottled	<0.05	0.06	0.06	0.06
Wheat biscuit cereal	<1.23	<1.22	<1.21	<1.20
Wine, still red	0.34	<0.17	0.18	<0.17
Wine, still white	0.31	0.17	0.22	0.20

Additional Taro samples obtained to make up for shortfall in samples in Q2

4.1.5 Iodine

4.1.5.1 Table 10 - Iodine content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to three decimal places

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	<0.010	<0.010	<0.010	<0.010
Apple-based juice	0.005	0.003	0.002	0.005
Bananas	0.002	<0.002	0.004	<0.002
Beans, baked, canned	0.016	0.010	0.004	0.008
Beer	0.003	0.004	0.004	0.004
Beetroot, canned	0.009	0.003	0.005	0.009
Biscuits, chocolate	<0.010	0.025	0.084	0.168
Biscuits, cracker	<0.010	<0.010	<0.010	<0.010
Biscuits, plain sweet	0.029	0.017	<0.010	<0.010
Bran flake cereal, mixed	<0.010	<0.010	<0.010	<0.010
Caffeinated beverage	0.002	<0.001	<0.001	<0.001
Carbonated drink	<0.001	<0.001	<0.001	<0.001
Cheese	0.037	0.033	0.068	0.036
Chicken	0.004	0.008	0.006	0.010
Chocolate beverage	0.020	<0.001	0.054	0.004
Coconut cream, canned	<0.009	<0.009	0.046	0.033
Coffee, instant	<0.001	<0.001	<0.001	<0.001
Confectionery	0.023	<0.010	<0.010	<0.010
Corn, frozen	<0.002	<0.002	<0.002	<0.002
Cornflakes	<0.010	<0.010	<0.010	<0.010
Dairy dessert	0.051	0.084	0.048	0.043
Fish cakes	0.130	0.034	0.026	0.019
Fish fingers	0.076	0.625	0.029	<0.010
Fish, canned	0.064	0.100	0.128	0.204
Fruit drink	<0.001	<0.001	0.001	<0.001
Honey	<0.010	<0.010	<0.010	<0.010
Hummus	0.003	0.003	0.003	0.007
Ice cream	0.051	0.061	0.052	0.068
Infant/Follow-on formula	0.126	0.122	0.152	0.136
Infant weaning food, cereal based	0.036	0.002	0.002	0.008
Infant weaning food, custard/fruit dish	<0.002	0.088	0.071	<0.002
Infant weaning food, savoury dish	0.015	0.005	0.004	0.019
Jam	<0.010	<0.010	<0.010	<0.010
Milk chocolate	0.334	0.091	0.224	0.162
Mixed berries, frozen	<0.002	<0.002	<0.002	<0.002
Mixed vegetables, frozen	<0.002	<0.002	0.005	0.002
Muesli	0.015	<0.010	0.019	<0.010
Noodles, instant	0.225	0.332	0.309	0.207
Oats, rolled	<0.010	<0.010	<0.010	<0.010
Oil	<0.010	<0.009	<0.010	<0.010
Orange juice	0.003	0.002	<0.001	<0.001
Other cereals	<0.010	0.032	<0.010	0.128
Pasta, dried	<0.010	<0.010	0.145	<0.010
Peaches, canned	0.011	0.012	0.010	<0.002

Peanut butter	0.022	<0.010	<0.010	<0.009
Peanuts	<0.010	<0.010	<0.010	<0.010
Peas, frozen	0.003	<0.002	<0.002	<0.002
Pineapple, canned	0.026	0.016	<0.002	0.005
Potato crisps	0.016	<0.010	0.011	0.019
Prawns/shrimps	0.103	0.062	0.043	0.014
Prunes	0.011	<0.010	0.014	<0.010
Raisins/sultanas	<0.010	<0.010	0.017	0.026
Rice, white	<0.010	<0.010	<0.010	0.014
Salad dressing	0.041	<0.010	<0.009	<0.010
Simmer sauce, bottled	0.024	0.013	0.014	0.014
Snack bars	0.041	0.028	0.040	0.026
Snacks, flavoured	0.302	0.404	0.241	0.052
Soup, vegetable	0.004	0.007	0.010	0.007
Soya milk	0.013	0.104	0.001	<0.001
Spaghetti in sauce, canned	0.003	0.012	0.012	0.002
Sugar	<0.010	<0.010	<0.010	<0.010
Table spreads	<0.010	<0.010	<0.010	<0.010
Taro	0.011	<0.002	<0.002	<0.002
Taro[#]	<0.002	<0.002	-	-
Tea	<0.001	<0.001	<0.001	<0.001
Tomato sauce	0.007	0.017	0.024	0.002
Tomatoes in juice, canned	0.004	0.005	0.004	0.005
Water, bottled	<0.001	0.002	<0.001	0.002
Wheat biscuit cereal	<0.010	<0.010	<0.010	<0.010
Wine, still red	0.009	0.010	0.015	0.003
Wine, still white	0.009	0.004	0.008	<0.001
Yeast extract	0.013	0.018	0.033	0.073
Yoghurt	0.065	0.063	0.045	0.074

[#] Additional Taro samples obtained to make up for shortfall in samples in Q2

4.1.6 Lead

4.1.6.1 Table 11 - Lead content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to three decimal places for all foods except water

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	<0.010	<0.010	<0.010	<0.010
Apple-based juice	0.002	<0.001	<0.001	0.003
Bananas	<0.002	<0.002	<0.002	<0.002
Beans, baked, canned	<0.002	<0.002	<0.002	<0.002
Beer	<0.001	<0.001	<0.001	<0.001
Beetroot, canned	<0.002	<0.002	<0.002	<0.002
Biscuits, chocolate	0.014	0.012	<0.010	<0.010
Biscuits, cracker	<0.010	<0.010	<0.010	<0.010
Biscuits, plain sweet	<0.010	<0.010	<0.010	<0.010
Bran flake cereal, mixed	<0.010	<0.010	<0.010	<0.010
Caffeinated beverage	<0.001	<0.001	<0.001	<0.001
Carbonated drink	<0.001	<0.001	<0.001	<0.001
Cheese	<0.010	<0.010	<0.010	<0.010
Chicken	<0.002	<0.002	<0.002	<0.002
Chocolate beverage	0.013	0.003	0.002	0.010
Coconut cream, canned	<0.010	<0.010	<0.010	<0.010
Coffee, instant	<0.001	<0.001	<0.001	<0.001
Confectionery	<0.010	<0.010	<0.010	<0.010
Corn, frozen	<0.002	<0.002	<0.002	<0.002
Cornflakes	<0.010	<0.010	<0.010	<0.010
Dairy dessert	0.003	0.002	0.004	<0.002
Fish cakes	0.008	<0.002	<0.002	<0.002

Fish fingers	0.003	0.007	<0.002	<0.002
Fish, canned	0.003	<0.002	<0.002	<0.002
Fruit drink	<0.001	<0.001	0.002	<0.001
Honey	0.012	<0.010	<0.010	<0.010
Hummus	<0.002	<0.002	<0.002	0.003
Ice cream	<0.002	<0.002	<0.002	<0.002
Infant/Follow-on formula	<0.010	<0.010	<0.010	<0.010
Infant weaning food, cereal based	<0.002	0.003	<0.002	<0.002
Infant weaning food, custard/fruit dish	0.036	<0.002	<0.002	0.028
Infant weaning food, savoury dish	<0.002	0.005	0.002	<0.002
Jam	<0.010	<0.010	<0.010	0.011
Milk chocolate	0.010	<0.010	0.013	<0.010
Mixed berries, frozen	0.006	<0.002	0.004	0.002
Mixed vegetables, frozen	0.004	0.004	0.002	0.003
Muesli	<0.010	<0.010	0.011	<0.010
Noodles, instant	0.003	<0.002	0.003	0.004
Oats, rolled	<0.010	<0.010	<0.010	<0.010
Oil	<0.010	<0.010	<0.010	<0.010
Orange juice	<0.001	<0.001	<0.001	<0.001
Other cereals	<0.010	<0.010	<0.010	<0.010
Pasta, dried	<0.010	<0.010	<0.010	<0.010
Peaches, canned	0.016	0.029	0.026	0.025
Peanut butter	<0.010	<0.010	<0.010	<0.010
Peanuts	<0.010	<0.010	<0.010	<0.010
Peas, frozen	0.003	0.003	<0.002	0.005
Pineapple, canned	0.024	0.015	0.011	0.007
Potato crisps	<0.010	<0.010	<0.010	<0.010
Prawns/shrimps	0.008	0.006	0.014	0.010
Prunes	0.019	<0.010	<0.010	0.011
Raisins/sultanas	<0.010	<0.010	<0.010	0.013
Rice, white	<0.010	<0.010	<0.010	<0.010
Salad dressing	<0.010	<0.010	<0.010	<0.010
Simmer sauce, bottled	0.006	0.004	0.004	0.004
Snack bars	<0.010	<0.010	<0.010	<0.010
Snacks, flavoured	<0.010	<0.010	<0.010	<0.010
Soup, vegetable	0.001	<0.001	0.001	<0.001
Soya milk	<0.001	0.002	0.002	<0.001
Spaghetti in sauce, canned	<0.002	<0.002	<0.002	0.004
Sugar	<0.010	<0.010	0.039	<0.010
Table spreads	<0.010	<0.010	<0.010	<0.010
Taro	0.015	<0.002	<0.002	<0.002
Taro[#]	0.002	<0.002	-	-
Tea	<0.001	<0.001	<0.001	<0.001
Tomato sauce	0.004	<0.002	0.003	<0.002
Tomatoes in juice, canned	0.004	0.018	0.012	0.005
Water, bottled	<0.0001	<0.0001	<0.0001	<0.0001
Wheat biscuit cereal	<0.010	<0.010	<0.010	<0.010
Wine, still red	0.004	<0.002	0.003	0.004
Wine, still white	0.010	0.011	0.011	0.015
Yeast extract	<0.010	0.017	0.016	<0.010
Yoghurt	<0.002	<0.002	<0.002	<0.002

[#] Additional Taro samples obtained to make up for shortfall in samples in Q2

4.1.7 Mercury (Total and Methyl Mercury)

4.1.7.1 Table 12 – Total mercury content (mg/kg) of foods in Q4of 2016 NZTDS, reported to three decimal places

Food	Brand 1	Brand 2	Brand 3	Brand 4

Almonds	<0.010	<0.010	<0.010	<0.010
Apple-based juice	<0.001	<0.001	<0.001	<0.001
Bananas	<0.002	<0.002	<0.002	<0.002
Beans, baked, canned	<0.002	<0.002	<0.002	<0.002
Beer	<0.001	<0.001	<0.001	<0.001
Beetroot, canned	<0.002	<0.002	<0.002	<0.002
Biscuits, chocolate	<0.010	<0.010	<0.010	<0.010
Biscuits, cracker	<0.010	<0.010	<0.010	<0.010
Biscuits, plain sweet	<0.010	<0.010	<0.010	<0.010
Bran flake cereal, mixed	<0.010	<0.010	<0.010	<0.010
Caffeinated beverage	<0.001	<0.001	<0.001	<0.001
Carbonated drink	<0.001	<0.001	<0.001	<0.001
Cheese	<0.010	<0.010	<0.010	<0.010
Chicken	<0.002	<0.002	<0.002	<0.002
Chocolate beverage	<0.001	<0.001	<0.001	<0.001
Coconut cream, canned	<0.010	<0.010	<0.010	<0.010
Coffee, instant	<0.001	<0.001	<0.001	<0.001
Confectionery	<0.010	<0.010	<0.010	<0.010
Corn, frozen	<0.002	<0.002	<0.002	<0.002
Cornflakes	<0.010	<0.010	<0.010	<0.010
Dairy dessert	<0.002	<0.002	<0.002	<0.002
Fish cakes	0.033*	0.028*	0.016*	0.029*
Fish fingers	0.021*	0.016*	0.025*	0.182*
Fish, canned	0.031*	0.104*	0.010*	0.014*
Fruit drink	<0.001	<0.001	<0.001	<0.001
Honey	<0.010	<0.010	<0.010	<0.010
Hummus	<0.002	<0.002	<0.002	<0.002
Ice cream	<0.002	<0.002	<0.002	<0.002
Infant/Follow-on formula	<0.010	<0.010	<0.010	<0.010
Infant weaning food, cereal based	<0.002	<0.002	<0.002	<0.002
Infant weaning food, custard/fruit dish	<0.002	<0.002	<0.002	<0.002
Infant weaning food, savoury dish	<0.002	<0.002	<0.002	<0.002
Jam	<0.010	<0.010	<0.010	<0.010
Milk chocolate	<0.010	<0.010	<0.010	<0.010
Mixed berries, frozen	<0.002	<0.002	<0.002	<0.002
Mixed vegetables, frozen	<0.002	<0.002	<0.002	<0.002
Muesli	<0.010	<0.010	<0.010	<0.010
Noodles, instant	<0.002	<0.002	<0.002	<0.002
Oats, rolled	<0.010	<0.010	<0.010	<0.010
Oil	<0.010	<0.010	<0.010	<0.010
Orange juice	<0.001	<0.001	<0.001	<0.001
Other cereals	<0.010	<0.010	<0.010	<0.010
Pasta, dried	<0.010	<0.010	<0.010	<0.010
Peaches, canned	<0.002	<0.002	<0.002	<0.002
Peanut butter	<0.010	<0.010	<0.010	<0.010
Peanuts	<0.010	<0.010	<0.010	<0.010
Peas, frozen	<0.002	<0.002	<0.002	<0.002
Pineapple, canned	<0.002	<0.002	<0.002	<0.002
Potato crisps	<0.010	<0.010	<0.010	<0.010
Prawns/shrimps	0.005	0.005	0.004	0.012
Prunes	<0.010	<0.010	<0.010	<0.010
Raisins/sultanas	<0.010	<0.010	<0.010	<0.010
Rice, white	<0.010	<0.010	<0.010	<0.010
Salad dressing	<0.010	<0.010	<0.010	<0.010
Simmer sauce, bottled	<0.002	<0.002	<0.002	<0.002
Snack bars	<0.010	<0.010	<0.010	<0.010
Snacks, flavoured	<0.010	<0.010	<0.010	<0.010
Soup, vegetable	<0.010	<0.010	<0.010	<0.010
Soya milk	<0.001	<0.001	<0.001	<0.001
Spaghetti in sauce, canned	<0.002	<0.002	<0.002	<0.002

Sugar	<0.010	<0.010	<0.010	<0.010
Table spreads	<0.010	<0.010	<0.010	<0.010
Taro	<0.002	<0.002	<0.002	<0.002
Taro[#]	<0.002	<0.002	-	-
Tea	<0.001	<0.001	<0.001	<0.001
Tomato sauce	<0.002	<0.002	<0.002	<0.002
Tomatoes in juice, canned	<0.002	<0.002	<0.002	<0.002
Water, bottled	<0.002	<0.002	<0.002	<0.002
Wheat biscuit cereal	<0.010	<0.010	<0.010	<0.010
Wine, still red	<0.002	<0.002	<0.002	<0.002
Wine, still white	<0.001	<0.001	<0.001	<0.001
Yeast extract	<0.010	<0.010	<0.010	<0.010
Yoghurt	<0.002	<0.002	<0.002	<0.002

[#]Additional Taro samples obtained to make up for shortfall in samples in Q2

[*]Samples further analysed for methyl mercury content

4.1.7.2 Table 13 - Methyl Mercury content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to three decimal places

Food	Brand 1	Brand 2	Brand 3	Brand 4
Fish cakes	0.031	0.027	0.019	0.024
Fish fingers	0.021	0.018	0.031	0.159
Fish, canned	0.032	0.100	0.009	0.013
Prawns/shrimps	0.006	0.005	<0.004	0.014

4.1.8 Selenium

4.1.8.1 Table 14 –Selenium content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to three decimal places

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	<0.020	<0.020	<0.020	<0.020
Apple-based juice	<0.002	<0.002	<0.002	<0.002
Bananas	<0.004	0.034	0.010	0.011
Beans, baked, canned	0.021	0.014	0.013	0.018
Beer	<0.002	<0.003	<0.002	<0.002
Beetroot, canned	<0.004	<0.004	<0.004	<0.004
Biscuits, chocolate	<0.020	<0.020	<0.020	0.043
Biscuits, cracker	0.109	0.079	<0.020	<0.020
Biscuits, plain sweet	<0.020	<0.020	0.025	<0.020
Bran flake cereal, mixed	0.095	0.130	0.083	0.067
Caffeinated beverage	<0.002	<0.002	<0.002	<0.002
Carbonated drink	<0.002	<0.002	<0.002	<0.002
Cheese	0.092	0.091	0.103	0.100
Chicken	0.252	0.256	0.243	0.248
Chocolate beverage	0.007	<0.002	0.006	0.003
Coconut cream, canned	<0.019	<0.019	<0.019	<0.019
Coffee, instant	<0.002	<0.002	<0.002	<0.002
Confectionery	<0.020	<0.020	<0.020	<0.020
Corn, frozen	<0.004	<0.004	0.015	0.005
Cornflakes	<0.020	<0.020	<0.020	0.040
Dairy dessert	0.011	0.009	0.008	0.009
Fish cakes	0.132	0.105	0.092	0.192
Fish fingers	0.157	0.193	0.275	0.279
Fish, canned	0.640	0.624	0.230	0.260
Fruit drink	<0.002	<0.002	<0.002	<0.002
Honey	<0.020	<0.020	<0.020	<0.020
Hummus	0.007	0.127	0.021	<0.004
Ice cream	0.006	0.012	0.005	0.012
Infant/Follow-on formula	0.020	<0.020	0.022	0.023

Infant weaning food, cereal based	0.021	0.058	<0.004	0.025
Infant weaning food, custard/fruit dish	<0.004	0.005	0.004	<0.004
Infant weaning food, savoury dish	0.014	<0.004	<0.004	0.011
Jam	<0.020	<0.020	<0.020	<0.020
Milk chocolate	0.033	0.040	0.032	0.022
Mixed berries, frozen	<0.004	<0.004	<0.004	<0.004
Mixed vegetables, frozen	<0.004	<0.004	<0.004	0.037
Muesli	0.094	0.070	0.113	0.061
Noodles, instant	0.008	0.032	0.075	0.065
Oats, rolled	0.028	<0.020	<0.020	<0.020
Oil	<0.019	<0.019	<0.020	<0.019
Orange juice	<0.002	<0.002	<0.002	<0.002
Other cereals	<0.020	0.167	0.042	0.056
Pasta, dried	0.177	0.182	0.052	0.106
Peaches, canned	<0.004	<0.004	<0.004	<0.004
Peanut butter	0.039	0.054	0.140	0.095
Peanuts	0.118	0.135	0.114	0.040
Peas, frozen	0.006	0.009	0.004	<0.004
Pineapple, canned	<0.004	<0.004	<0.004	<0.004
Potato crisps	<0.020	<0.020	<0.020	<0.020
Prawns/shrimps	0.335	0.251	0.240	0.221
Prunes	<0.020	<0.020	<0.020	<0.020
Raisins/sultanas	<0.020	<0.020	<0.020	<0.020
Rice, white	<0.020	<0.020	<0.020	<0.020
Salad dressing	0.022	0.057	<0.019	<0.020
Simmer sauce, bottled	0.004	0.020	0.032	0.030
Snack bars	0.100	<0.020	0.036	0.023
Snacks, flavoured	0.023	0.020	<0.020	0.037
Soup, vegetable	<0.004	<0.004	0.006	0.006
Soya milk	0.012	0.007	0.005	0.020
Spaghetti in sauce, canned	0.007	0.009	0.008	0.015
Sugar	<0.020	<0.020	<0.020	<0.020
Table spreads	<0.020	<0.020	<0.020	<0.020
Taro	<0.004	<0.004	<0.004	0.004
Taro[#]	<0.004	<0.004	-	-
Tea	<0.002	<0.002	<0.002	<0.002
Tomato sauce	0.025	<0.004	<0.004	<0.005
Tomatoes in juice, canned	<0.004	<0.004	<0.004	0.007
Water, bottled	<0.001	<0.001	<0.001	<0.001
Wheat biscuit cereal	0.089	0.226	0.166	0.086
Wine, still red	<0.002	<0.002	<0.002	<0.002
Wine, still white	0.002	<0.002	<0.002	<0.002
Yeast extract	<0.020	<0.020	0.135	0.081
Yoghurt	0.010	0.007	0.009	0.011

[#] Additional Taro samples obtained to make up for shortfall in samples in Q2

4.1.9 Sodium

4.1.9.1 Table 15 – Sodium content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to whole numbers in all foods except for bottled water

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	<50	<50	<50	<50
Apple-based juice	25	<5	146	20
Bananas	<10	<10	<10	<10
Beans, baked, canned	4664	4559	4239	4908
Beer	15	19	14	18
Beetroot, canned	2898	2448	2004	1991
Biscuits, chocolate	3794	1170	2748	1515
Biscuits, cracker	9287	8061	3445	6107

Biscuits, plain sweet	4410	3524	3905	4516
Bran flake cereal, mixed	3570	3602	1789	2200
Caffeinated beverage	458	1321	445	380
Carbonated drink	9	10	95	72
Cheese	6655	6066	6065	6939
Chicken	517	573	436	409
Chocolate beverage	328	<5	104	53
Coconut cream, canned	124	130	125	152
Coffee, instant	<5	<5	<5	<5
Confectionery	309	186	228	268
Corn, frozen	<10	12	<10	<10
Cornflakes	5481	4060	5472	5427
Dairy dessert	480	395	489	378
Fish cakes	7658	5208	2418	4323
Fish fingers	5632	4807	3427	2934
Fish, canned	3493	3649	2334	4114
Fruit drink	46	173	7	129
Honey	78	70	100	<50
Hummus	4996	4514	3976	4293
Ice cream	405	552	347	530
Infant/Follow-on formula	208	236	305	274
Infant weaning food, cereal based	74	95	23	68
Infant weaning food, custard/fruit dish	<10	137	145	15
Infant weaning food, savoury dish	141	84	94	147
Jam	<50	<50	229	<50
Milk chocolate	664	783	569	721
Mixed berries, frozen	<10	<10	<10	<10
Mixed vegetables, frozen	135	93	118	221
Muesli	57	803	253	1522
Noodles, instant	3721	5479	4745	4480
Oats, rolled	<50	<50	<50	<50
Oil	<49	<49	<50	<49
Orange juice	14	11	8	10
Other cereals	5254	3285	2977	1116
Pasta, dried	<50	<50	99	<50
Peaches, canned	41	47	44	16
Peanut butter	5825	4836	1855	3436
Peanuts	5116	4679	<50	1788
Peas, frozen	17	<10	<10	<10
Pineapple, canned	18	<10	<10	<10
Potato crisps	8191	8294	5584	4733
Prawns/shrimps	6815	5939	5629	4070
Prunes	<50	<50	<50	<50
Raisins/sultanas	93	139	63	<50
Rice, white	<50	<50	<50	<50
Salad dressing	8309	6498	6765	4231
Simmer sauce, bottled	5356	4233	4359	3985
Snack bars	2091	873	592	804
Snacks, flavoured	4971	6748	5210	4712
Soup, vegetable	1606	2764	2414	2049
Soya milk	316	369	604	503
Spaghetti in sauce, canned	3310	4729	4471	4179
Sugar	<50	<50	<50	<50
Table spreads	3235	3341	3292	3435
Taro	13	<10	<10	<10
Taro[#]	<10	<10	-	-
Tea	<5	<5	<5	<5
Tomato sauce	7806	7129	5072	10029
Tomatoes in juice, canned	1552	57	26	40
Water, bottled	0.2	9.0	20.7	9.6

Wheat biscuit cereal	2736	2875	2359	2878
Wine, still red	25	32	22	26
Wine, still white	21	28	41	14
Yeast extract	47199	34259	35174	41712
Yoghurt	262	331	285	247

[#] Additional Taro samples obtained to make up for shortfall in samples in Q2

4.1.10 Tin

4.1.10.1 Table 16 –Tin content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to two decimal places for all foods except beverages, vegetable soup and bottled water

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	<0.05	<0.05	<0.05	<0.05
Apple-based juice	<0.005	<0.005	<0.005	<0.005
Bananas	<0.01	<0.01	<0.01	<0.01
Beans, baked, canned	24.87	51.55	0.30	34.18
Beer	<0.005	<0.005	<0.005	<0.005
Beetroot, canned	1.31	1.51	1.39	0.91
Biscuits, chocolate	<0.05	<0.05	<0.05	<0.05
Biscuits, cracker	<0.05	<0.05	<0.05	<0.05
Biscuits, plain sweet	<0.05	<0.05	<0.05	<0.05
Bran flake cereal, mixed	<0.05	<0.05	<0.05	<0.05
Caffeinated beverage	<0.005	<0.005	<0.005	<0.005
Carbonated drink	<0.005	<0.005	<0.005	<0.005
Cheese	<0.05	<0.05	<0.05	<0.05
Chicken	<0.01	<0.01	<0.01	<0.01
Chocolate beverage	<0.005	<0.005	<0.005	<0.005
Coconut cream, canned	<0.05	<0.05	<0.05	<0.05
Coffee, instant	<0.005	<0.005	<0.005	<0.005
Confectionery	<0.05	<0.05	<0.05	<0.05
Corn, frozen	<0.01	0.06	<0.01	<0.01
Cornflakes	<0.05	<0.05	<0.05	<0.05
Dairy dessert	<0.01	<0.01	<0.01	<0.01
Fish cakes	<0.01	<0.01	<0.01	<0.01
Fish fingers	0.01	0.01	0.01	0.01
Fish, canned	<0.01	0.01	0.03	0.03
Fruit drink	<0.005	<0.005	<0.005	<0.005
Honey	<0.05	<0.05	<0.05	<0.05
Hummus	0.02	<0.01	<0.01	0.01
Ice cream	<0.01	<0.01	<0.01	<0.01
Infant/Follow-on formula	<0.05	<0.05	<0.05	<0.05
Infant weaning food, cereal based	<0.010	<0.010	26.06	<0.010
Infant weaning food, custard/fruit dish	58.05	0.02	0.06	66.01
Infant weaning food, savoury dish	<0.01	0.10	<0.01	<0.01
Jam	<0.05	<0.05	<0.05	<0.05
Milk chocolate	<0.05	<0.05	<0.05	<0.05
Mixed berries, frozen	<0.01	<0.01	<0.01	<0.01
Mixed vegetables, frozen	<0.01	<0.01	<0.01	<0.01
Muesli	<0.05	<0.05	<0.05	<0.05
Noodles, instant	<0.01	<0.01	<0.01	<0.01
Oats, rolled	<0.05	<0.05	<0.05	<0.05
Oil	<0.05	<0.05	<0.05	<0.05
Orange juice	<0.005	<0.005	<0.005	<0.005
Other cereals	<0.05	<0.05	<0.05	<0.05
Pasta, dried	<0.05	<0.05	<0.05	<0.05
Peaches, canned	46.70	38.80	62.56	62.16
Peanut butter	<0.05	<0.05	<0.05	<0.05
Peanuts	<0.05	<0.05	<0.05	<0.05

Peas, frozen	<0.01	<0.01	<0.01	<0.01
Pineapple, canned	131.83	62.07	97.03	51.64
Potato crisps	<0.05	<0.05	<0.05	<0.05
Prawns/shrimps	<0.01	<0.01	<0.01	<0.01
Prunes	<0.05	<0.05	<0.05	<0.05
Raisins/sultanas	<0.05	<0.05	<0.05	<0.05
Rice, white	<0.05	<0.05	<0.05	<0.05
Salad dressing	<0.05	<0.05	<0.05	<0.05
Simmer sauce, bottled	0.03	0.14	0.33	0.13
Snack bars	<0.05	<0.05	<0.05	<0.05
Snacks, flavoured	<0.05	<0.05	<0.05	<0.05
Soup, vegetable	<0.005	<0.005	0.172	0.047
Soya milk	<0.005	<0.005	<0.005	<0.005
Spaghetti in sauce, canned	74.12	30.82	31.62	0.43
Sugar	<0.05	<0.05	<0.05	<0.05
Table spreads	<0.05	<0.05	<0.05	<0.05
Taro	<0.01	<0.01	<0.01	<0.01
Taro[#]	<0.01	<0.01	-	-
Tea	<0.005	<0.005	<0.005	<0.005
Tomato sauce	<0.01	<0.01	0.19	<0.01
Tomatoes in juice, canned	2.86	3.84	83.29	2.93
Water, bottled	<0.0005	<0.0005	<0.0005	<0.0005
Wheat biscuit cereal	<0.05	<0.05	<0.05	<0.05
Wine, still red	<0.01	<0.01	<0.01	<0.01
Wine, still white	<0.005	0.009	<0.005	<0.005
Yeast extract	<0.05	<0.05	<0.05	<0.05
Yoghurt	<0.01	<0.01	<0.01	<0.01

[#] Additional Taro samples obtained to make up for shortfall in samples in Q2

4.1.11 Zinc

4.1.11.1 Table 17 –Zinc content (mg/kg) of foods in Q4 of 2016 NZTDS, reported to two decimal places for all foods except bottled water

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	38.66	29.69	35.62	33.81
Apple-based juice	0.17	<0.10	0.13	0.11
Bananas	1.88	1.78	1.94	1.50
Beans, baked, canned	5.25	4.45	5.07	4.83
Beer	<0.10	<0.10	<0.10	<0.10
Beetroot, canned	1.91	3.45	2.10	2.00
Biscuits, chocolate	7.71	5.41	5.51	6.48
Biscuits, cracker	15.26	6.82	19.24	3.92
Biscuits, plain sweet	5.78	4.14	5.61	4.18
Bran flake cereal, mixed	45.38	46.92	25.43	24.91
Caffeinated beverage	<0.10	<0.10	<0.10	<0.10
Carbonated drink	<0.10	<0.10	<0.10	<0.10
Cheese	40.17	34.62	32.54	39.89
Chicken	9.32	10.43	8.39	9.23
Chocolate beverage	3.31	1.44	1.58	2.26
Coconut cream, canned	1.12	1.01	1.42	2.07
Coffee, instant	<0.10	<0.10	<0.10	<0.10
Confectionery	<1.00	<1.00	<1.00	<1.00
Corn, frozen	4.56	5.43	4.56	4.22
Cornflakes	2.77	51.04	3.14	3.13
Dairy dessert	4.61	4.02	4.11	3.43
Fish cakes	5.14	3.70	5.15	3.42
Fish fingers	4.20	5.12	3.24	3.41
Fish, canned	6.29	6.75	8.78	8.86

Fruit drink	<0.10	<0.10	<0.10	<0.10
Honey	<1.00	<1.00	<1.00	<1.00
Hummus	11.15	9.24	12.02	5.80
Ice cream	1.94	5.39	1.87	5.26
Infant/Follow-on formula	4.57	5.72	6.72	5.27
Infant weaning food, cereal based	3.31	2.20	1.76	1.71
Infant weaning food, custard/fruit dish	0.30	1.72	1.38	0.93
Infant weaning food, savoury dish	4.52	2.03	1.04	3.33
Jam	<1.00	<1.00	1.05	<1.00
Milk chocolate	13.26	16.29	13.93	9.08
Mixed berries, frozen	1.58	1.39	2.00	2.11
Mixed vegetables, frozen	2.90	3.72	2.08	4.40
Muesli	23.83	25.82	20.28	20.63
Noodles, instant	1.93	1.54	21.50	20.89
Oats, rolled	3.67	4.24	2.80	5.17
Oil	<0.98	<0.99	<1.00	<0.97
Orange juice	0.28	0.23	0.33	0.33
Other cereals	9.59	12.37	11.33	73.10
Pasta, dried	4.55	4.44	6.70	8.55
Peaches, canned	0.62	0.60	0.59	0.57
Peanut butter	26.71	27.43	30.13	30.04
Peanuts	28.41	29.61	25.95	33.82
Peas, frozen	7.42	7.45	6.59	6.58
Pineapple, canned	0.60	0.42	1.02	1.02
Potato crisps	10.29	10.93	11.57	13.62
Prawns/shrimps	8.77	8.52	6.48	6.08
Prunes	3.85	4.00	3.95	3.91
Raisins/sultanas	1.28	<1.00	1.30	1.66
Rice, white	5.26	6.11	4.30	5.43
Salad dressing	<0.97	1.57	<0.97	<1.00
Simmer sauce, bottled	1.95	2.15	2.03	2.07
Snack bars	14.21	11.85	11.57	10.57
Snacks, flavoured	4.33	3.54	2.86	16.12
Soup, vegetable	2.85	0.17	1.81	1.12
Soya milk	1.11	1.26	2.73	2.83
Spaghetti in sauce, canned	1.36	1.27	1.34	2.74
Sugar	<1.00	<1.00	<1.00	<1.00
Table spreads	<1.00	<1.00	<1.00	<1.00
Taro	25.47	27.44	19.36	9.50
Taro#	9.24	12.05	-	-
Tea	0.13	<0.10	<0.10	0.17
Tomato sauce	1.68	1.44	1.56	1.37
Tomatoes in juice, canned	1.00	1.14	0.79	1.15
Water, bottled	0.0013	0.0014	0.0168	0.0013
Wheat biscuit cereal	15.39	22.56	17.06	16.63
Wine, still red	0.56	0.66	1.25	0.77
Wine, still white	0.97	0.80	0.72	0.35
Yeast extract	29.60	75.24	73.73	35.53
Yoghurt	3.89	3.93	3.80	4.39

Additional Taro samples obtained to make up for shortfall in samples in Q2

4.2 AGRICUTURAL COMPOUNDS

For agricultural compounds, results are reported in four sections: compounds in the multi-residue screen that were not detected in any food for Q4 (which are listed collectively); each agricultural compound detected reported on a per compound basis in all foods with positive results; CS_2 detects; and phenoxy and aromatic acid herbicides.

All agricultural compound results in the NZTDS are reported on a 'foods as consumed' basis. As some agricultural compounds are measured using several marker analytes the reported residue is as the parent agricultural compound with the detected analyte or analytes recorded in brackets.

Agricultural compounds are applied to specific foods, often under specific conditions or only at certain times. Different producers of a particular crop will not necessarily use the same compounds to perform the same tasks. This specificity suggests that residues will only be present in specific foods, rather than as ubiquitous contaminants present in all food groups. In addition, many compounds are known to break down rapidly in the environment. Therefore, for most agricultural compounds in most foods, a 'not detected' (ND) result is likely to represent a true zero result.

4.2.1 Agricultural compounds not detected in any food in Q4 of 2016 NZTDS

Of the 301 agricultural compound analytes in the multi-screen for the 2016 NZTDS, 251 analytes were not detected in any of the foods sampled in Q4. In the CS_2 analytical screen, residues were detected in four of the foods analysed. Additionally, of the 21 analytes in the phenoxy and aromatic acid herbicide screen, 19 were not detected in any of the foods sampled in Q4.

4.2.2 Multi-screen residues detected in Q4 of 2016 NZTDS

4.2.2.1 Table 18 – Acetamiprid residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	ND	0.02

4.2.2.2 Table 19 – Azoxystrobin residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.01	ND	ND	ND
Muesli	ND	ND	0.01	ND
Raisins/sultanas	ND	ND	ND	0.15

4.2.2.3 Table 20– Benzalkonium Chloride (C12, C14 and C16) residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Beetroot, canned	ND	ND	ND	0.04[a,b]
Chicken	0.13[a,b]	ND	ND	ND
Chocolate beverage	ND	ND	ND	0.05[a]
Corn, frozen	0.03[a,b]	0.07[a,b]	0.12[a,b]	ND
Hummus	ND	1.90[a,b]	0.93[a,b]	ND
Mixed berries, frozen	ND	0.02[a]	ND	0.06[a,b]
Mixed vegetables, frozen	ND	ND	ND	
Orange juice	ND	ND	ND	0.17[b,c]
Peas, frozen	0.17[a,b]	ND	ND	ND
Prawns/shrimps	ND	ND	0.17[a,b]	ND
Salad dressing	ND	ND	ND	0.10[b]
Tomato sauce	0.14[a,b]	ND	ND	0.07[b]

[a] contains Benzalkonium Chloride (C12)
[b] contains Benzalkonium Chloride (C14)
[c] contains Benzalkonium Chloride (C16)

4.2.2.4 *Table 21 – Bifenthrin residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.*

Food	Brand 1	Brand 2	Brand 3	Brand 4
Mixed berries, frozen	ND	ND	0.03	ND
Raisins/sultanas	ND	ND	ND	0.01

4.2.2.5 *Table 22 – Boscalid residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.*

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.03	ND	0.08	0.02
Mixed berries, frozen	ND	ND	0.05	0.01
Muesli	ND	ND	0.02	ND
Prunes	0.09	ND	ND	ND
Raisins/sultanas	0.05	0.02	ND	0.49

4.2.2.6 *Table 23 – Carbendazim (including benomyl and thiophanate) residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.*

Food	Brand 1	Brand 2	Brand 3	Brand 4
Simmer sauce, bottled	0.06	ND	0.05	0.04
Tomato sauce	0.03	ND	ND	ND

4.2.2.7 *Table 24 – Chlorantraniliprole residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.*

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	ND	0.03

4.2.2.8 *Table 25– Chlorpropham residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.*

Food	Brand 1	Brand 2	Brand 3	Brand 4
Fish cakes	ND	0.06	ND	ND
Potato crisps	0.20	0.67	ND	ND

4.2.2.9 *Table 26 – Chlorpyrifos residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.*

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.01	ND	ND	ND
Peanut butter	ND	0.04	ND	ND
Peanuts	ND	ND	ND	0.02
Raisins/sultanas	ND	ND	ND	0.13

4.2.2.10 *Table 27 – Chlorpyrifos-methyl residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.*

Food	Brand 1	Brand 2	Brand 3	Brand 4
Biscuits, cracker	0.06	0.09	ND	ND
Bran flake cereal, mixed	ND	ND	0.06	0.06
Fish cakes	ND	0.02	ND	ND
Fish, fingers	ND	ND	0.01	ND
Muesli	ND	ND	0.01	0.05
Other cereals	ND	ND	ND	0.42
Snacks, flavoured	ND	ND	ND	0.02
Wheat biscuit cereal	0.01	ND	0.01	0.03

4.2.2.11 Table 28 – Cyflufenamid residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	0.01	ND	ND	ND

4.2.2.12 Table 29 – Cyhalothrin residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	0.02	0.02

4.2.2.13 Table 30 – Cypermethrin residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Oil	ND	ND	0.14	ND
Raisins/sultanas	ND	ND	0.06	0.03

4.2.2.14 Table 31– Cyprodinil residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.01	ND	0.02	ND
Raisins/sultanas	0.02	ND	0.01	0.18

4.2.2.15 Table 32 – Deltamethrin (including Tralomethrin) residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Biscuits, cracker	0.02	0.03	ND	ND
Bran flake cereal, mixed	ND	ND	0.04	ND
Other cereals	ND	ND	ND	0.08

4.2.2.16 Table 33 – Didecyldimethylammonium chloride (DDAC) residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Chicken	0.09	ND	ND	ND
Snack bars	0.10	ND	ND	ND

4.2.2.17 Table 34 – Difenoconazole residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	ND	0.02

4.2.2.18 Table 35 – Dimethomorph residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	ND	0.02

4.2.2.19 Table 36 – Diphenylamine residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Infant weaning food, cereal based	ND	0.02	ND	ND
Infant weaning food, custard/fruit dish	0.06	ND	ND	ND

4.2.2.20 Table 37 – Fenpyroximate residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	0.01	ND	ND	ND

4.2.2.21 Table 38 – Fenvalerate (including esfenvalerate) residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	ND	0.02

4.2.2.22 Table 39 – Fluazifop-butyl residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	ND	0.10

4.2.2.23 Table 40 – Fludioxonil residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Infant weaning food, cereal based	ND	0.05	ND	ND
Infant weaning food, custard/fruit dish	0.08	ND	ND	ND
Mixed berries, frozen	ND	ND	0.03	ND
Raisins/sultanas	ND	ND	ND	0.02

4.2.2.24 Table 41 – Hexythiazox residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Prunes	ND	ND	0.03	ND

4.2.2.25 Table 42 – Imazalil residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Hummus	0.02	ND	ND	0.01
Infant weaning food, cereal based	ND	0.13	0.02	ND
Infant weaning food, custard/fruit dish	0.02	ND	ND	ND

4.2.2.26 Table 43 – Imidacloprid residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	0.02	ND

4.2.2.27 Table 44 – Indoxacarb residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	0.02	0.02

4.2.2.28 Table 45 – Iprodione residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.04	ND	0.06	ND
Hummus	ND	ND	ND	0.02
Infant weaning food, cereal based	ND	0.07	ND	ND
Infant weaning food, custard/fruit dish	0.02	ND	ND	ND
Muesli	ND	ND	0.02	0.02
Peaches, canned	ND	ND	0.01	ND
Raisins/sultanas	ND	0.02	0.04	0.23

Snack bars	0.01	ND	ND	ND

4.2.2.29 Table 46 – Metalaxyl residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.02	ND	0.01	ND
Raisins/sultanas	ND	ND	ND	0.07
Wine, still red	ND	ND	ND	0.02

4.2.2.30 Table 47 –Methoxyfenozide residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.01	ND	0.02	ND
Raisins/sultanas	0.02	0.08	0.08	0.05

4.2.2.31 Table 48 – Metribuzin residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Potato crisps	0.01	0.01	0.02	ND

4.2.2.32 Table 49 –Myclobutanil residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	ND	0.01

4.2.2.33 Table 50 –Penconazole residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	ND	0.02

4.2.2.34 Table 51 –Phosmet residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Mixed berries, frozen	ND	ND	ND	0.02

4.2.2.35 Table 52 – Piperonyl-butoxide residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Almonds	0.09	ND	0.02	0.02
Biscuits, cracker	0.11	0.09	ND	ND
Bran flake cereal, mixed	0.04	0.02	0.15	0.04
Other cereals	ND	0.02	ND	0.80
Peanuts	0.01	ND	ND	ND
Prunes	ND	ND	0.03	ND

4.2.2.36 Table 53 – Pirimiphos-methyl residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Biscuits, chocolate	0.09	0.04	0.05	ND
Biscuits, cracker	ND	ND	ND	0.13
Biscuits, plain sweet	0.08	0.17	0.09	0.08
Bran flake cereal, mixed	ND	ND	ND	0.07
Fish fingers	ND	ND	0.08	0.02
Oats, rolled	ND	ND	0.01	ND
Pasta, dried	0.02	ND	ND	ND
Snack bars	ND	0.01	0.01	0.01

Snacks, flavoured	ND	ND	0.02	0.33

4.2.2.37 Table 54 –Procymidone residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Mixed vegetables, frozen	ND	ND	0.01	ND
Simmer sauce, bottled	ND	0.02	ND	ND
Spaghetti in sauce, canned	0.02	ND	ND	ND

4.2.2.38 Table 55 –Propargite residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Infant weaning food, cereal based	ND	0.04	0.01	ND
Raisins/sultanas	ND	ND	ND	0.03

4.2.2.39 Table 56 –Propham residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Potato crisps	0.09	0.12	0.52	0.08

4.2.2.40 Table 57 –Pyraclostrobin residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Prunes	0.05	ND	ND	ND
Raisins/sultanas	0.02	ND	ND	0.06

4.2.2.41 Table 58 –Pyrimethanil residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.05	ND	0.06	0.04
Hummus	0.01	ND	ND	0.02
Muesli	0.02	ND	0.04	0.02
Peaches, canned	ND	ND	0.11	ND
Raisins/sultanas	ND	ND	0.26	0.88
Snack bars	0.04	ND	0.03	ND

4.2.2.42 Table 59 –Spinosad residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.02	0.04	ND	ND
Other cereals	ND	0.02	ND	ND
Wheat biscuit cereal	0.03	ND	0.03	0.06

4.2.2.43 Table 60 –Spirotetramat (Spirotetramat-cis-enol, Spirotetramat-enol-glucoside and Spirotetramat-cis-keto-hydroxy) residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Potato crisps	0.02[a]	0.01[a]	0.01[a]	ND
Raisins/sultanas	0.06[b]	0.02[b]	0.03[b]	0.11[a,b,c]

[a] contains Spirotetramat-*cis*-enol

[b] contains Spirotetramat-enol-glucoside (not a component of the residue definition for MRL enforcement)

[c] contains Spirotetramat-*cis*-keto-hydroxy (not a component of the residue definition for MRL enforcement)

4.2.2.44 Table 61 – Tebufenpyrad residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4

Raisins/sultanas	ND	ND	0.02	ND

4.2.2.45 Table 62 –Triadimenol residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Raisins/sultanas	ND	ND	ND	0.07

4.2.3 Carbon disulphide residues detected in Q4 of 2016 NZTDS

4.2.3.1 Table 63 – Carbon disulphide residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Apple-based juice	ND	ND	ND	0.06
Coconut cream, canned	ND	ND	0.02	ND
Orange juice	0.02	ND	ND	ND
Tomato sauce	0.03	ND	ND	0.04

4.2.4 Phenoxy and aromatic acid herbicides detected in Q4 of 2016 NZTDS

4.2.4.1 Table 64– Clopyralid residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Bran flake cereal, mixed	0.02	0.01	0.01	0.04
Corn, frozen	ND	0.02	ND	ND
Oats, rolled	ND	0.01	0.02	ND
Pasta, dried	ND	ND	0.04	0.02

4.2.4.2 Table 65 – Haloxyfop residues (mg/kg) detected in foods in Q4 of 2016 NZTDS, reported to two decimal places. Foods with no reported residues are not listed.

Food	Brand 1	Brand 2	Brand 3	Brand 4
Peas, frozen	ND	ND	ND	0.02