National Food Institute
Technical University of Denmark

Pesticide Residues in Food on the Danish Market

Results from the period 2012 - 2017

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Prepared by National Food Institute, Technical University of Denmark

Division for Risk Assessment and Nutrition

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1 Preface

The present report presents the results for pesticide residues analysed for in the period 2012-2017 of the monitoring programmes conducted by the Danish Veterinary and Food Administration (DVFA). The programme included commodities of fruit, vegetables, cereals and animal origin using random sampling of food on the Danish market. Since the beginning of the 1960's, Denmark has monitored fruit and vegetables for pesticide residues.

For the periods 1993-1997, 1998-2003 and 2004-2011, results were collated and the dietary exposure was calculated. In this report, data for the analyses carried out in the period 2012-2017 are reported, as well as the exposure calculations performed based on the detected residues. The analyses have been carried out by the laboratory of the Danish Veterinary and Food Administration (DVFA) in Ringsted. The samples were collected by DVFA.

The residue data have been combined with consumption data and the exposures for different consumer groups have been estimated. Risk assessment of chronic dietary exposure has been performed for the individual pesticides based on the Acceptable Daily Intake (ADI), as well as risk assessment for cumulative chronic dietary exposure to all the pesticides detected in the present period. Risk assessments of acute dietary exposures is outside the scope of the present report.

The focus of the present report is solely on exposure to and risk assessment of pesticide residues in food on the Danish market. It is acknowledged that some individuals in the Danish population may also be exposed to pesticides from other sources; however, it is outside the scope of the present report to perform risk assessments for such sources of pesticides.

It is also acknowledged that the general population is exposed to other kinds of chemical substances which might exert similar adverse health effects as pesticides; however, it is outside the scope of the present report to perform risk assessments for combined exposures to all kinds of different chemicals, including pesticides.

The present report has been produced and adopted by the authors. This task has been carried out exclusively by the authors in the context of a contract between the Danish Veterinary and Food Administration, Ministry of Environment and Food of Denmark and the National Food Institute, Technical University of Denmark.

2 Sammenfatning og konklusion

Denne rapport præsenterer resultaterne for kontrol af pesticidrester i fødevarer i Danmark for perioden 2012-2017. Antal stoffer varierer fra år til år, da der løbende bliver inkluderet nye stoffer i analysemetoderne. Der blev analyseret for 273-314 pesticider, angivet som restdefinitioner. Der blev i alt analyseret 13.492 prøver af frugt, grønt, cerealier, kød, børnemad og andre forarbejdede fødevarer. Af disse blev 1232 økologiske prøver ikke medtaget i eksponeringsberegningerne, da konsum af økologiske fødevarer forventes at være ulige fordelt i befolkningen. Desuden blev tre prøver med indhold udelukket, fordi disse indhold ikke blev anset for representative for fødevarer på det danske marked: En prøve af oksekød fra New Zealand med et indhold af dieldrin, en prøve af gulerødder fra Albanien med et indhold af dieldrin, og en prøve af tørret majs fra Argentina med et indhold af dichlorvos. Fordelingen mellem de forskellige typer af fødevarer kan ses i tabel 1.

Resultaterne viser, at der var langt flere fund af pesticider i frugt og grøntsager (se tabel 3) end i andre afgrøder. Sammenlignes frugt og grøntsager indeholdt frugt flest pesticidrester (se figurerne 1-3). Der var generelt flere pesticidrester i udenlandske produkter i forhold til danske (se figurerne 1-3), og der var hyppigere fund af flere pesticider i samme prøve blandt udenlandske prøver sammenlignet med prøver fra Danmark (se figur 5).

Der blev samlet set fundet overskridelser af maksimalgrænseværdien (MRL) i 1,4 % af alle prøver

For de afgrøder, der bidrager mest til eksponeringen for pesticider, er der foretaget en sammenligning af prøver mellem de lande, hvorfra der har været udtaget mere end 10 prøver til kontrol i perioden 2012-2017. For afgrøder, der er dyrket både i Danmark og i udlandet, viser resultaterne generelt, at der var en mindre hyppighed af pesticidrester i danske afgrøder sammenlignet med udenlandske afgrøder. For enkelte afgrøder var hyppigheden af fund i danske prøver imidlertid ikke det laveste blandt alle lande. Det drejer sig om jordbær, agurker, salat, gulerødder, hvedemel og hvedekerner.

Resultaterne fra analyseprogrammet er brugt til at beregne eksponeringen for den danske befolkning fra fødevarer ved at gange gennemsnittet af pesticidindhold med det gennemsnitlige konsum. Der findes ikke en enkelt international vedtaget model til at beregne eksponering fra pesticidrester. De analyseresultater, der ligger til grund for rapporten, er generelt udført på rå afgrøder og ikke på skrællede eller tilberedte produkter. Analysemetoderne har også en nedre grænse for, hvornår et indhold af pesticid kan påvises/rapporteres (rapporteringssgrænsen, LOR).

Eksponeringer er beregnet ved brug af to forskellige modeller. Den ene model er udviklet til at være konservativ (dvs. 'på den forsigtige side') for beregning af en samlet eksponering (Model 2). Den anden model er udviklet til en sammenligning mellem forskellige afgrøder, konsumentgrupper eller oprindelseslande samt til beregning af pesticidbelastning (PL) (Model 3). En detaljeret beskrivelse af modellerne findes i Annex 6.1.

I denne rapport er der for citrusfrugter, banan og melon brugt processing faktorer, der tager højde for, at størstedelen af pesticidet findes i skrællen.

Risikovurderingen for de enkelte pesticider blev udført ved beregning af en Hazard Quotient (HQ). HQ er forholdet mellem den kroniske (livslange) eksponering og det Acceptable Daglige Indtag (ADI) for det pågældende pesticid. HQ for de enkelte pesticider lå mellem 0% og 7,2% for børn 4-6 år (5 stoffer over 1%, resten under 1 %) og mellem 0% og 2,0% for voksne (3 stoffer over 1%, resten under 1 %), hvilket indikerer, at der ikke er en nævneværdig sundhedsmæssig risiko ved indtag af de enkelte pesticider fra fødevarer.

Der er også udført risikovurdering af det samlede kroniske indtag af de fundne pesticider ved at summere alle HQ for de enkelte pesticider til et Hazard Indeks (HI). HI varierer mellem 3,3% og 16% for voksne, og mellem 8,5% og 46% for børn i alderen 4-6 år alt efter hvilken model, der er brugt i beregningerne. Med Model 2 er HI beregnet til 13% for voksne og 36% for børn i alderen 4-6 år. Da HI metoden forudsætter samme type effekt for alle de fundne pesticider, er metoden relativt konservativ (dvs. 'på den forsigtige side'), idet alle pesticider ikke har samme type af effekter. HI på 13% for voksne og 36% for børn i alderen 4-6 år indikerer således, at der ikke er en sundhedsmæssig risiko ved det samlede kroniske indtag af de fundne pesticider fra fødevarer. Risikovurdering er også udført for børn i alderen 1-3 år og børn i alderen 7-14 år. HI for disse aldersgrupper var lavere end for børn i alderen 4-6 år, og derfor præsenteres kun resultater for børn i alderen 4-6 år i denne rapport.

Som tidligere nævnt blev der generelt fundet færre pesticidrester i danske afgrøder sammenlignet med afgrøder fra udlandet. Dette har også indflydelse på eksponeringen. Spiste man danske afgrøder, når det var muligt, blev både eksponering og HI nedsat. For både børn i alderen 4-6 år og voksne faldt HI med en faktor 1,6, mens eksponeringen faldt med en faktor 1,4.

Myndighederne anbefaler voksne at spise mindst 600 g frugt og grøntsager om dagen. For mænd og kvinder er indtaget med Model 3 beregnet for dem, som spiser mere end 600 g frugt og grøntsager om dagen. Både eksponeringen og HI steg med en faktor 1,6 for kvinder og med en faktor 1,8 for mænd. HI var dog stadig mindre end 100% for både mænd (10%) og kvinder (12%).

Der er også beregnet med Model 3, hvilke pesticider og afgrøder der bidrog mest til eksponeringen og til HI. For afgrøderne bidrog 25 forskellige afgrøder til 85% af HI og 81% af eksponeringen. Æbler bidrog mest til både eksponering og HI. For pesticiderne bidrog 'Top-9' pesticiderne med godt halvdelen til både eksponering og HI.

Resultaterne for perioden 2012-2017 viser lige som resultaterne for sidste periode (2004-2011), at HI var godt under 100% for både børn og voksne. Dette gælder også for voksne, der spiser mere end 600 g frugt og grønt om dagen.

Når der sammenlignes med resultater fra perioden 2004-2011, ses et fald i HI for både børn og voksne. For børn i alderen 4-6 år faldt HI fra 44% til 36% og for voksne fra 18% til 13%. Model 2 er anvendt ved beregningerne for begge perioder. Derimod er eksponeringen nogenlunde den samme for både børn og voksne i de to perioder. En mulig forklaring på faldet i HI uden et fald i eksponeringen kunne være, at nogle af de mere toksiske pesticider ikke længere er godkendt, og at der i denne periode (2012-2017) derfor er anvendt flere mindre toksiske pesticider sammenlignet med den tidligere periode (2004-2011).

Med henblik på at vurdere den sundhedsmæssige betydning af pesticidindholdet i forskellige typer frugt og grønt er pesticidbelastningen (PL) beregnet som et forhold mellem det gennemsnitlige pesticidindhold i en fødevare og ADI for hvert påvist pesticid i denne fødevare. Beregning af PL for pesticider kan vise, hvilke stoffer der bidrager mest til pesticidbelastningen for en afgrøde, og PL kan således anvendes til at identificere kritiske kilder til eksponering for pesticider. PL er således et værdifuldt redskab til lave en ranking af både afgrøder og pesticider i forhold til deres PL. For 34 afgrøder var PL lavere for dansk producerede afgrøder sammenlignet med afgrøder produceret udenfor Danmark. For seks afgrøder (hovedkål, grønkål, løg, persille rødder, pastinak og græskar) var PL dog højere for dansk producerede afgrøder sammenlignet med udenlandsk producerede afgrøder. Baseret på PL kombineret med indtag er den generelle konklusion, som også nævnt ovenfor, at eksponeringen for pesticider kan nedsættes ved at vælge dansk producerede afgrøder når muligt.

Resultaterne for denne periode (2012-2017) bekræfter generelt konklusionerne fra den tidligere periode (2004-2011), dvs. at der med den nuværende viden, ikke vurderes at være en sundhedsmæssig risiko ved kronisk indtag af de enkelte pesticider fra fødevarer såvel som ved det samlede kroniske indtag af de fundne pesticider fra fødevarer, selv for voksne, der spiser mindst 600 g frugt og grøntsager om dagen. Generelt kan man nedsætte sit pesticidindtag med ca. en tredjedel ved at vælge dansk producerede afgrøder, hvor det er muligt i stedet for de tilsvarende udenlandske afgrøder.

På den anden side skal pesticideksponering via fødevarer ikke ignoreres. Grundlaget for eksponeringsberegningerne for danske forbrugere kunne forbedres, for eksempel ved at:

- Udvide antallet af pesticider i monitoringsprogrammet.
- Øge prøveantallet af afgrøder hvori det forventes at finde pesticidrester.
- Øge følsomheden for analysemetoder med henblik på at minimere usikkerheder i beregningsmetoderne.
- Fremskaffe detaljeret information vedrørende konsum for afgrøder hvori det forventes at finde pesticidrester.

3 Summary and conclusion

This report presents the results for the analyses of pesticide residues in foods on the Danish market for the period 2012-2017. The analytical programme included 273-314 pesticides expressed as residue definitions. The number of substances varied from year to year due to the fact that more substances were included in the monitoring programme each year. In total 13,492 samples have been analysed. The samples included fruits, vegetables, cereals, meat, baby food and other processed foods. Of these, 1232 samples of organically grown samples were excluded from the exposure calculations, since the consumption of organically grown foods are expected to be unevenly distributed between consumers. In addition, three samples were excluded from the exposure calculations because their content of residues were considered not to be representative for commodities on the Danish market: a sample of bovine meat from New Zealand with a content of dieldrin, a sample of carrots from Albania with a content of dieldrin, and a sample of dried maize from Argentina with a content of dichlorvos. The distribution of sampling between the different kinds of commodities is shown in Table 1.

The results show that more residues were found in samples of foreign origin compared to samples of Danish origin (see Figure 1-3). Overall fruits and vegetables had higher frequencies of residues than the other commodity groups and fruits had higher frequencies compared to vegetables. Also, samples with more than one residue were more frequently found in samples of foreign origin. Overall, residues above the MRLs were found in 1.4% of the samples, most frequently in fruit.

For some of the commodities that contributed most to the exposure the frequency of residues in samples have been compared between countries when the number of samples were higher than 10. The frequencies of residues in commodities grown outside Denmark were, in general, higher than in Danish samples. Also, samples with residues above the MRLs were more often in foreign origin. However, for strawberries, cucumber, carrots, lettuce, wheat flour and wheat the frequencies in Danish samples were higher compared to samples from some of the other countries.

The results from the analytical programme have been used to calculate the exposure for the Danish population by multiplying an average of the residue levels with an average of the consumption. There is no common agreement in EU or internationally on how to calculate the exposure, e.g. if a processing factor should be included or not, or how to handle residues below the level of reporting (LOR), also called non-detects. The exposure calculations has been performed by using two different models. One model was designed to be conservative for total consumers (Model 2). The other model was designed to facilitate comparison between different commodities, consumer groups or country origin, as well as calculation of the pesticide load (PL) (Model 3). A detailed description of the models used can be found in Annex 6.1.

Processing factors have been used for citrus fruits, banana and melons taking into account that most of the pesticide residues are located in the peel.

The risk assessment of chronic dietary exposure for a single pesticide was performed by estimation of a Hazard Quotient (HQ), i.e. the estimated total dietary exposure divided by the toxicological reference value, ADI, for that pesticide.

The HQ for the individual pesticides was calculated to be between 0% and 7.2% for children age 4-6 years (five substances above 1%, the rest below 1%) and between 0% and 2% for adults (three substances above 1%, the rest below 1%), which indicate that there is no appreciable risk of adverse health effects following dietary exposure to the indivudal pesticides.

Risk assessment of cumulative exposure to a mixture of pesticides has been performed by using the Hazard Index (HI) method. The HI varies between 3.3% and 16% for adults, and between 8.5% and 46% for children age 4-6 years, depending on which model was used in the calculation. With Model 2, the HI was 13% for adults and 36% for children age 4-6 years. As the HI method assumes the same kind of adverse health effect for all the detected pesticides, it is a relatively conservative (precautionary) approach for cumulative risk assessment. Overall, the HI of 13% for adults and 36% for children indicate that there is no appreciable risk of adverse health effects following cumulative dietary exposure to all the pesticides detected in the present period. Risk assessement has also been performed for children age 1-3 years and 7-14 years; the HI for these age groups were lower than for children age 4-6 years and therefore only results for children age 4-6 years are presented in this report.

As mentioned above, commodities of Danish origin generally contained fewer pesticides compared to commodities of foreign origin. This can impact the pesticide exposure. If commodities of Danish origin were chosen whenever possible, the exposure and HI decreased. The exposure decreased with a factor of 1.4 for both children and adults, and the HI decreased with a factor of 1.6 for both children and adults.

Exposure has also been estimated with Model 3 for high consumers (men and women), i.e. those who consumed more than 600 g of fruit and vegetables every day. Both the exposure and HI increased with a factor of 1.6 for women and with a factor of 1.8 for men; however, the HI was still well below 100% for both men (10%) and women (12%).

With Model 3 it has also been estimated which commodities and pesticides that contributed most to the exposure and HI. For the commodities, 85% of the HI and 81% of the exposure was accounted for by 25 different commodities. Apples contributed most to both exposure and HI. For the pesticides, the ‘top nine’ pesticides accounted for approximately half of the HI as well as of the exposure.

The results from the present period (2012-2017) show, as for the previous period (2004-2011), that the HI was well below 100% for both adults and children. This was also the case for adult high consumers eating more than 600 g of fruit and vegetables per day.

For both children and adults a decrease in HI was observed from the previous period (2004-2011), i.e. from 44% to 36% for children 4-6 years and from 18% to 13% for adults; for both periods the calculations were performed with Model 2. However, the exposure was almost the same for the two periods for both consumer groups. An explanation for the decrease in HI without a decrease in the exposure could be that some of the more toxic pesticides detected in the previous period are not authorized any longer and consequently, less toxic pesticides have been used for the present period compared to the previous period.

In order to quantify the toxicological significance of the pesticide content for different types of fruit and vegetables, a pesticide load (PL) has been calculated as a ratio comparing the average amount of pesticide residues in a food commodity with the ADIs of every pesticide detected in that commodity. Calculating the PL for individual substances can illustrate which pesticides contribute to a high degree to the PL of a commodity and can thus be used to identify critical sources of pesticide exposure. The PL is a very valuable tool for ranking of both commodities and pesticides according to their PL. For 34 commodities the consumer had a choice of a corresponding Danish product. Of these 28 had a lower PL when produced in Denmark whereas for six commodities (head cabbage, kale, onions, parsley root, parsnip and pumpkin) the PL was higher in the Danish samples. On basis of PL combined with consumption the general conclusion is, as previously stated, that consumers exposure can be reduced by choosing Danish grown commodities whenever available.

The results obtained for the present period (2012-2017) generally confirm the conclusions for the previous period (2004-2011), i.e., according to our current knowledge there is no appreciable risk of adverse health effects following dietary exposure to the indivudal pesticides, as well as following cumulative dietary exposure to all the pesticides, even for high consumers (adults) who eat more than 600 g of fruit and vegetables each day. Generally, the exposure to pesticides can be reduced by choosing Danish grown commodities whenever possible instead of foreign grown commodities.

On the other hand, exposure to pesticide residues from the food should not be ignored. The basis for exposure calculations for Danish consumers could be further improved by:

- Expanding the number of pesticides in the monitoring programme.
- Increasing the number of samples where residues are expected.
- Increasing the sensitivity of the analytical methods in order to minimize the uncertainty in the data modelling.
- Providing detailed dietary information for commodities where residues are expected.

4 Pesticide residues and exposure

4.1 Monitoring programme

The monitoring programme 2012-2017 included 13492 samples representative for foods on the Danish market. The number of fruit, vegetable, cereal and animal product samples has been quite stable for the period 2012-2017 with around 2200 samples per year. In 2017, the number of samples was decreased by almost 25%, to 1700 samples (see Figure 1) due to a general reduction. The results from 2012-2017 have been published in annual reports (Jensen et al., 2013, 2014, 2015, 2016, 2017, 2018). This report will give an overview of the six year period from 2012-2017.

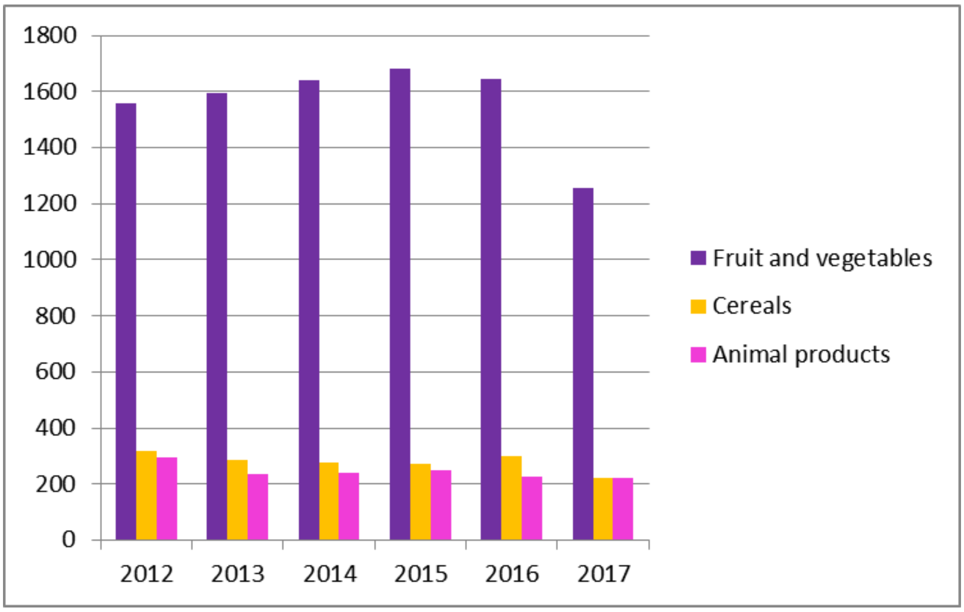

Figure 1. *Number of fruit and vegetable samples, cereal samples and samples of animal origin analysed from 2012-2017. Processed food is not included.*

Design of sampling plan

The Danish pesticide monitoring programme has two main objectives: Firstly, the programme has to check compliance with the maximum residue levels (MRLs) laid down by the EU (EU Commission, 2005), and secondly to monitor the residue levels in foods to enable an evaluation of the exposure of pesticides to the Danish population.

The sampling plan for the period 2012 to 2017 consisted of two parts. The first part of the sampling plan focussed on commodities, which were found to contribute most to the dietary intake and Hazard Index (HI) for the period 2004-2011 (Petersen et al. 2013). The number of samples taken of the individual commodities were then graduated depending on how much they contributed to the Hazard Index (HI). Therefore, the number of samples taken of individual commodities varied from 45-50 samples to 15 samples. The highest number of samples was consequently taken of the approximately 20 commodities contributing most to the HI. Due to changes in the total number of samples available in the different years, changes have been made resulting e.g. in choosing to sample some of the commodities with limited contribution to the HI only every third year in order to have an acceptable number of samples (15 units) when it was included. Focusing on a limited number of commodities will provide a better basis for comparison between years, so that trends in pesticide residues detected may be analysed. All commodities in the EU coordinated control programme are included in this annual sampling plan (European Commission 2011, 2012, 2014, 2015, 2016). This part of the sampling plan comprised 70% fruit and vegetable samples and 15% cereal samples. The remaining 15% of the samples were of animal origin, including milk, honey as well as baby food and organic commodities. The second part of the sampling plan included samples that contributed less to the intake of pesticides, but focussed specifically on the compliance with MRLs or labelling of the production method, e.g. organically grown, or produced without growth regulators or surface treatment.

Sampling

Authorised personnel from the regional food control units under the Danish Veterinary and Food Administration performed the sampling and collected the samples randomly within each commodity. The sampling procedure conformed to the EU directive on sampling for official control of pesticide residues (European Union, 2002). A total of 13492 samples were taken primarily at wholesalers, importers, slaughterhouses and at food processing companies (see Table 1). Most of the samples were conventionally grown fresh fruits and vegetables (64%), but also conventionally grown cereals (10%) and samples of animal origin (9%) were collected. In addition, 9% samples of organically grown crops (fresh, frozen, processed) were collected, as well as processed foods (e.g. wine) and samples of baby food. One fourth of the fruit and vegetable samples and half of the cereal samples were of Danish origin. For meat 85% of the samples were of Danish origin. Approximately, 370 different conventionally and 171 organically grown fruit, vegetable and cereal commodities were sampled.

Sampling of meat and other products of animal origin are regulated by EU Directive 96/23/EC. The aim of this directive is to ensure that the Member States monitor primarily their own production of commodities of animal origin for different substances, e.g. pesticides. However, imported samples from third countries shall also be monitored. The number of samples was between 0.03% and 0.15% of the production or import.

For fruits, vegetables, and cereals the aim has been to monitor the commodities sold on the Danish market. Consequently, more samples produced in EU Member States and third countries have been collected compared to samples of Danish origin. The division between Danish and foreign produced commodities were determined by an iterative process with focus on the availability of the products as well as a more risk based approach.

Table 1. *Number of samples analysed for in the period 2012-2017, Danish, EU and non-EU origin, respectively.*

Foods	Danish	EU	Non-EU	Total
Fruit and vegetables	2211	3816	2566	8593
Cereals	676	406	292	1374
Meat	1019	1	181	1201
Milk	82	2	1	85
Honey	153	0	0	153
Processed fruit and vegetables	14	368	271	653
Processed cereals	29	112	8	149
Processed meat	5	0	10	15
Babyfood	0	23	11	34
Other	0	1	5	6
Fruit and vegetables, organic	240	344	203	787
Cereals, organic	165	97	43	305
Meat organic	20	0	0	20
Processed fruit and vegetables, organic	3	41	17	61
Processed cereals, organic	1	2	0	3
Processed meat, organic	1	0	0	1
Milk, organic	9	0	0	9
Babyfood, organic	0	29	2	31
Other, organic	1	6	5	12
Total	4629	5248	3615	13492

Laboratories

Samples were primarily analysed at the DVFA Laboratory. However, from 2013 100 of the samples already analysed by the routine analysis were also analysed by High Resolution Mass Spectrometer (HRMS) at DTU National Food Institute. All laboratories involved in the monitoring were accredited for pesticide analysis in accordance to ISO 17045 by the Danish body of accreditation, DANAK.

Analytical programme

The samples were analysed by different analytical methods and the number of pesticides analysed for in the different commodity types are shown in Table 2. The number includes isomers and metabolites and refers only to the residue definitions. All analytical methods have been slightly extended with new substances since 2012. However, the number has doubled since 2004, the first year in the latest report on pesticide residues from 2004-2011 (Petersen et al., 2013). Furthermore, as mentioned above approximately 100 samples have, from 2013 and onwards, been analysed each year by the HRMS screening method for additional >200 pesticides in order to ensure that all relevant pesticides are included in the routine pesticide programme.

Table 2. *Number of pesticides (residue definitions) analysed for in the period 2012-2017 in different types of foods.*

Foods/Year	2012	2013	2014	2015	2016	2017
Fruit and vegetables	273	272	275	301	307	314
Cereals	219	192	220	219	220	227
Meat	37	34	29	29	28	32
Baby/infant food	274	273	205	218	289	300

The pesticides included in the analytical methods and the results for the screening methods were published in annual reports (Jensen et al, 2013, 2014, 2015, 2016, 2017, 2018).

4.2 Residues

The average frequencies of samples with residues are shown in Table 3. It should be noted that the frequencies have a large variation covering commodities with very low frequencies and others where practically all samples contained residues. Among the Danish fruit and vegetable commodities in which no pesticide residues were detected, are beetroot, broccoli, Chinese cabbage, head cabbage, red head cabbage, spring head cabbage, and rhubarb. The commodities with the highest frequencies (57-89%) are cucumber, strawberry and ruccola. Only commodities with more than 10 samples are included.

Likewise, foreign produced almond, asparagus, cashew nut, hazel nut, white head cabbage, and rhubarb samples contained no residues. However, residues were found in 95% or more of banana, chive, clementine, red currant, grapefruit, lime, mandarin/clementine, orange, parsley, pomelo and ruccola.

Although the commodities in the group of processed fruits and vegetables are more limited, there is also some variation in the frequencies of detection, e.g. dried figs 6% and dried Goji berries 100%.

However, in general the exposure to pesticides differs from commodity to commodity. This is described in Section 4.3. The frequencies listed in Table 3 have to be considered as the lowest possible frequencies, since the pesticide profile in the analytical methods did not cover all pesticides used in Denmark or in the countries exporting to Denmark. Analysing for all authorised pesticides would probably result in more findings. However, on the other hand, results from the screening analyses have shown that the pesticide profile in the standard routine analyses covers the vast majority of the pesticide residues present in the samples.

Table 3. *Frequency of samples with residues, both Danish and foreign commodities.*

Foodstuff	Frequency of samples with residues[1]	Frequency of samples above MRL
Fruit and vegetables	54%	2.0%
Cereals	30%	1.0%
Meat	0.2%	0.0%
Milk	0.0%	0.0%
Honey	3.9%	0.0%
Processed fruit and vegetables	36%	0.6%
Processed cereals	37%	0.0%
Processed meat	0.0%	0.0%
Baby food	0.0%	0.0%
Other[2]		
Fruit and vegetables, organic	0.7%	0.0%
Cereals, organic	3.3%	0.3%
Meat organic	0.0%	0.0%
Processed fruit and vegetables, organic	1.6%	0.0%
Processed cereals, organic[2]		
Processed meat, organic[2]		
Milk, organic[2]		
Baby food, organic	0.0%	0.0%
Other, organic	0.0%	0.0%
Total	40%	1.4%

[1] Includes also samples above MRL
[2] Less than 10 samples

Comparison between Danish and foreign produced commodities

Figure 2 shows the frequencies of samples with detections below or at the MRL, and above the MRL for fruit commodities produced in Denmark (DK), the EU (all Member States except Denmark), and outside the EU (non-EU). In general, samples of fruit commodities produced in Denmark had lower frequencies of detections below MRL (45-58%) than fruit commodities produced outside Denmark (69-76%). However, the fruit commodities were not the same as many fruits types cannot be grown in Denmark (e.g. oranges, pineapples). For Danish produced samples, the frequencies of samples with detection seem to have decreased throughout the years. No differences were seen between samples produced in the EU and outside the EU, except for samples with detection above MRL where samples produced outside the EU more frequently had residues above MRL, namely 2-5%.

Exceedances of the MRLs were found in three Danish produced apple samples. In fruits produced outside Denmark, 98 exceedances of the MRLs were found in 29 different commodities. Most exceedances were found in oranges (11), grapefruit (9), pomegranate (9), mandarins and clementines (7), passion fruits (6), pomelo (6) and strawberries (6). The number in brackets refers to the number of samples.

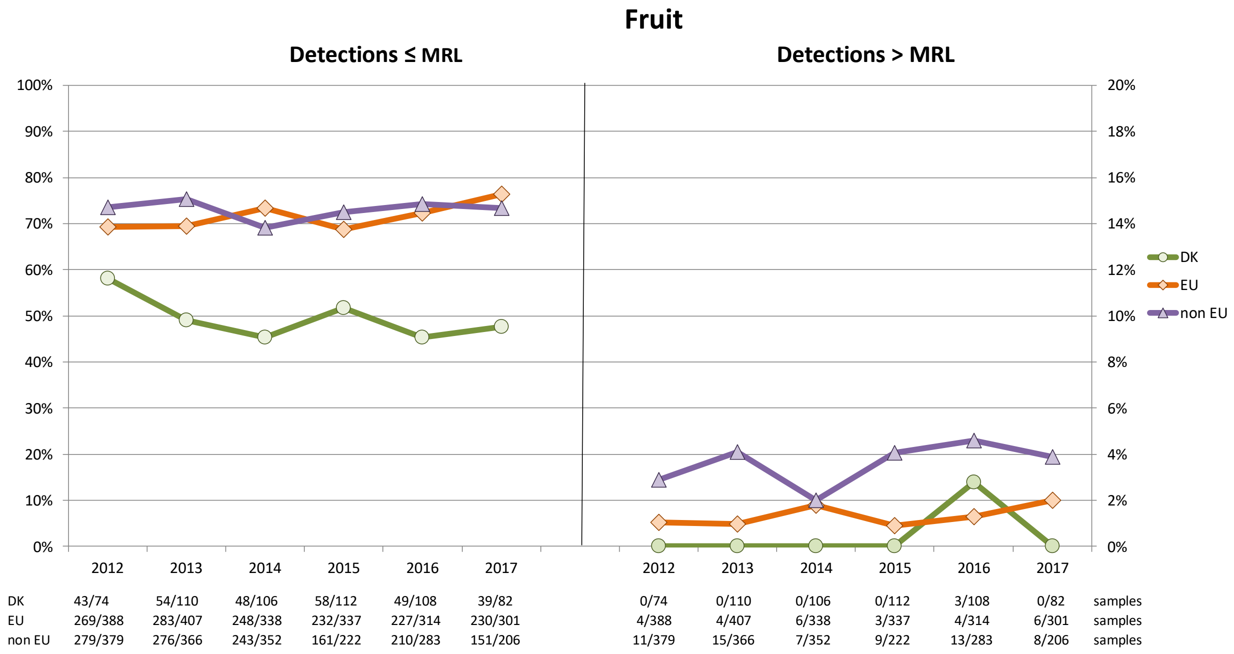

Figure 2. *Frequencies of samples with detections below or at the MRL, and above the MRL for fruit produced in Denmark, the EU and outside the EU.*

Figure 3 shows the frequencies of samples with detection below or at the MRL, and above the MRL for vegetable commodities produced in Denmark, the EU and outside the EU. In general, there were fewer vegetable samples with residues compared to fruit. Furthermore, vegetables produced in Denmark had lower frequencies of detections below MRL (13-27%) than vegetables produced outside Denmark (36-55%). The frequencies in the samples of Danish origin showed an increasing trend from 2012 to 2017. The increasing trend has been addressed in Jensen et al. (2018), but in brief the reasons could be e.g. increased number of pesticides analysed for, more risk based sample plans, and more wet weather conditions. The latter could be responsible for the increase of fungicide residues. No differences were seen between samples produced in the EU and the outside EU, except for samples with detection above the MRL where samples produced outside the EU more frequently had residues above the MRL than samples produced in the EU, namely 1-6% and 1-2%, respectively. As mentioned below 24 MRLs exceedances were seen for tea and wine leaves.

Exceedances of the MRLs was found in 12 Danish produced vegetable samples, celeriac (2), kale (2), parsley (1), peas with pods (2), potatoes (2), courgettes (1), tarragon (1) and organic parsley (1). The number in brackets refers to the number of samples. In vegetables produced outside Denmark 108 exceedances of the MRLs were found in 38 different commodities. Most exceedances were found in cumin seed (10), chilli peppers (7), carrots (6), tea (17) and vine leaves (7).

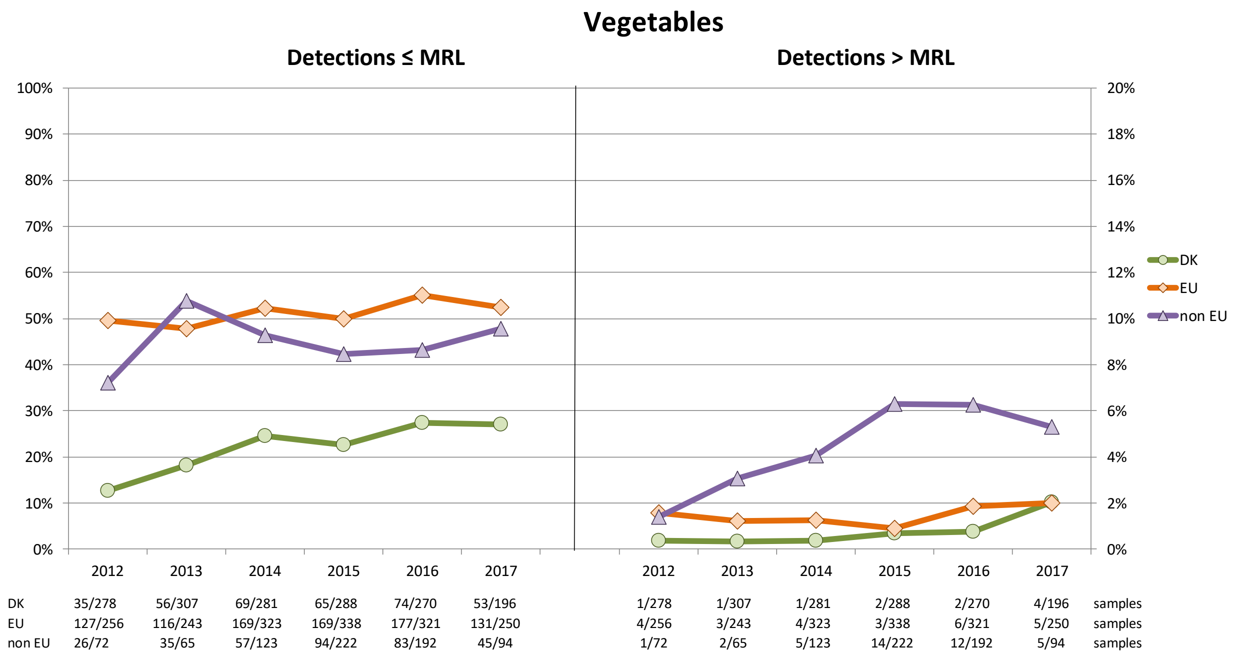

Figure 3. *Frequencies of samples with detections below or at the MRL, and above the MRL for vegetables produced in Denmark, the EU and outside the EU.*

Figure 4 shows the frequencies of samples with detection below or at the MRL, and above the MRL for cereal commodities produced in Denmark, the EU, and outside the EU. Cereals produced in Denmark had lower frequencies of detections below MRL (14-27%) than cereals produced in the EU (41-61%) while cereals grown outside EU had frequencies of detections in between (20-52%). The type of cereals produced in Denmark and the EU was different from cereals produced outside the EU. The cereal samples produced outside the EU were mainly rice and the samples from the EU and Denmark consisted mainly of wheat, oat, rye and barley. No residues above the MRLs were seen in Danish produced cereals. However, exceedances of the MRLs were seen in cereals produced outside Denmark and was frequently observed for especially rice.

In cereals produced outside Denmark 21 exceedances of the MRLs were found in white rice (16) parboiled rice (3) and maize (2). The number in brackets refers to the number of samples.

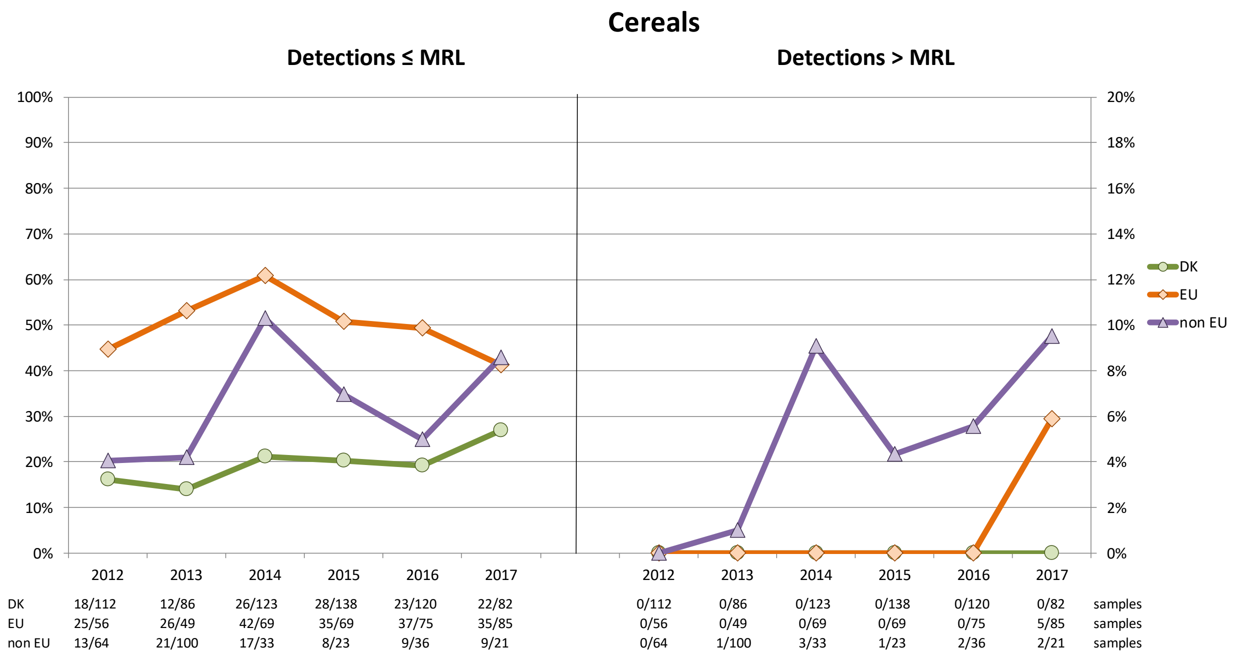

Figure 4. *Frequencies of samples with detections below or at the MRL, and above the MRL for cereals produced in Denmark, the EU and outside the EU.*

Products with low frequencies of samples with residues

In addition to the fruit, vegetable and cereal commodities mentioned above, several commodities with few residues have been analysed. These included animal products, organic grown products, baby food and processed foods. No pesticide residues were found in any of the 34 baby/infant food samples. For meat samples, detections were only observed in three foreign samples, namely one sample containing aldrin and dieldrin (beef meat) and two containing DDT (lamb meat). These pesticides are persistant organic pollutants (POPs) and are banned worldwide for all uses with the exception for the use of DDT in malaria control. Since the substances are very persistant in the environment, residues can still be found in the environment, which can explain the detections in meat. Processed food contained fewer residues than the raw materials used because peeling, cooking, mixing, etc. can decrease the concentration in the processed food. However, the commodities still reflected the situation of the detection frequencies of the raw materials. Consequently, commodities like orange juice and wine had relatively high frequencies (33-49%) compared to other processed foods, and raisins and dried gojiberries had even higher frequencies (75-100%).

Multiple residues

Residues of several different pesticides, 2-14, were found in 47% of all fruit samples and in 17% of all vegetable samples, details are shown in Figure 5. Danish produced fruit contained 2-7 residues in 29% of the samples while fruit from EU and non-EU countries contained 2-12 residues in more than 48% and 53% of the samples, respectively. The Danish produced vegetables contained 2-5 residues in 6% of the samples while vegetables produced in EU and non-

EU countries contained 2-14 residues in 28% and 23% of the samples, respectively. One reason for the lower number of different pesticides in Danish samples could be that the number of pesticides approved for use in Denmark is lower than in some other countries.

Citrus fruits, banana, papaya and rucola contained multiple residues in more than 75% of the samples. More than 50 samples contained nine or more pesticides residues and the samples with the highest number of residues were chili peppers from India where 14 different pesticides were detected. Three strawberry samples from Belgium had 12 residues, one sample had 11 residues and one sample 10 residues. Wine leaves from Germany had 11 residues, 10 residues were found in an orange sample from Argentina, chili from Malawi, chives from Israel, and cumin seeds and rice both from India. However, it should be emphasised that it is not necessarily an individual fruit or vegetable that contained all the detected pesticides since the analysed samples were composed of more than one fruit or vegetable, e.g. at least 10 individual fruits. The composite sample can also in some cases consist of commodities produced by different growers. Table 4 shows the commodities with multiple residues where more than 30 samples have been analysed for in the period 2012-2017.

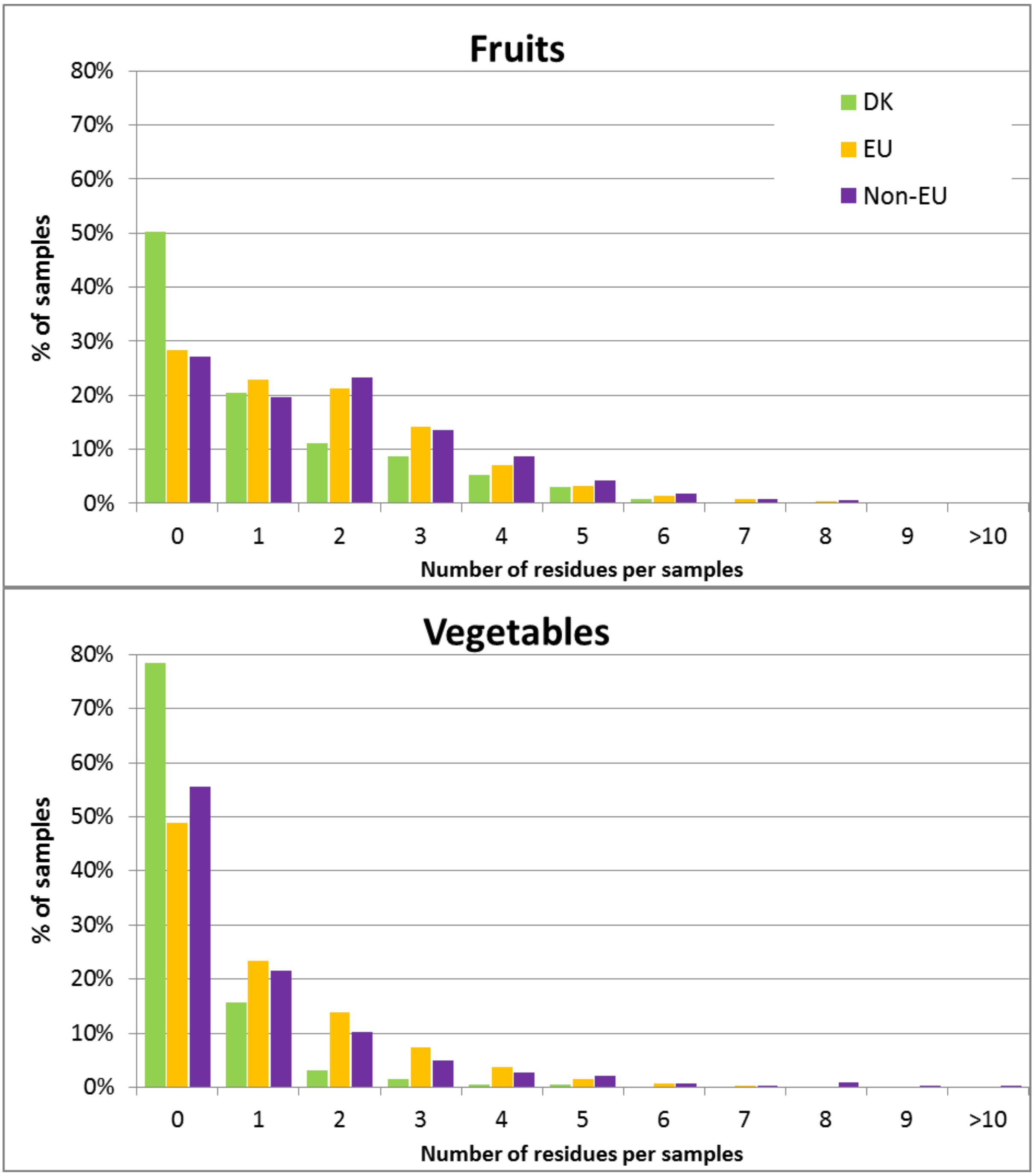

Figure 5. *Number of pesticides residues in fruit and vegetable samples for the period 2012-2017.*

Table 4. *Percentage of samples with multiple residues. Only commodities where more than 30 samples have been analysed for in the period 2012-2017 are included. The table contains Danish as well as foreign produced samples*

Commodities	**Samples, multiple residues**	**Commodities**	**Samples, multiple residues**	**Commodities**	**Samples, multiple residues**
Grapefruit	96%	Melon	29%	Tea	14%
Pomelo	92%	Chilli peppers	28%	Rolled oat	11%
Bananas	86%	Mango	28%	Spelt, flour	10%
Ruccola	86%	Peppers, sweet	28%	Wheat flour	10%
Lemon	80%	Rice, parboiled	27%	Wheat kernels	10%
Oranges	78%	Spinach	27%	Maize	10%
Mandarins/clementines	76%	Apples	27%	Kiwi	10%
Papaya	76%	Wine, red	26%	Broccoli	9%
Nectarine	60%	Rice, white	24%	Parsnip	9%
Table grapes	56%	Plum	23%	Lettuce, iceberg	6%
Strawberries	56%	Tomatoes	23%	Carrots	6%
Peach	50%	Beans with pods	22%	Peas without pods	5%
Blackberries	45%	Courgettes	22%	Rye flour	4%
Pear	42%	Celery	21%	Orange, juice	4%
Celeriac	39%	Aubergines	21%	Potato	3%
Blueberries	37%	Wine, white	20%	Avocados	2%
Lettuce	33%	Leek	17%	Onions	2%
Raspberries	32%	Pomegranate	16%	Persimmon	1%
Pineapples	31%	Pasta, dried	15%	Rye kernels	0.5%

Conclusion on residues and frequencies of the found pesticides

The overall conclusion on residues responsible for the major part of the exposure to pesticides is that Danish produced fruits, vegetables and cereals had lower frequencies of samples with pesticide residues compared to products of foreign origin. It is estimated that the foreign produced commodities showed more than 20% higher frequencies. Also, a smaller number of different pesticides were found in the Danish products. However, some of the foreign produced commodities had comparable detection frequencies to the Danish produced commodities, or even lower. This was the case for strawberries (China, Poland), carrots (Belgium), cucumber (Netherlands) and wheat (Sweden). For other foreign produced commodities various differences between countries were observed. Residues from several different pesticides, 2-14, were found in 47% of all fruit samples and in 17% of all vegetables samples.

Pesticides found in fruit and vegetables, cereals and samples of animal origin.

The pesticides that have been found in the period 2012-2017 are presented in Appendix 7.2. In all the commodities, 177 different substances were detected. Residues exceeding the MRLs included 66 different pesticides. Pesticides which were detected in at least 0.5 % of the samples of fruit, vegetables and cereals are presented in Figure 6.

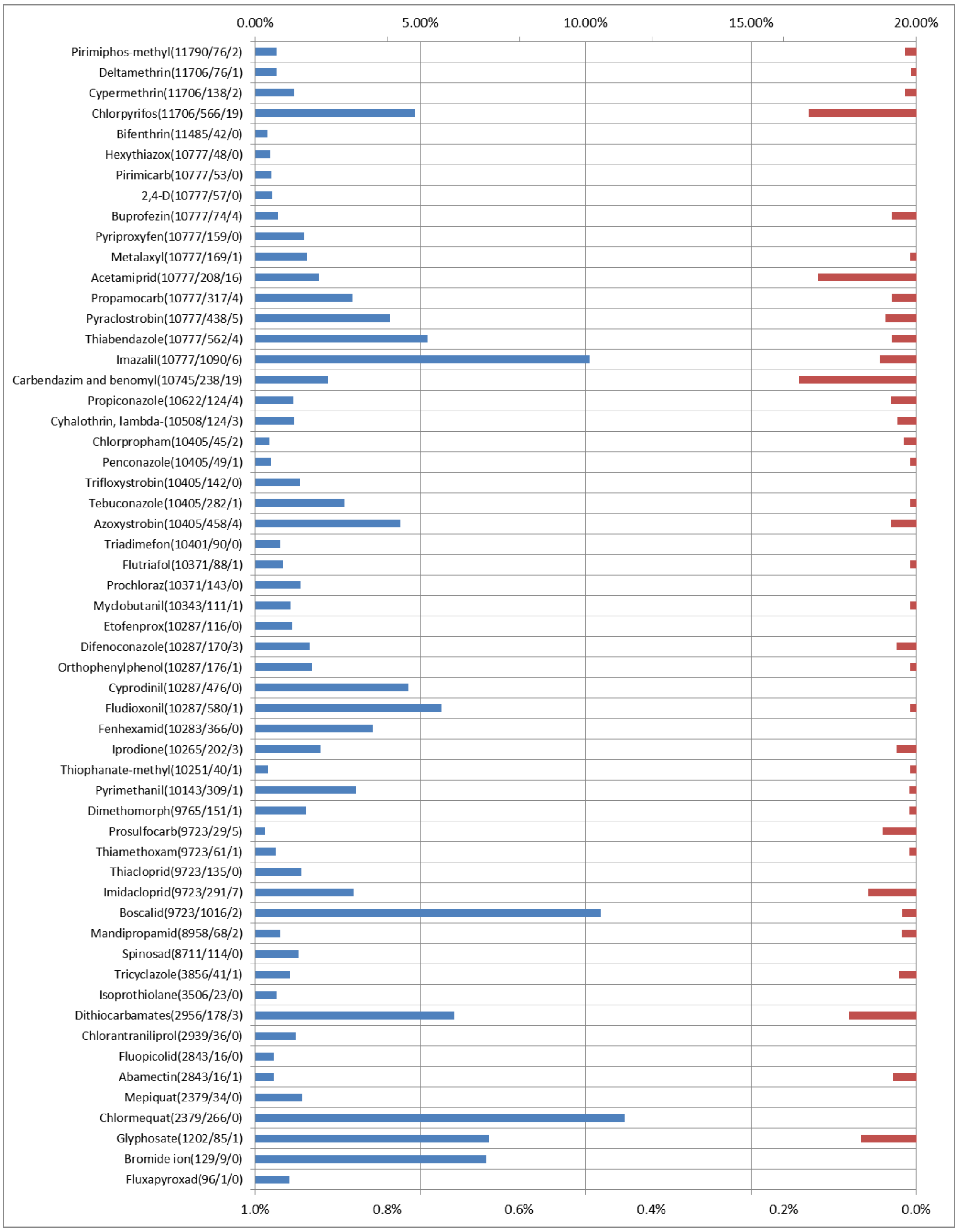

Figure 6 *Detected pesticides. The pesticides that were detected in at least 0.5% of the plant product samples are ordered by the total number of samples analysed for the pesticide. The figures in brackets next to the name of the pesticide refer to the number of samples analysed for this pesticide, the number of samples with residues <MRL and the number of samples exceeding the MRLs. The blue bars represent the percentage of samples <MRL. The axis for these results is shown at the top (0%-20%). The red bars represent the percentage of samples with residues above the MRL. The axis for these results is shown at the bottom (0.0-1.0%).*

Pirimiphos-methyl was the pesticide analysed for in most samples (11,790). Chlormequat, boscalid and imazalil were the pesticides most frequently found (10-11% of the samples), while carbendazim, chlorpyrifos and acetamiprid were the pesticides that exceeded the MRLs most frequently (0.15-0.18% of the samples).

The most frequently found pesticides in foreign produced fruit and vegetables were imazalil, boscalid, chlorpyrifos, dithiocarbamates and thiabendazole, and for cereals it was chlormequat, pirimiphos-methyl, tricyclazole, glyphosate and propiconazole. For the Danish produced fruit and vegetables the most freqently found pesticides were boscalid, pyraclostrobin, azoxystrobin, cyprodinil and propamocarb while in cereals it was chlormequat, boscalid, glyphosate, mepiquat and pirimiphos-methyl.

Evaluation of pesticide residue in commodities produced in different countries.

The commodities consumed in Denmark are produced in many different countries and the monitoring data were evaluated to determine any differences in the frequencies of samples with residues of Danish and foreign origin or between countries. Here, foreign origin means countries outside Denmark. For the commodities that contributed most to the exposure of pesticides for Danish consumers, the frequency of residues in samples has been compared between countries. Only commodities for which more than 10 samples from the same country were analysed are included in this evaluation. The text below refers to Figure 7.

Apples are one of the commodities that contribute most to the pesticide intake for the Danish consumers (Jensen et al., 2015b) (see Section 4.3). This is due to the high consumption of apples, the high frequency of pesticide residues in apples, and because apples are usually consumed raw with the peel. For most pesticides a major part of the content can be found in the peel. Apples are therefore controlled frequently and all together 335 samples were collected and analysed. Approximately 45% of the samples originated from Denmark and approximately 25% originated from Italy. The remaining 30% originated from Germany and France (see Figure 7). The frequencies of pesticide residues ranged from 28% (Denmark) to 75% (France) (see Figure 7). The Danish apple samples had residues of 12 different pesticides and the most frequently found were boscalid and pyraclostrobin. The foreign apple samples had residues of 27 different pesticides and the most frequently found were boscalid, fludioxonil, pyraclostrobin and chlorpyrifos.

Approximately 40% of the collected pear samples in the period 2012-2017 were of Danish origin and another 40% originated from the Netherlands. In total, 283 pear samples were collected. The frequencies of pesticide residues ranged from 32% (Denmark) to 95% (South Africa) (see Figure 7). The Danish pear samples had residues of 9 different pesticides and the most frequently found were boscalid, pyraclostrobin and dithiocarbamates. The foreign pear samples had residues of 30 different pesticides and the most frequently found were fludioxonil, pyraclostrobin, boscalid and cyprodinil.

For pineapples 75% originated from Costa Rica and 12 % from Panama. Pineapples are not grown in Denmark. In total, 91 pineapple samples were collected. The frequencies of pesticide residues ranged from 73% (Panama) to 78% (Costa Rica). The pineapple samples had residues of seven different pesticides and the most frequently found were triadimefon and prochloraz.

Practically all peach samples originated from Spain (62%) and Italy (37%). Peaches are not grown commercially in Denmark. In total, 125 samples of peaches were collected. The frequencies of pesticide residues ranged from 74% (Spain) to 80% (Italy) (see Figure 7). The peach samples had residues of 37 different pesticides and the most frequently found were tebuconazole, fludioxonil, spinosad and etofenprox.

Also most of the nectarine samples originated from Italy (51%) and Spain (36%); however, some also originated from Chile (11%). As with peaches, nectarines are not grown commercially in Denmark. In total, 166 samples of peaches were collected and the frequencies of pesticide residues ranged from 75% (Spain) to 100% (Chile) (see Figure 7). The nectarine samples had residues of 31 different pesticides and the most frequently found were tebuconazole, etofenprox, boscalid and fludioxonil.

The banana samples originated from Columbia (53%), Costa Rica (29%), and Ecuador (8%). Bananas are not grown in Denmark. In total, 219 banana samples were collected and the frequencies of pesticide residues ranged from 89% (Ecuador) to 100% (Costa Rica) (see Figure 7). The banana samples had residues of 12 different pesticides and the most frequently found were imazalil, thiabendazole and azoxystrobin.

The orange samples originated from several countries, Spain (41%), Greece (19%), Egypt (14%), South Africa (10%) and Morocco (5%). Oranges are not grown in Denmark. In total, 310 orange samples were collected and the frequencies of pesticide residues ranged from 92% (Greece) to 100% (Spain, Egypt and Morocco) (see Figure 7). The orange samples had residues of 41 different pesticides and the most frequently found were imazalil, thiabendazole, chlorpyrifos and orthophenylphenol.

More than 80% of the mandarins and clementine samples originated from Spain, and 5% from Morocco. Mandarins and clementines are not grown in Denmark. In total, 306 mandarins and clementine samples were collected and the frequencies of pesticide residues ranged from 94% (Spain) to 100% (Morocco) (see Figure 7). The mandarins and clementine samples had residues of 36 different pesticides and the most frequently found were imazalil, chlorpyrifos and thiabendazole.

More than half of the collected strawberries samples in the period 2012-2017 were of Danish origin (56%) and another 40% originated from seven other countries, Spain (12%), Belgium (7%), Poland (6%), Germany (5%), the Netherlands (5%), China (3%) and Morocco (3%). In total, 457 strawberry samples were collected. The frequencies of pesticide residues ranged from 62% (China and Poland) to 94% (Belgium) (see Figure 7). The Danish strawberry samples had a frequency of 72% and contained residues of 20 different pesticides. The most frequently found pesticides were boscalid, cyprodinil, fludioxonil, pyraclostrobin and azoxystrobin. The foreign strawberry samples contained 45 different pesticides residues and the most frequently found were fludioxonil, cyprodinil, boscalid, trifloxystrobin and fenhexamid.

Table grapes are not commercially grown in Denmark and the grape samples originated from several countries to cover the supplies of grapes the whole year round, South Africa (33%), Italy (16%), India (12%), Spain (9%), Egypt (8%), Chile (7%) and Peru (4%). In total, 296 grape samples were collected. The frequencies of pesticide residues ranged from 56% (Egypt) to 100% (Peru) (see Figure 7). The grape samples had residues of 53 different pesticides and the most frequently found were fenhexamid, boscalid, dimethomorph and myclobutanil.

Red wine is commercially produced in Denmark, but the production is very low compared to the amount traded in from other countries. Thus, only two Danish red wine samples were collected and analysed; no residues were found. Then the red wine samples originated from seven countries, Italy (31%), France (14%), South Africa (11%), Spain (10%), Chile (9%), USA and Australia (both 6%) (see Figure 7). In total, 287 red wine samples were collected. The frequencies of pesticide residues ranged from 15% (South Africa) to 82% (Italy). The wine samples had residues of 14 different pesticides and the most frequently found were metalaxyl, fenhexamid, boscalid and dimethomorph which more or less are the same pesticides most frequently found in table grapes.

Almost half of the collected tomato samples were of Danish origin (46%) and another 47% originated from three other countries, the Netherlands (19%), Spain (23%) and Morocco (5%). In total, 308 tomato samples were collected. The frequencies of pesticide residues ranged from 11% (Denmark) to 73% (Spain) (see Figure 7). The Danish tomatoes had residues of 8 different pesticides and the most frequently found was azoxystrobin. The foreign tomato samples contained 50 different pesticides residues and the most frequently found were boscalid, dithiocarbamates, cyprodinil, pyraclostrobin and tebuconazole.

One fourth of the collected courgette samples were of Danish origin (27%) and another half of the courgette samples originated from Spain (51%). Only 51 courgette samples were collected. The frequencies of pesticide residues ranged from 7% (Denmark) to 50% (Spain) (see Figure 7).   The three Danish courgette samples with residues contained acetamiprid, carbendazim or hexaconazole. The foreign courgette samples contained 12 different pesticides residues and the most frequently found were imidacloprid and acetamiprid.

The sweet pepper samples originated mainly from the Netherlands (39%), Spain (38%), Turkey (9%) and Morocco (7%). In total, 321 samples of sweet pepper samples were collected. The frequencies of pesticide residues ranged from 20% (Netherlands) to 77% (Turkey and Morocco) (see Figure 7). The sweet pepper samples had residues of 41 different pesticides and the most frequently found were flutriafol, fludioxonil and boscalid.

Almost half of the collected lettuce samples were of Danish origin (45%) and another half originated from five other countries, Spain (18%), Italy (15%), Germany (6%), the Netherlands (6%) and France (5%). In total, 221 lettuce samples were collected. The frequencies of pesticide residues ranged from 35% (Denmark) to 92% (Netherlands) (see Figure 7). The Danish lettuce samples had residues of 21 different pesticides and the most frequently found were boscalid, mandipropamid and pyraclostrobin. The foreign lettuce samples contained 28 different pesticides residues and the most frequently found were boscalid, imidacloprid and iprodione.

More than 2/3 of the collected carrot samples were of Danish origin (69%) and 1/4 originated from four other countries, Italy (9%), Belgium (7%), Germany (6%) and the Netherlands (5%) (see Figure 7). In total, 334 carrot samples were collected. The frequencies of pesticide residues ranged from 25% (Denmark) to 71% (Netherlands). The Danish carrot samples had residues of 5 different pesticides and the most frequently found by far was boscalid. The foreign carrot samples contained 15 different pesticides residues and the most frequently found were boscalid and azoxystrobin.

More than 2/3 of the collected potato samples were of Danish origin (69%) and 1/5 originated from four other countries, France (9%), UK (6%), Germany and Egypt (both 4%). In total, 279 potato samples were collected. The frequencies of pesticide residues ranged from 16% (Denmark) to 85% (France) (see Figure 7). The Danish potato samples had residues of 6 different pesticides and the most frequently found by far were chlorpropham and propamocarb. The foreign potato samples contained 9 different pesticides residues and the most frequently found were also chlorpropham and propamocarb. Additionally, 59 samples from the category 'new potatoes' of Danish origin were collected. The frequencies of pesticide residues were higher for these than for the other Danish potato samples, namely 31% and the most frequently found pesticide was pencycuron.

The wheat grain and flour category consists of groats and kernels, white flour, whole flour and bran. In total, 500 samples of these wheat types were collected, 300 of these were of Danish origin (60%). However, also wheat samples originated from Germany (21%), Sweden (3%), as well as samples where no country of origin were specified (9%). The frequencies of pesticide residues ranged from 8% (Sweden) to 65% (Germany) (see Figure 7). The Danish wheat samples had residues of 15 different pesticides and the most frequently found were chlormequat and boscalid. The foreign wheat samples contained 12 different pesticides residues and the most frequently found was chlormequat.

Rye grain and flour category consist of groats and kernels, white flour, whole flour and bran. In total, 304 samples of these rye types were collected, 239 of them were of Danish origin (79%). However, also rye samples originated from Germany (9%), as well as samples where no country of origin was specified (10%). The frequencies of pesticide residues ranged from 3% (Denmark) to 57% (Germany) (see Figure 7). The Danish rye samples had 7 residues of 5 different pesticides, deltamethrin, glyphosate, mepiquat, permethrin, tebuconazole. The foreign wheat samples contained also 5 different pesticides residues and the most frequently found was chlormequat.

Rice samples consisted of white and brown rice, short grained rice and rice flour. In total, 161 rice samples were collected. Rice is not grown in Denmark or northern Europe. However, the Netherlands and Germany have many rice mills that process paddy rice to white rice, brown rice or parboiled rice. Consequently, the origin of samples is not known for many of the samples (22%). However, the rice samples also originated from Thailand (19%), Italy (17%) and India (13%). The frequencies of pesticide residues ranged from 3% (Thailand) to 65% (India). The rice samples contained 23 different pesticides residues and the most frequently found were tricyclazole, propiconazole, buprofezin and isoprothiolane.

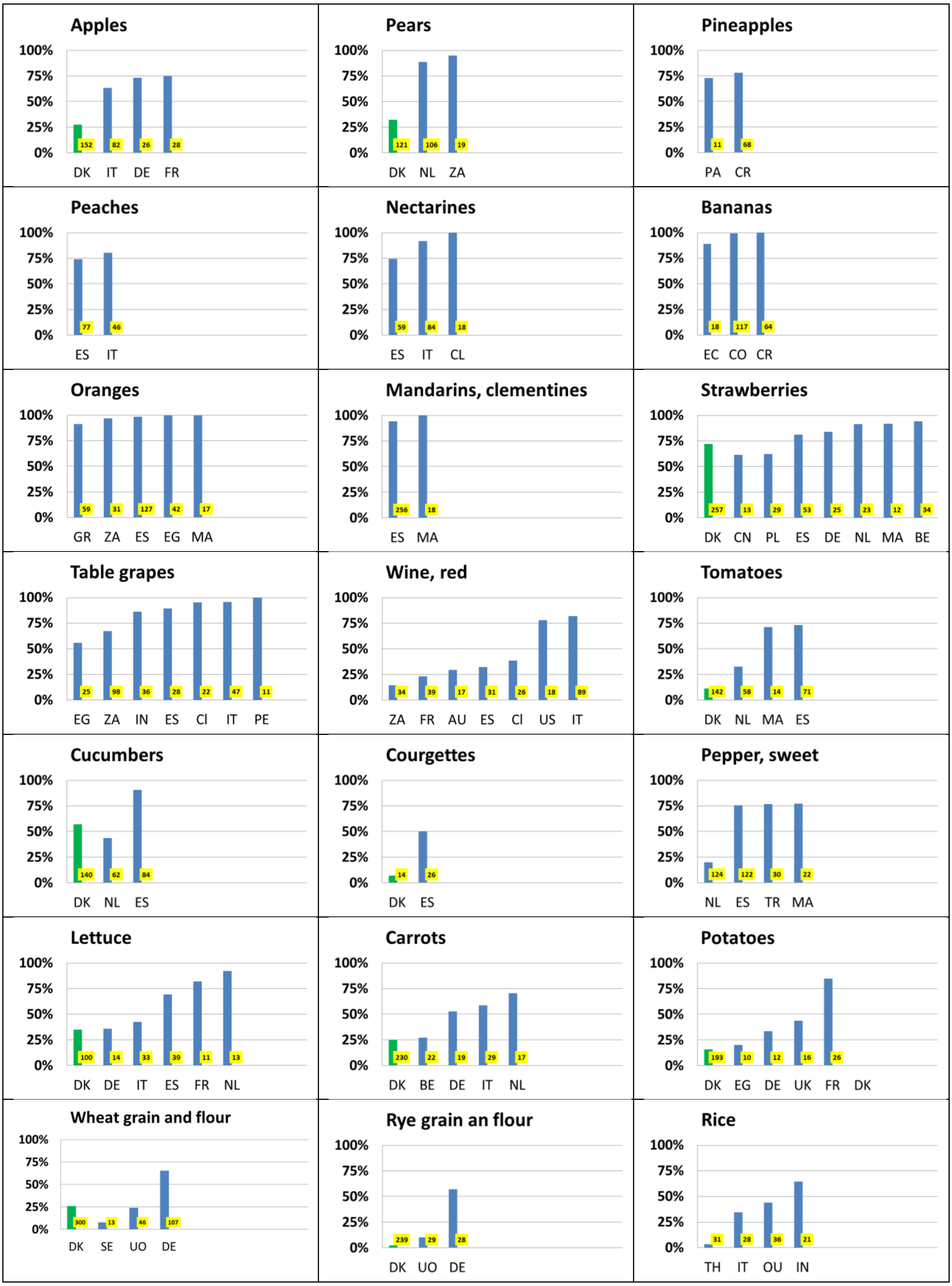
Apples
100% 75% 50% 25% 0%
152 82 26 28
DK IT DE FR
Pears
121 106 19
DK NL ZA
Pineapples
11 68
PA CR
Peaches
77 46
ES IT
Nectarines
59 84 18
ES IT CL
Bananas
18 117 64
EC CO CR
Oranges
59 31 127 42 17
GR ZA ES EG MA
Mandarins, clementines
256 18
ES MA
Strawberries
257 13 29 53 25 23 12 34
DK CN PL ES DE NL MA BE
Table grapes
25 98 36 28 22 47 11
EG ZA IN ES CI IT PE
Wine, red
34 39 17 31 26 18 89
ZA FR AU ES CI US IT
Tomatoes
142 58 14 71
DK NL MA ES
Cucumbers
140 62 84
DK NL ES
Courgettes
14 26
DK ES
Pepper, sweet
124 122 30 22
NL ES TR MA
Lettuce
100 14 33 39 11 13
DK DE IT ES FR NL
Carrots
230 22 19 29 17
DK BE DE IT NL
Potatoes
193 10 12 16 26
DK EG DE UK FR DK
Wheat grain and flour
300 13 46 107
DK SE UO DE
Rye grain an flour
239 29 28
DK UO DE
Rice
31 28 36 21
TH IT OU IN

Figure 7. *Frequencies of samples with pesticide residues. The figures marked in yellow are the number of samples originating from the countries listed. The country codes are ISO 3166 codes (see Table 5). The green bars represent Denmark.*

Table 5. *The ISO 3166 Codes (Countries) used in Figure 7. The codes can be found on* https://www.iso.org/obp/ui/#search *(Accessed on 2 November 2018)* .

Country	Code	Country	Code	Country	Code	Country	Code
Australia	AU	Denmark	DK	Italy	IT	South Africa	ZA
Belgium	BE	Egypt	EG	Kenya	KE	Spain	ES
Brazil	BR	Ecuador	EC	Morocco	MA	Sri Lanka	LK
Chile	CL	France	FR	Netherlands	NL	Sweden	SE
China	CN	Germany	DE	Panama	PA	Turkey	TR
Columbia	CO	Greece	GR	Peru	PE	USA	US
Costa Rica	CR	India	IN	Poland	PL	Unknown origin	UO

The differences in the pesticide residue frequencies of samples originating from different countries indicate that if Danish consumers had chosen commodities of Danish origin, they would have had a lower exposure to pesticides. This is especially the case for apples, pears, tomatoes, lettuce, sweet pepper, and potatoes. The reasons for the lower frequencies of pesticide residues in commodities of Danish origin are due to several factors. Denmark has for many years had a stricter regulation on pesticide use, especially with regard to protection of the groundwater and the pest pressure in Denmark is lesser than in countries with a warmer climate. In addition, the use of biological pest control is common for commodities grown in greenhouses. Dietary exposure calculations have shown that choosing Danish-produced commodities whenever possible could reduce the 8Hazard Index (HI) with about 1/3 (see Section 4.3).

Comparison of pesticides analysed for and found in periods 2004-2011 and 2012-2017

The analytical methods used cover many pesticides and the number of pesticides included varies from year to year. The total number of pesticides analysed for in 2017 has increased from 230 to 314 compared to 2011. Some pesticides were added to the analytical methods and other pesticides were removed from the methods. Of the 99 pesticides that were added to the scope, 44 were found in the samples. As can be seen in Table 6, especially boscalid was found very frequently (>1000 detections), but also etofenprox, imidacloprid, mandipropamid, spinosad, thiacloprid and thiamethoxam were frequently found (>50 detections). Fipronil, imidacloprid and prosulfocarb had the highest number of MRL exceedances (6, 7 and 5, respectively).

Of the 226 pesticides that were analysed in both periods, 117 were actually also found in both periods, 46 were found less frequently (less than 50%), and 22 were found more often (more than 200%), see Table 7. The number of analysed samples for quinoxyfen and fenbuconazole was low in 2004-2011 so the increase in frequencies for these two pesticides may not be that significant. However, the increase in findings for propiconazole and aclonifen has been very high (>1800%)

Furthermore, 33 pesticides were only found in 2004-2017. Most of them were only found 1-4 times, but tolylfluanid and fenitrothion were found frequently (172 and 28 times, respectively). However, these pesticides are not approved for use any longer, see Table 8. Pesticides only found in 2012-2017 are listed in Table 9. These 17 pesticides were not found very frequently, only 1-4 times each. Other 59 pesticides were not found either in 2004-2011 or in 2012-2017; these are listed in Table 10.

Finally, 24 pesticides analysedfor in 2004-2011 were not included in the pesticide scope for 2012-2017. Ten of these pesticides were found and especially captan/folpet and chlorothalonil were found frequently (see Table 11), and in the period 2004-2011 even exceedances of the MRL were seen for chlorothalonil. Captan, folpet, chlorothalonil, pyridate and pyrethrins are still approved for use and they would probably also have been found during 2012-2017 if they had been analysed for. The analytical methods have changed during the years and the exclusion of these pesticides is due to these changes. The methods currently in use are less time consuming and more pesticides can be included but at the cost of some of the analytical challenging ones.

Table 6. *Pesticide findings of new pesticide in the scope for 2012-2017*

Pesticide	No. of samples	<MRL	>MRL
Abamectin	2843	16	1
Boscalid	9723	1016	2
Chlorantraniliprol	2939	36	0
Chlorfenapyr	10287	1	1
Clopyralid	8711	2	0
Clothianidin	1235	1	0
Cyazofamid	8711	8	0
Cymoxanil	8711	4	0
Diflubenzuron	3856	4	0
Dinocap	8711	4	1
Diuron	2856	1	0
Ethoprophos	8711	1	0
Etofenprox	10287	116	0
Etoxazole	361	1	0
Fenamidone	8711	1	0
Fenoxycarb	8711	1	0
Fipronil	8723	0	6
Flonicamid	2975	5	0
Flufenoxuron	8711	3	0
Fluopicolid	2843	16	0
Fluxapyroxad	96	1	0
Haloxyfop	8662	0	1
Imidacloprid	9723	291	7
Indoxacarb	8711	21	1
Isoprocarb	2856	0	1
Isoprothiolane	3506	23	0
Lufenuron	8711	6	0
Mandipropamid	8958	68	2
MCPA	7018	2	0
Mepanipyrim	8711	25	0
Metaflumizone	2856	1	0
Metamitron	8711	2	0
Oxadiazon	2843	1	1
Pencycuron	8711	25	1
Phenmedipham	8711	5	1
Piperonylbutoxid	2843	1	0
Prosulfocarb	9723	29	5
Prothioconazole	10371	2	1
Spinosad	8711	114	0
Thiacloprid	9723	135	0
Thiamethoxam	9723	61	1
Tricyclazole	3856	41	1
Triflumizol	2843	3	0
Zoxamide	8711	2	0

Table 7. *Pesticides found both in 2004-2011 and 2012-2017 and the relative frequencies <50% or >200% in relation to findings in 2001-2011.*

Pesticide	fewer findings	Pesticide	more findings
Acephate	33%	Acetamiprid	297%
Atrazine	27%	Aclonifen	1815%
Azinphos-methyl	3%	Aldrin and Dieldrin	482%
Bifenthrin	35%	Azoxystrobin	201%
Bitertanol	16%	Buprofezin	511%
Bromide ion	26%	Dichlorvos	474%
Bromopropylate	6%	Difenoconazole	299%
Carbaryl	14%	Fenbuconazole	245%
Carbendazim and benomyl	41%	Fenpropathrin	325%
Chlorpropham	14%	Fenpropimorph	366%
Chlorpyrifos-methyl	43%	Fenpropimorph	366%
Chlorthal-dimethyl	26%	Fludioxonil	280%
Cyromazine	26%	Glyphosate	377%
Diazinon	31%	Metalaxyl	210%
Dichlorprop	27%	Monocrotophos	394%
Dicloran	17%	Pendimethalin	366%
Dicofol	5%	Propiconazole	1893%
Dimethoate	25%	Propoxur	424%
Diniconazole	20%	Quinoxyfen	510%
Diphenylamine	14%	Tebuconazole	214%
Endosulfan	5%	Triazophos	230%
Ethion	45%	Trifloxystrobin	221%
Fenarimol	9%		
Fenazaquin	30%		
Fenthion	3%		
Fenvalerate and esfenvalerate	66%		
Fluoxastrobin	24%		
Fluvalinate, tau-	17%		
Kresoxim-methyl	35%		
Linuron	35%		
Malathion-Malaoxon	7%		
Methamidophos	22%		
Methidathion	5%		
Methomyl	12%		
Orthophenylphenol	38%		
Oxamyl	11%		
Phosalone	4%		
Procymidone	3%		
Profenofos	31%		
Propargite	6%		
Quintozene	29%		
Quizalofop	32%		
Tetraconazole	10%		
Tetradifon	10%		
Triflumuron	25%		
Vinclozolin	2%		

Table 8. *Pesticides analysed for both in 2004-2011 and in 2012-2017, but only detected in 2004-2011.*

Detected in 2004-2011	No. of samples	<MRL	>MRL
Aldicarb	9973	9	3
Benfuracarb	6237	6	0
Carbofuran	10951	5	4
Chlorfenvinphos	14832	13	0
Chlormephos	9262	1	0
Clomazone	4516	0	1
Dichlofluanid	10951	2	0
Diethofencarb	7145	4	0
Diflufenican	9948	3	0
Fenitrothion	10951	21	7
Fenoxaprop-P-Ethyl	9956	1	0
Fenson	11309	1	0
HCH	14680	0	2
Flucythrinate	9871	2	0
Fluroxypyr	3975	2	0
HCH	14680	0	2
Hexachlorobenzene	14862	2	2
Lindane	11309	1	0
Methacrifos	8849	1	0
Metribuzin	2886	2	0
Mevinphos	3762	1	0
Ofurace	8510	1	0
Oxydemeton-methyl	10448	4	0
Parathion-methyl	10951	5	7
Pentachlorobenzene	8496	1	0
Phenthoate	10951	1	1
Prothiofos	11309	7	2
Pyrazophos	11077	1	0
Quinalphos	10951	0	1
Tebufenozide	2886	4	0
Tecnazene	10951	2	0
Tetrachlorvinphos	11072	1	0
Tolylfluanid	14832	172	0
Triallate	3975	2	0
Trichlorfon	9948	3	0
Trichloronat	3881	0	1

Table 9. *Pesticides analysed for both in 2004-2011and in 2012-2017, but only detected in 2012-2017.*

Detected in 2004-2011	No. of samples	<MRL	>MRL
Acrinathrin	7934	1	0
Azinphos-ethyl	11485	2	0
Bentazone	10773	1	0
Cyproconazole	10287	4	0
Fenamiphos	8711	1	0
Fenpropidin	10283	4	0
Flutolanil	10287	1	0
Fuberidazole	10287	1	0
Mecarbam	9389	1	0
Oxadixyl	10777	1	1
Paclobutrazol	10287	0	2
Phosphamidon	10283	0	1
Phoxim	9389	0	1
Picoxystrobin	7440	1	0
Propanil	10287	1	0
Propham	10405	4	0
Proquinazid	10777	6	0

Table 10. *Pesticides analysed for, but not found in 2004-2017.*

2-Naphthoxyacetic acid	Dimoxystrobin	Heptachlor	Pentachloroanisole
4-Chlorophenoxy acetic acid	Dinoterb	Heptenophos	Pentachlorothioanisole
Bromophos	Dioxathion	Iodosulfuron-methyl	Picolinafen
Bromophos-ethyl	Ditalimfos	Isofenphos	Pirimiphos-ethyl
Bromoxynil	DNOC	Isofenphos-Methyl	Pyrazophos
Bromuconazole	Endrin	Isoproturon	Pyridaphenthion
Carbophenothion	Ethiofencarb	Jodfenphos	Simazine
Carboxin	Etrimfos	Methoxychlor	Sulfotep
Chlordane	Fluazifop-P-butyl	Metribuzin	TEPP
Chlorfenson	Flufenacet	Molinate	Tetrasul
Cinidon-ethyl	Flufenacet	Monolinuron	Thifensulfuron-methyl
Clethodim	Flupyrsulfuron-methyl	Nitrofen	Trifluralin
Demeton-S-Methyl	Fluquinconazole	Nuarimol	Triticonazole
Dialifos	Flurtamone	Oxycarboxin	Vamidothion
Dichlofenthion	Fonofos	Parathion	Pentachloroanisole

Table 11. *Pesticides analysed for and detected in samples from 2004-2011, but not analysed for in the period 2012-2017.*

Detected in 2012-2017	No. of samples	<MRL	>MRL
Binapacryl	12006	1	0
Biphenyl	10353	1	0
Captafol	12006	1	0
Captan/Folpet	12006	40	0
Carbosulfan	14141	4	0
Chlorothalonil	14106	70	6
Ethoxyquin	7628	1	0
Pentachlorophenol	14106	1	0
Pyridate	5362	1	0
Pyrethrins	12447	2	0

4.3 Exposure

Dietary exposure

The dietary exposure to pesticides has been calculated in order to assess the chronic (long-term) consumer health risk for the Danish population. To follow the trend in exposure over time, the exposure has been calculated according to the approach of National Estimated Daily Intake given in "Guidelines for predicting dietary intakes of pesticides residue" (WHO, 1997). The primary goal of this task has been to assess whether the pesticide residues present in an average Danish diet are acceptable from a food safety point of view.

The dietary exposure to a pesticide residue in a given food was estimated by multiplying the average residue level in the food by the average amount of that food consumed. Residues were obtained from the Danish monitoring programme for the period 2012-2017 while consumption data were obtained from the Danish National Dietary Survey. The total dietary exposure to a given pesticide was estimated by summing the exposure for all food items containing residues of that pesticide. The exposure for each food item (*i*) is calculated by multiplying the average residue concentration (*Ci*) in the food item with the consumption (*Mi*) of the food item and divide it with the bodyweight (*bw*)

$$Exposure = \frac{C_1 * M_1 + C_2 * M_2 + C_3 * M_3 + \cdots + C_i * M_i}{bw}$$

A more detailed description of the exposure calculations can be found in Annex 6.1

Consumption data

For Danish consumers (4 to 75 years), the exposure estimates were based on consumption data obtained from DANSDA (Danish National Survey of Diet and physical Activity) 2011-2013 (Pedersen et al., 2015). The dataset covers the amount of food and beverages recorded for 7 consecutive days and collected from a representative sample of 3946 participants.

For children below 4 years of age, the data were from the National dietary survey among young children aged 6-36 month. Data were collected during one year in 2014-2015. The dataset covers 386 children 12-23 months old and 347 children 24-36 months old. The diet of the children was recorded for 7 consecutive days using a web-based structured dietary program.

For both studies the participants can be characterised as close to representative for the Danish population. In this report, the following consumer groups will be used: children 1-3 years, 4-6 years and 7-14 years; and adults, women and men 15-75 years.

The consumption data used for the exposure calculations for different consumer groups are presented in Appendix 7.3. It is not possible from the consumption data to distinguish between consumption of commodities of Danish and foreign origin. Therefore, the distribution between domestic and foreign commodities, as well as the distribution between the foreign commodities has been assumed to follow the distribution of samples taken in the monitoring programmes.

Residue data

The residue data included a total of 13,492 samples. Of these, 1232 samples, i.e. organically grown samples, a sample of bovine meat from New Zealand with a content of dieldrin (0.032 mg/kg), a sample of carrots from Albania with a content of dieldrin (0.31 mg/kg) and a sample of dried maize from Argentina with a content of dichlorvos (1.5 mg/kg) were not included in the exposure assessment, because their content of residues were considered not to be representative for food on the Danish market. see also Annex 6.1. The pesticides in the monitoring programme were found in 138 different commodities.

An average content has been calculated for each combination of pesticide, commodity and origin (domestic or foreign). Only combinations of pesticide/commodity/origin with at least one detectable residue above the limit of reporting (LOR) were included in the exposure calculations.

Different models used for exposure calculation

Levels below the LOR

In many circumstances, no detectable amount of pesticides was found, but this does not necessarily mean that the content is zero. The content may just be too low for detection with the available methods, or in other words, below the level of reporting (LOR). No international agreed method for estimation of the contribution from levels below the LOR exists. Different methods can be applied for non-detects, e.g. zero, ½LOR and LOR to indicate a lower bound, middle bound and upper bound for the exposure (ANSES, 2011; EFSA, 2010; EFSA, 2018).

As described more comprehensively in Annex 6.1, four models have been used when addressing levels below the LOR in the calculation of the average content:

- In Model 0, the levels below the LOR have been set to zero.
- In Model 1, all the levels below the LOR have been replaced by ½LOR.
- In Model 2, the average content was calculated in the same way as in Model 1. But the result from the ½LOR-correction was limited to 25 times the result that has been calculated using Model 0. The background for the correction factor of 25 is described in Annex 6.2.
- In Model 3, the average content was calculated as in Model 2, except for that the contents were calculated separately for each country when more than ten samles were analysed. Model 3 is considered to be less conservative than Model 2, but will produce less biased comparisons between origins and commodities. This Model was used when comparing commodities and pesticides that contribute most to the exposure and HI. Model 3 was also used when comparing HI for consumers eating Danish grown commodities whenever possible with a “normal” consumer.

The different models are described more comprehensively in Annex 6.1.

Processing factors

To obtain the most realistic picture of the exposure to pesticides it is also important to address processing factors. The pesticides included in the calculations were found in commodities such as citrus fruits, banana and water melon for which processing factors for peel/pulp distribution are normally applied in a refined exposure calculation. The processing factors used in this report were the same as those used in the report for the previous monitoring periods, 1998-2003 and 2004-2011 (Poulsen et al., 2004, Petersen et. al. 2013). For thiabendazole and the benomyl group a processing factor of 0.25 was used while a factor of 0.1 was used for all the other pesticides (see Appendix 7.6).

Risk assessment

The risk assessment of chronic dietary exposure for a single pesticide is performed by estimation of a Hazard Quotient (HQ), i.e. the estimated total dietary exposure divided by the toxicological reference value, ADI for that pesticide:

$$Hazard\ Quotient\ (HQ) = \frac{Exposure}{ADI}$$

The Acceptable Daily Intake (ADI) is an estimate of the amount of a substance in food or drinking water that can be consumed over a lifetime without presenting an appreciable risk to health (EFSA Glossary).

An HQ below 1 indicates that there is no appreciable risk of adverse health effects following dietary exposure to a specific pesticide, i.e. the total dietary exposure is lower than the ADI for that pesticide. In the present report, the HQ is expressed as a percentage instead of the ratio itself, i.e. an HQ below 100% indicates that there is no appreciable risk of adverse health effects following dietary exposure to a specific pesticide.

There is yet no internationally agreed method for risk assessment of the cumulative chronic exposure to multiple residues of pesticides in food. In the present report, risk assessment of cumulative chronic exposure to a mixture of pesticides has been performed by using the HI method as described by US EPA (1986a), Wilkinson et al. (2000), EFSA (2009), Reffstrup et al. (2010) and Kortenkamp et al. (2012), and recently by EFSA (2019).

The HI method assumes that the effects following cumulative exposure can be predicted by the mathematical model of dose-addition (Wilkinson et al., 2000, EFSA, 2009) and is designed for risk assessment for substances which have the same kind of adverse health effect or common mode of action, e.g. the organophosphor pesticides or the triazole group. This has also been confirmed recently by EFSA in their ‘Guidance on harmonised methodologies for human health, animal health and ecological risk assessment of combined exposure to multiple chemicals’ (EFSA, 2019). The HI method based on dose-addition can also be used even when the substances have dissimilar mode of actions as described by Kortenkamp et al. (2012) and Reffstrup et al. (2010). Toxicologically relevant interactions (synergism and antagonism) are uncommon at low levels of exposure (EFSA, 2019).

In the present report, the HI is the sum of the HQs for the individual pesticides detected in the food:

$$Hazard\ Index\ (HI) = HQ_1 + HQ_2 + HQ_3 + \cdots + HQ_p$$

An HI below 1 indicates that there is no appreciable risk of adverse health effects following cumulative dietary exposure to all the detected pesticides. In the present report, the HI is expressed as a percentage.

As the HI method assumes the same kind of adverse health effect for all the detected pesticides, it is a relatively conservative (precautionary) approach for cumulative risk assessment.

The ADIs used for calculation of the HQs for the individual pesticides are predominantly those set by the EU (Commission (COM) or EFSA). For pesticides where no ADI has been set by the EU, e.g. for substances not approved in the EU, the ADI set by the Joint FAO/WHO Meeting on Pesticide Residues (JMPR), when available, is used if considered adequate by the National Food Institute. In all other cases an ADI, only to be used for the present report, has been set by the National Food Institute (see Appendix 7.5). The ADIs used in the present report are listed in Appendix 7.5.

Results and discussion of exposure calculations

Table 12 presents the average exposure in µg/kg bw/day for adults (15-75 years) and children (1-3 years, 4-6 years, 7-14 years) using different models in the calculations.

In the previous report (Petersen et al., 2013), exposure calculations with no reduction for peeling were also shown. Since the three commodity groups citrus fruits, banana and melons always will be peeled before consumption we have not shown the unrefined calculations in the present report.

For adults the exposure is between 0.9 and 2.1 µg/kg bw/day. For the different children populations, the highest exposure is between 2.2 and 5.6 µg/kg bw/day and was found for children aged 4-6 years.

Table 12. *Average exposure for the consumer groups "Children" (1-3 years, 4-6 years, 7-14 years) and "Adults" (15-75 years) using different models*

	Exposure		
	Model 0	Model 1	Model 2
	(µg/kg bw/day)		
Children 1-3 years	2.4	5.6	4.7
Children 4-6 years	2.2	5.6	4.8
Children 7-14 years	1.3	3.3	2.9
Adults 15-75 years	0.9	2.1	1.8

Table 13 presents the HI for adults (15-75 years) and children (1-3 years, 4-6 years, 7-14 years) using different assumptions in the calculations. For adults, the HI is between 3.3 and 16%. For the children populations, the highest HI is for the age group 4-6 years with HI between 8.5 and 46%.

The average exposures in Table 12 and the HIs in Table 13 also reflect that using ½LOR in the calculations (Model 1) has a high impact on the exposure, as well as on the HI. For all three calculation models the HI is below 100%.

Table 13. *HI for the consumer groups "Children" (1-3 years, 4-6 years, 7-14 years) and "Adults" (15-75 years) using different models.*

	Hazard Index (HI)		
	Model 0	Model 1	Model 2
		%	
Children 1-3 years	9.3	44	34
Children 4-6 years	8.5	46	36
Children 7-14 years	5.1	27	21
Adults 15-75 years	3.3	16	13

The average exposure in µg/kg bw/day and the HI for the consumer groups 'children age 4-6 years, adults, men, and women' using Model 2 are presented in Table 14. The results show that children had the highest exposure per kg bw followed by women, adults and men. The reason for the highest exposure for children is that they consume relatively more food per kg bodyweight compared to adults. Due to the fact that women consume more fruit and vegetables than men (see Appendix 7.3) they have a higher average exposure than men. Since the exposure per kg bw is highest for children, the HI is also highest for children (36%), i.e. more than twice as high as for women (14%) and about three times higher than for men (11%), but still well below 100%.

Table 14. *Average exposure and HI for adults, men, women and children 4-6 years (Model 2).*

	Exposure (µg/kg bw/day)	Hazard Index %
Children, 4-6 years	4.8	36
Adults, 15-75 years	1.8	13
Men, 15-75 years	1.6	11
Women, 15-75 years	2.0	14

The commodities that contribute most to the exposure and Hazard Index

The contribution of each commodity to the exposure, as well as to the HI has been calculated for the consumer groups “Adults” and “Children 4-6 years” by using Model 3, as described previously.

The exposure and HI for the 25 commodities that contribute most to the exposure for the consumer group “Adults” are presented in Table 15. These 25 commodities contribute with about 85% of the total HI for all commodities and about 81% of the total exposure. Compared to this, 25 commodities contributed with 95% and 97% to the exposure and HI, respectively for the period 2004-2011 (Petersen et. al.). Eighteen of the commodities were the same. It is noted that the contribution from apples has decreased since the previous period, i.e. from 39% of the total HI in the previous period to 23% in this period. It should be noted that the consumption of a specific commodity can have a high impact on the HI. Also the toxicity of the pesticides found in the commodities as reflected by the magnitude of the ADI has high impact on the HI for a commodity.

Table 15. *Exposure and HI for the 25 commodities that contribute most to the HI for "Adults" by using Model 3.*

Commodity	Exposure (µg/kg bw/day)	Hazard Index %
Apples	0.2	1.5
Wheat flour. white	0.095	0.49
Lettuce etc.	0.12	0.34
Tomatoes	0.1	0.34
Carrots	0.013	0.26
Pears	0.061	0.25
Strawberries	0.039	0.24
Potatoes	0.087	0.2
Cucumbers	0.086	0.2
Table grapes	0.036	0.17
Peaches	0.024	0.16
Peppers. sweet	0.025	0.16
Broccoli	0.0088	0.13
Courgettes	0.0026	0.12
Oranges	0.025	0.11
Pineapples	0.0053	0.11
Wine. red	0.02	0.11
Nectarines	0.027	0.1
Wheat. wholemeal	0.024	0.1
Mandarins. clementines	0.015	0.08
Rice	0.0077	0.08
Cauliflower	0.0084	0.08
Onions	0.0031	0.08
Rye grain and flour	0.017	0.07
Bananas	0.019	0.07
Sum	1.1	5.5
Total	1.3	6.5
% Total	81	85

Figure 8 shows the nine commodities that contribute most to the HI for “Adults”, i.e. apples, wheat flour, lettuce etc., tomatoes, carrots, pears, strawberries, potatoes and cucumbers, together with the contributions from the rest of the commodities (“Others”). Figure 9 shows the nine commodities that contribute most to the exposure for “Adults”, i.e. apples, lettuce etc., tomatoes, wheat flour, potatoes, cucumbers, pears, strawberries, and table grapes, together with the contributions from the rest of the commodities (“Others”). As can bee seen the same eight commodities are in the ‘top nine’ regarding both HI and exposure, but with some differences in the relative contributions. Apples contribute most to both HI and exposure whereas apples contribute relatively more to HI than to the exposure. Carrots are in the ‘top nine’ regarding HI while table grapes are in the ‘top nine’ regarding exposure. These differences reflect the different types of pesticides (with different ADIs) that were found in the different commodities.

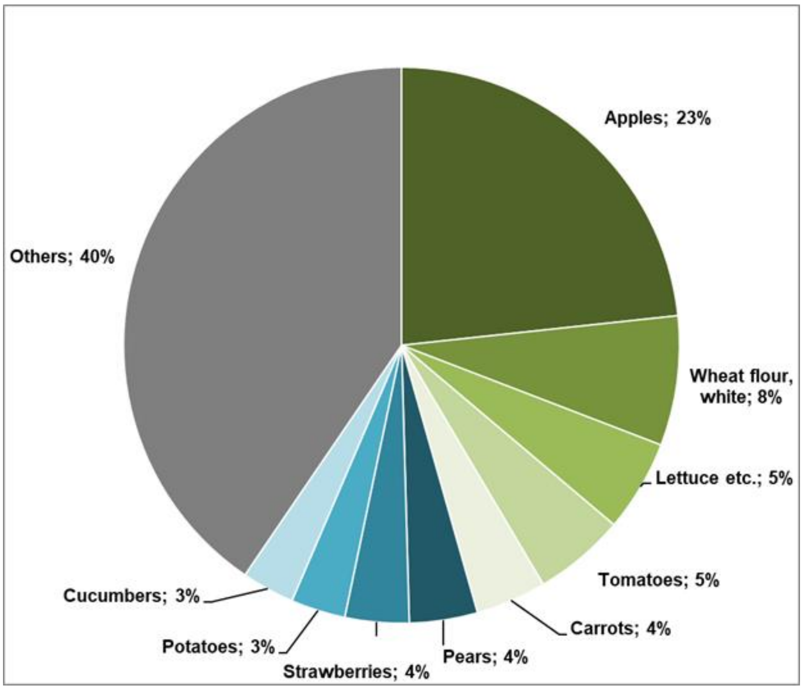

Figure 8. *Relative contribution of* ***commodities*** *to* ***HI*** *for pesticide residues in the diet. Consumer group: Adults; estimated diet Hazard Index: 6.5%. "Other" represents 129 different commodities. Model 3*

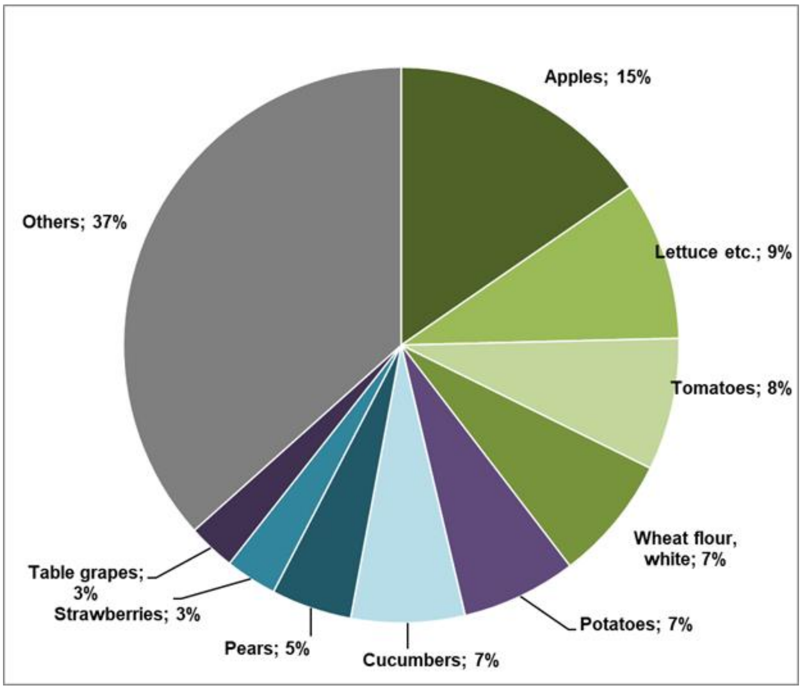

Figure 9. *Relative contribution of* ***commodities*** *to total* ***exposure*** *to pesticide residues in the diet. Consumer group: Adults; estimated total exposure: 1.3 µg/kg bw/day. "Other" represents 129 different commodities. Model 3.*

Pesticides that contributes most to exposure and HI

The contribution of each pesticide to the exposure, as well as to the HI has been calculated for the consumer groups “Adults” and “Children 4-6 years” by using Model 3, as described previously. Details are shown for individual pesticides in Appendix 7.7. For children aged 4-6 years, the HQs for the individual pesticides ranged from 0 to 7.2%; only 5 substances had an HQ > 1% (see Appendix 7.8). For adults, the HQs for the individual pesticides ranged from 0 to 2.0%; only 3 substances had an HQ > 1 % (see Appendix 7.8). These HQs indicate that there is no appreciable risk of adverse health effects following dietary exposure to the individual pesticides.

The exposure and HQs for the 20 pesticides that had the highest HQ for the consumer group “Adults” are shown in Table 16. The sum of HQ constitutes about 75% of the total HI and about 45% of the total exposure. As can be seen in Table 16, there is a big difference in ordering the pesticides according to the exposure or the HQ, which is mainly due to differences in their ADI.

Table 16. *Exposure and HQ for the group "Adults" and the 20 pesticides that contribute most to the Hazard Index*

Pesticide name	Exposure (μg/kg bw/day)	Hazard Quotient %
Dithiocarbamates	0.011	1.1
Chlorpyrifos	0.010	1.0
Pirimiphos-methyl	0.013	0.33
Boscalid	0.11	0.28
Aldrin and Dieldrin	0.00028	0.28
Imazalil	0.053	0.21
Cyhalothrin, lambda-	0.0041	0.16
Chlorpyrifos-methyl	0.013	0.13
Cyprodinil	0.039	0.13
Chlormequat	0.051	0.13
Bitertanol	0.0037	0.12
Chlorpropham	0.061	0.12
Dichlorvos	0.000081	0.10
Iprodione	0.060	0.10
Indoxacarb	0.0060	0.10
Prosulfocarb	0.0049	0.097
Difenoconazole	0.0095	0.095
Deltamethrin	0.0094	0.094
Pyraclostrobin	0.028	0.094
Diazinon	0.00018	0.092
Sum[1)]	0.59	4.8
Total	1.3	6.4
% of total	45	75

1) *Summing has been performed using more decimals on individual exposures/HQs than shown in the table.*

Figure 10 shows the nine pesticides that contribute most to the HI for “Adults”, i.e. dithiocarbamates, chlorpyrifos, pirimiphos-methyl, boscalid, aldrin and dieldrin, imazalil, lambda-cyhalotrin, chlorpyrifos-methyl and cyprodinil, together with the contributions from the rest of the pesticides (“Others”). Figure 11 shows the nine pesticides that contribute most to the exposure, i.e. propamocarb, boscalid, dithiocarbamates, pyrimethanil, glyphosate, chlorpropham, iprodione, fludioxonil and imazalil, together with the contributions from the rest of the pesticides (“Others”). Among the ‘top nine’ pesticides contributing most to both HI and exposure are boscalid, dithiocarbamates and imazalil while the other six ‘top nine’ pesticides were different in terms of contribution to exposure and HI. For example, dithiocarbamates contribute most to the HI while propamocarb contributes most to the exposure; the HQ for propamocarb is so low that this pesticide is not among the 20 pesticides with highest HQ values. The ‘top nine’ pesticides account for approximately half of the HI as well as of the exposure. The ‘top nine’ pesticides are approved in the EU with the exception of aldrin and dieldrin.

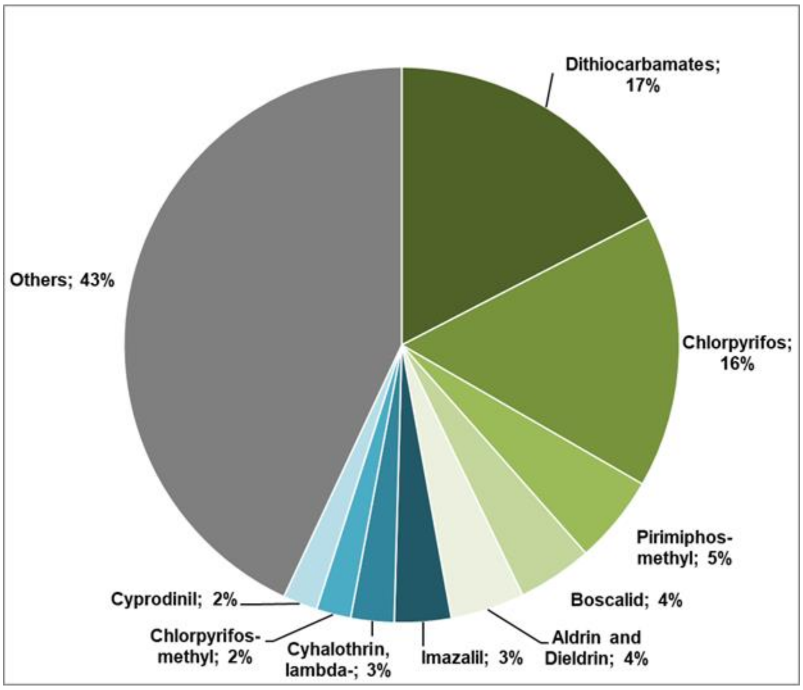

Figure 10. *Relative contribution of* ***pesticides*** *to* ***HI*** *for pesticide residues in the diet. Consumer group: Adults; estimated Hazard Index: 6.4%. "Other" represents 169 different pesticides. Model 3.*

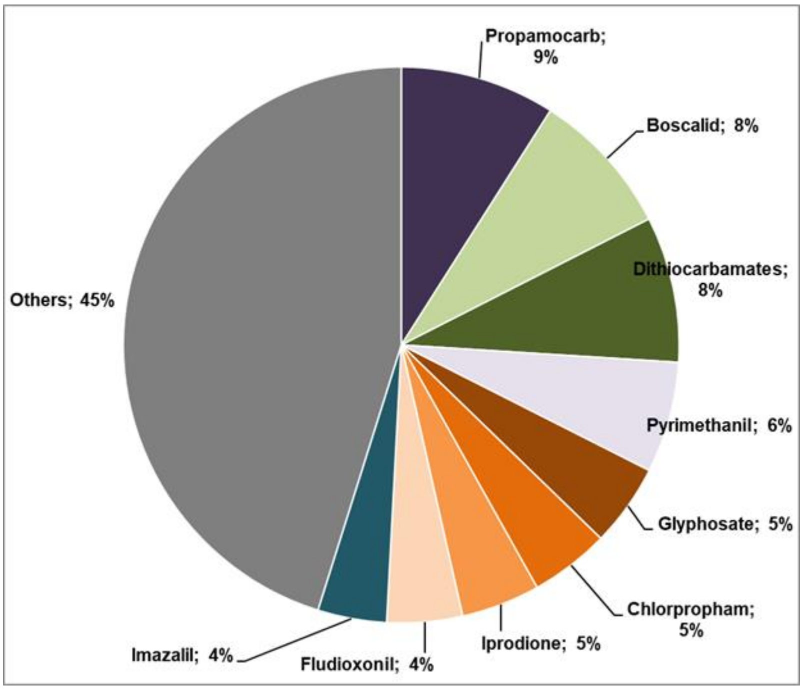

Figure 11. *Relative contribution of* ***pesticides*** *to total* ***exposure*** *to pesticide residues in the diet. Consumer group: Adults; estimated total exposure: 1.3 µg/kg bw/day. "Other" represents 169 different pesticides. Model 3.*

Effect on exposure to pesticide residues due to origin of commodities

Some commodities originate only from foreign countries, e.g. oranges while other commodities are produced both in Denmark and in foreign countries, e.g. apples. Since Danish commodities in general have lower contents and lower frequencies of pesticide residues compared to commodities of foreign origin, the average exposure can be expected to be lower when Danish commodities are eaten whenever possible. As can be seen in Figure 2 and 3, fruit and vegetables from the EU and outside the EU have a higher frequency of pesticide residues compared to fruit and vegetables produced in Denmark. Therefore, the origin of the commodities can have an impact on the exposure to pesticides, as well as to the HI.

The exposure to pesticides has been calculated assuming that the consumers eat commodities of Danish origin whenever possible, e.g. only Danish apples and pears, but only oranges from non-domestic countries since oranges are not grown in Denmark. Model 3 was used in the calculation of HI. The results are shown in Table 17. As can be seen both exposure and HI decreased when Danish produced commodities are preferred compared to eating commodities of both Danish and foreign origin. For all consumer groups the HI was reduced with about 1/3 when choosing Danish whenever possible.

Effect on exposure for consumers having a high consumption of fruit and vegetables

In Denmark, the Danish Food and Veterinary Administration recommends that everyone above 10 years of age eat 600 g of fruit and vegetables per day. Calculations have been performed to investigate the impact of a high consumption of fruits and vegetables on the exposure to pesticides for the consumer groups, men and women. The calculations were performed by taking all the participants in the food dietary survey who consumed more than 600 gram of fruits and vegetables and calculate the exposure for these persons (high consumers). Model 3 was used for this calculation. The results are shown in Table 17. Women had both a higher exposure and HI compared to men, which can be explaned with the fact that women generally eat more fruit and vegetables than men.

Table17. *Exposure and HI for average consumers and for consumers with high consumption of fruit and vegetables (above 600 g/day excluding potatoes) as well as consumers that choose Danish grown commodities whenever possible [a)].*

Consumer group	Exposure (µg/kg bw/day)	Hazard Index %
Children 4-6 years average consumption	3.5	17
Children 4-6 years, domestic preferred	2.5	11
Adults, average consumption	1.3	6.4
Adults, average consumption, domestic preferred	0.9	4.0
Men, average consumption	1.2	5.5
Men, average consumption, domestic preferred	0.8	3.4
Men, high consumption	2.1	10
Men, high consumption, domestic preferred	1.4	6.3
Women, average consumption	1.5	7.3
Women, average consumption, domestic preferred	1.0	4.5
Women, high consumption	2.3	12
Women, high consumption, domestic preferred	1.6	7.2

Comparison of exposure and HI for the two periods 2004-2011 and 2012–2017

The exposure and HI have been calculated for both monitoring periods, i.e. 2004-2011 and 2012-2017.

The Model 2 for exposure calculation was the same for the two periods, but the number of pesticides, reporting limits, commodities with consumption data and ADIs were not quite the same for the two periods:

Pesticide profile: The present period included and detected a higher number of pesticides. Since 2011, the number of pesticides in the monitoring programme has increased from 275 pesticides to about 314 pesticides including metabolites.

Reporting limits: In some cases reporting limits were different between the two periods. In most cases where a difference were seen the reporting limit were lower. This might influence the differences between the two periods.

Commodities with consumptions data: The present period included a higher number of commodities with consumption, about 136 commodities, while 130 commodities were included in the previous period. However, the 25 commodities that contributed most to the exposure were included in both periods. Consumption data from the survey performed in the period 2011-2013 were used in the present period while consumption data from the period 2003-2008 were used in the previous period.

ADIs: The ADIs changed for some of the substances between the two periods.

Age groups: Estimation of exposure was performed for children aged 4-6 years for both periods. For comparison, the exposure was also calculated for other children age groups, i.e. children aged 1-3 years and children aged 7-14 years in the present report. The calculations showed that the children aged 4-6 years had the highest HI compared to the other age groups.

Table 18 shows the average exposure for men, women and children for both periods.

Table 18 *Comparison of the average intake and HI for men, women and children using Model 2 for the two periods 2004-2011 and 2012-2017.*

	Children 4-6 years	Adults 15-75 years	Women 15-75 years	Men 15-75 years
	Exposure µg/kg bw/day			
Exposure µg/kg bw/day 2012-2017	4.8	1.8	2.8	1.6
Exposure µg/kg bw/day 2004-2011	4.5	1.9	2.0	1.6
	Hazard Index, %			
Hazard Index 2012-2017	36	13	14	11
Hazard Index 2004-2011	44	18	20	14

For all consumer groups the exposure was almost the same for the two periods while the HI decreased for all consumer groups indicating that less toxic pesticides were detected in the present period compared to the previous period.

It should be emphasised that the HI was well below 100% for all consumer groups in both periods.

Table 19 shows the 20 pesticides with the highest HQs in the period 2012-2017. Only six of the pesticides were also among the 20 pesticides with the highest HQs in the period 2004-2011. As can be seen the HQ for these substances is less in the present period compared to the previous period, except for the dithiocarbamates. For the dithiocarbamates a five times lower ADI was used for the HQ calculations in the present period compared to the previous period. Bitertanol has first been banned in the EU during the present period, which can explain that this substance was found in the monitoring programme. Aldrin and dieldrin have been banned globally since 1970s and are included in the Stockholm Convention on persistent organic pollutants (POPs). Since the substances are very persistent in the environment, residues of the substances are still found in the environment. These substances were detected in some vegetables, in meat from New Zealand and carrots from the Netherlands. Dichlorvos and diazinon were both banned in 2007 in the EU, but might still be allowed for use outside the EU. For dichlorvos the HQ was almost the same in both periods. For diazinon the HQ was reduced with a factor of 26 compared to the previous period.

Table 19. *Hazard Quotients (HQ) for the 20 pesticides that contribute most to the HI for the consumer group "Adults", present vs. previous periode (the EU Pesticide database).*

Pesticide name	Hazard Quotient 2012-2017	Hazard Quotient 2004-2011	Status under 1107/2009
Dithiocarbamates	1.1	0.42	Some approved[1]
Chlorpyrifos	1.0		Approved
Pirimiphos-methyl	0.33	1.1	Approved
Boscalid	0.28		Approved
Aldrin and Dieldrin	0.28		Not approved (since 1970s)
Imazalil	0.21	0.29	Approved
Cyhalothrin, lambda-	0.16		Approved
Chlorpyrifos-methyl	0.13		Approved
Cyprodinil	0.13		Approved
Chlormequat	0.13		Approved
Bitertanol	0.12	0.30	Not approved (since 2013)
Chlorpropham	0.12		Approved
Dichlorvos	0.10	0.12	Not approved (since 2007)
Iprodione	0.10		Approved
Indoxacarb	0.10		Approved
Prosulfocarb	0.097		Approved
Difenoconazole	0.095		Approved
Deltamethrin	0.094		Approved
Pyraclostrobin	0.094		Approved
Diazinon	0.092	2.4	Not approved (since 2007)

1) Dithiocarbamates include a group of substances: maneb, mancozeb, metiram, propineb, thiram and ziram. Mancozeb, metiram and ziram is approved for uses in the EU.

Conclusion for exposure and risk assessment

The average exposure to pesticides for the group “Adults” was calculated to be 1.8 µg/kg/bw/day using Model 2. This model takes into account both processing factors and that all non-detects from all countries could have contents above zero. Children have the highest average exposure per kg bw (4.8 µg/kg/bw/day) compared to woman and men (2.0 µg/kg/bw/day and 1.6 µg/kg/bw/day, respectively) since childre eat more per kg bw. Women had a higher exposure compared to men since woman eat more fruit and vegetables compared to men.

Consumers (men and women) eating more than 600 g of fruit and vegetables per day have an exposure that was higher than the average exposure, namely 3.1 µg/kg/bw/day compared to 2.0 µg/kg/bw/day for women and 2.8 µg/kg/bw/day compared to 1.6 µg/kg/bw/day for men.

Choosing Danish produced commodities whenever possible compared to eating commodities of both Danish and foreign origin has an impact on the exposure as well as on the HI. For all consumer groups (“Adults”, “Men”, “Women”, “Children “, “High consumers” (male or female)), the exposure was reduced about 30 % when choosing Danish whenever possible.

The risk assessment of the cumulative exposure was performed by the HI method. The HQ was calculated for each individual pesticide and then summed into the HI. The HQs for the individual pesticides range from 0 to 7.2% for children aged 4-6 years and from 0 to 2.0 % for adults with most of the HQs (97-98%) being below 1% (see Appendix 7.8), indicating that there is no appreciable risk of adverse health effects following exposure to the individual pesticides. The HI for “Adults” was 13% with the preferred model, i.e. Model 2. The HI was highest for children (36%), compared to women (14%) and men (11%). For high consumers (men and women) eating more than 600 g fruit and vegetable per day, the HI increased from 11% to 20% for men and for women the HI increased from 14% to 24%. The HI of 13% for adults and 36% for children indicate that there is no appreciable risk of adverse health effects following cumulative exposure to all the pesticides detected in the present period. The HI method assumes the same kind of adverse health effect for all the detected pesticides and therefore, it is a relatively conservative (precautionary) approach for cumulative risk assessment; the method was used in this report to give an indication of whether there is an appreciable risk of adverse health effects following cumulative exposure or not. Furthermore, the HI method gives indications of the commodities and pesticides that contribute most to the exposure, as well as to the HI.

About 85% of the HI and 81% of the exposure was accounted for by 25 different commodities. Regarding pesticides, the ‘top nine’ pesticides account for approximately half of the HI as well as of the exposure.

Summarising the results of the exposure and the HI calculations (based on ADI) it can be concluded that, according to our current knowledge there is no appreciable risk of adverse health effects following dietary exposure to the individual pesticides, as well as to cumulative dietary exposure to all the pesticides detected in the present period, even for high consumers (adults) who eat more than 600 g of fruit and vegetables each day.

On the other hand, exposure to pesticide residues from the food should not be ignored. The basis for exposure calculations for Danish consumers could be further improved by:

1. Expanding the number of pesticides in the monitoring programme.
2. Increasing the number of samples where residues are expected.
3. Increasing the sensitivity of the analytical methods in order to minimize the uncertainty in the data modelling.
4. Providing detailed dietary information for commodities where residues are expected.

4.4 Pesticide load

In order to identify critical sources of pesticide exposure and quantify the load of these pesticides in food on consumer health risk, the term Pesticide Load (PL) has been established in previous work (Andersen et al., 2014; Andersen et al., 2016).

The pesticide load (PL) occurring in food is defined as:

$$\text{PL (kg body weight/(kg food/day))} = \sum_{\substack{\text{pesticides} \\ \text{in food}}} \frac{\text{average concentration of pesticide (mg pesticide/kg food)}}{\text{ADI (mg pesticide/(kg body weight/day))}}$$

PL is calculated as a ratio comparing the average amount of pesticide residues in a food commodity with the acceptable daily intake (ADI) of every occurring pesticide.

If PL (the numerical value) is equal to the weight of a person, that person can consume 1 kg of a commodity without being presented to an appreciable risk of adverse health effects, provided that this commodity is the only source of the pesticide residues. For example, if PL for a commodity is 60, an individual with a bodyweight of 60 kg can consume 1 kg of this commodity, and an individual with a bodyweight of 15 kg can consume 250 g of this commodity without being presented to an appreciable risk of adverse health effects. If PL is 30, an individual with a bodyweight of 60 kg can consume 2 kg of this commodity without being presented to an appreciable risk of adverse health effects.

As PL is a function of ADI, PL evaluates the chronic effects of pesticides. In contrast to exposure, PL is independent of the amount of food consumed and thus also of the consumer e.g. adults, children of different ages. It is possible to make a simple ranking of both food commodities and pesticides occurring in the food samples according to their PL.

In this report PL is calculated on basis of data from the Danish pesticide monitoring program 2012-2017 (see Section 4.1) and ADI values (Appendix 7.5). Since pesticides are much less frequently detected in organic grown commodities, these are not included. Two different consumer groups are used: adults 15-75 years and children 4-6 years.

PL for food commodities consumed is calculated using Model 3. This model is less conservative than Model 2, but is considered to be less biased when comparing pesticide load between countries, commodities, pesticides and/or consumption patterns.

As the PL is based on the data obtained for this period (2012-2017) possible changes in the pesticide concentrations in the commodities will influence future PL values.

In Figure 12 food commodities are ranked according to their PL.

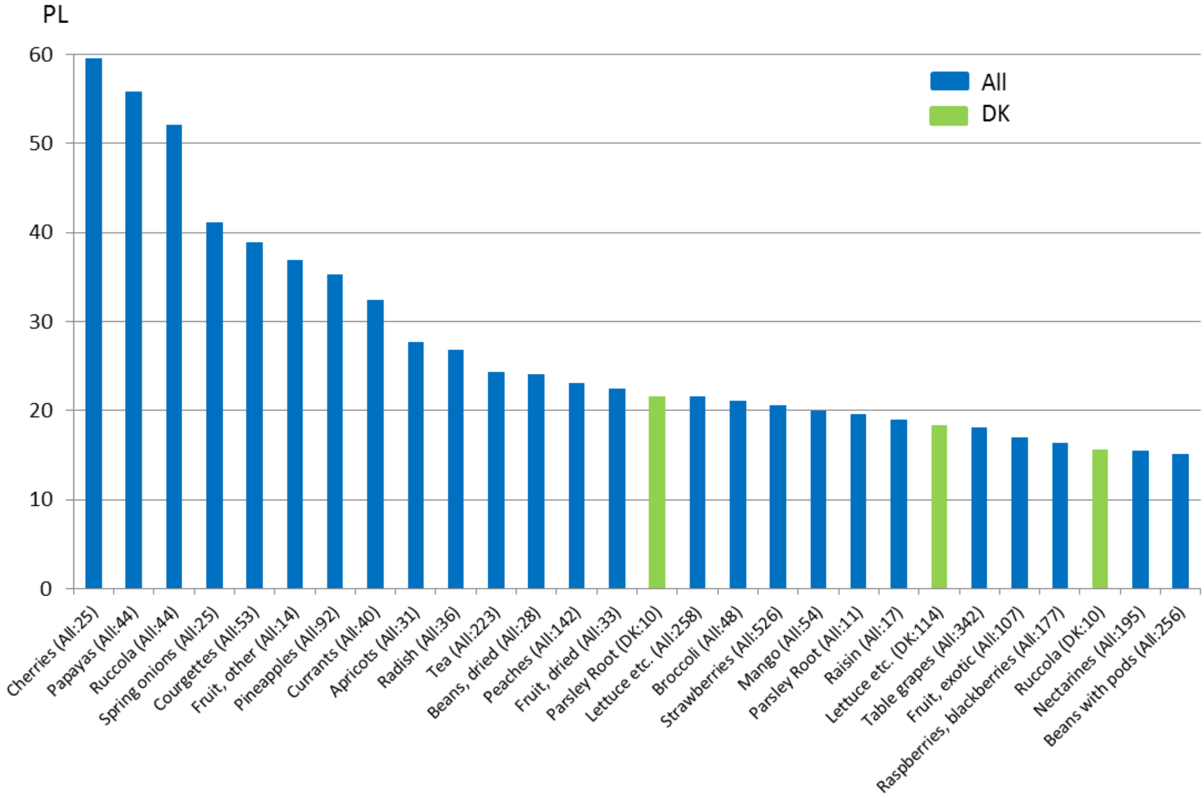

Figure 12. *The pesticide load (PL) of food commodities representing both ordinary consumers (all, shown in blue) and consumers who choose Danish produced commodities whenever possible (DK, shown in green) using Model 3. Only food commodities with more than 10 samples and PL values between 15 and 60 are shown.*

In total 131 food commodities of both Danish and foreign origins were analysed and only commodities with more than 10 samples are presented. Seven food samples had a PL higher than 60, 28 samples showed PL between 60 and 15, and 96 samples had PL lower than 15. Only three food commodities produced in Denmark had PL higher than 15 (parsley root, lettuce and ruccola).

For 34 commodities the consumer had a choice of a corresponding Danish product. Of these 28 had a lower PL when produced in Denmark whereas for six commodities (head cabbage, kale, onions, parsley root, parsnip and pumpkin) the PL was higher in the Danish samples.

Leaves of coriander (PL: 193), chives (PL: 129), spices (PL: 127) and chili peppers (PL: 97) were found to have very high values of PL. Herbs fresh (PL: 69) and dried (PL: 64) as well as parsley (PL: 60) had also high PL values. However, these food commodities are not consumed in large quantities.

When PL is multiplied with the consumption (M), the HI (See section 4.3) is obtained:

$$HI = PL(\text{kg body weight}/(\text{kg food/day}) * M\ (\text{kg food/day})/\text{kg body weight})$$

HI can be presented as the area limited by the axes and the point of interest in a simple plot of PL versus consumption (M). To illustrate whether the high contribution of a commodity to HI is caused by a high PL or a high consumption, or both, PL is plotted versus M. Figure 13 shows the HI split into the PL and M for the 'Top-9' commodities (see section 4.3) contributing most to the overall HI for adults 15-75 years (shown in Figure 8) and children 4-6 years, respectively; it should be noted that two commodities are different for children and adults. Adults having potatoes in 'Top-9' and children having sweet peppers. Data on consumption for adults (men and women) 15-75 years and children 4-6 years is collected from the Danish Nation Survey of Diet and physical activity (see Annex 6.1).

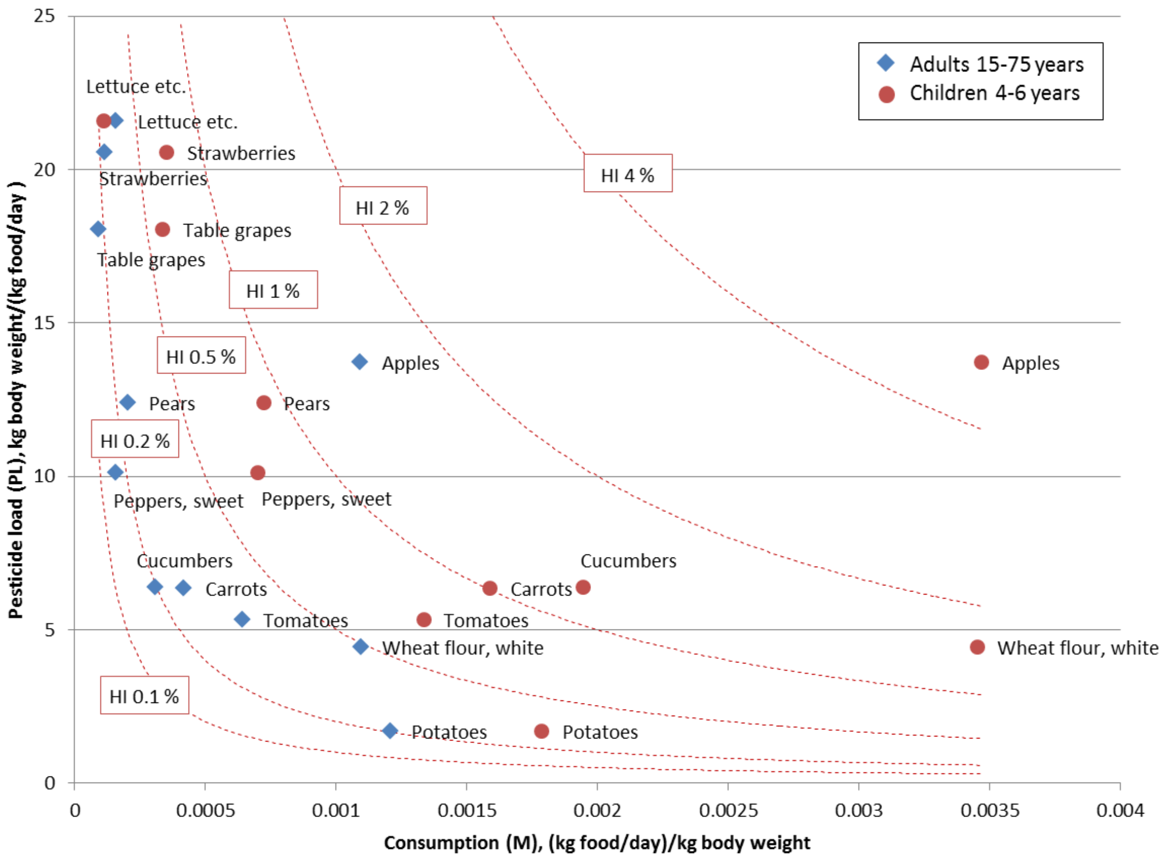

Figure 13. *Consumption (M) of food commodities consumed by adults 15-75 years and children 4-6 years (ordinary consumers, all) versus the pesticide load (PL). Only food commodities with more than 10 samples are shown and for the nine commodities with the highest HI for both consumer group. For illustration, dashed lines through points in the graph area representing same HI, is shown.*

PL is independent of food consumption and thus the y-axis representing PL is the same for both children and adults in Figure 13. Clearly apples and wheat flour are the food commodities having the highest HI for both consumer groups. Both commodities have high consumption rates within each comsumer group, and furthermore apples have a rather high PL. In general, for all shown commodities, children have the highest HI values. Children 4-6 years have a large consumption (0.0034 (kg food/day)/kg bw)) of apples compared to their body weight than adults (0.0012 (kg food/day)/kg bw)), resulting in a much higher HI (4.7%) compared to HI (1.5%) for adults.

For cucumbers, carrots, tomatoes, strawberries, pears, table grapes, potatoes and sweet peppers the trends are the same, children 4-6 years are consuming more of these commodities per kg body weight compared to adults and thus obtaining a higher exposure and HI. Strawberries and pears have a higher PL, but are consumed in less quantities, whereas cucumbers, carrots and tomatoes have a lower PL, but are consumed in higher quantities. Only lettuce has a slightly higher HI for adults compared to children.By selection of the nine commodities contributing most to the overall HI, table grapes and sweet peppers were found in children's 'top nine' but not in 'top nine' for adults. In contrast, potatoes and lettuce were among the 'top nine' for adults, but not for children. All of them are though shown in Figure 13.

In Figure 14, PL for commodities produced in Denmark (DK) and outside Denmark (non-DK) is plotted versus M for adults 15-75 years.

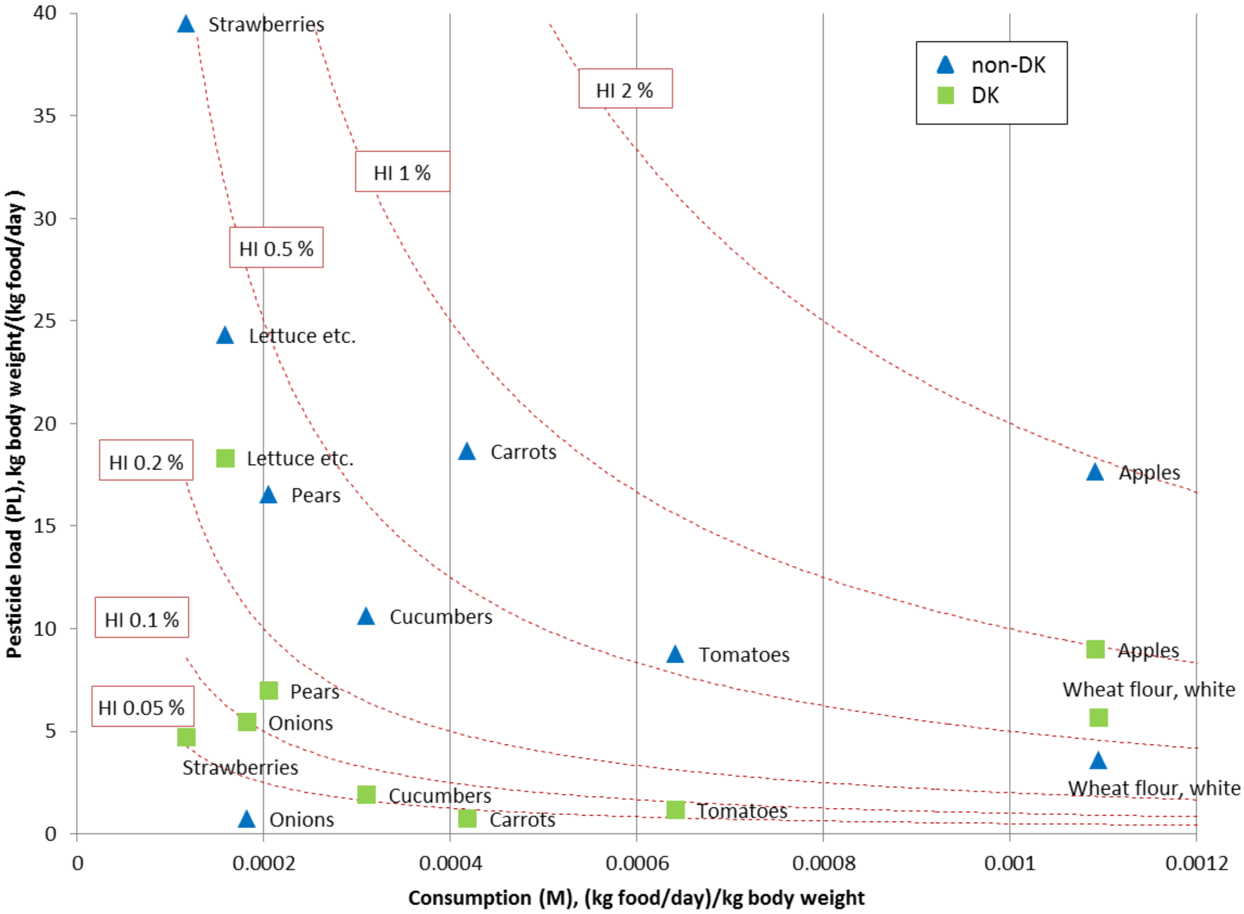

Figure 14. ***C**onsumption (M) of food commodities for adults 15-75 years versus the pesticide load (PL) for food produced in Denmark (DK) and outside Denmark (non-DK). Only food commodities with more than 10 samples are shown and for the nine commodities with the highest HI for both DK and non-DK. For illustration, dashed lines through points in the graph area representing same HI, is shown.*

Consumption for each commodity is plotted along the x-axis. The PL for each commodity as found in Danish or non-Danish grown foods, respectively, is plotted along the y-axis. Differences in PL, as well as contribution to HI will depend on the consumer's preference of origin for each commodity. A matching figure could be made for children with a different level of consumption (not shown).

In the 'top-nine' of food groups with highest HI values, onion is found on the list of Danish produced products, but not on the foreign list. In contrast, carrots are found on the foreign list, but not on the Danish list.

With the exception of wheat flour and onions, PL for all other commodities is found to be lower for Danish produced products compared to PL for the same commodity produced outside Denmark, respectively. Thus consumers can minimize their PL by choosing Danish produced products. In the case of apples HI can be reduced from 2% to 1%, whereas for strawberries, having a large difference in PL, it is possible to obtain a reduction of HI from 0.5% to 0.05%.

Pesticide contribution

A more specific qualitative analysis of the individual pesticides is valuable in order to understand their distinct contribution to the overall PL. Table 20 shows PL values for the individual pesticides in apples both grown in Denmark and in other countries.

Table 20. PL for pesticides in apples from different countries. Only results from countries with more than 10 samples are shown as well as only pesticides with PL higher than one. The only exception is samples from Brazil due to the high PL.

Country	Samples analysed	Pesticides detected	PL	Pesticide
All	380	34	13.7	
Denmark	174	15	9.0	
	114		2.0	Bitertanol
	99		2.5	Dithiocarbamates
	142		1.1	Prosulfocarb
non-DK	206	27	17.6	
France	33	11	10.6	
	28		7.6	Chlorpyrifos
Germany	27	10	14.5	
	26		5.3	Chlorpyrifos
	17		7.2	Dithiocarbamates
Italy	92	19	18.0	
	82		9.7	Chlorpyrifos
	66		1.2	Dinocap (sum)
	56		2.1	Dithiocarbamates
Poland	12	9	9.1	
	8		6.3	Chlorpyrifos
Brazil	8	8	57.7	
	5		53.0	Dithiocarbamates
	7		2.4	Phosmet (sum)

PL for apples was 13.7 for all analysed samples, whereas PL was 9.0 for Danish grown apples, but 17.6 for apples from other countries.

In 174 samples of apples from Denmark 15 pesticides have been detected of which three pesticides showed PL values higher than 1. In comparison, 27 different pesticides were detected in 206 apple samples from foreign countries of which four pesticides showed PL values higher than 1.

Biternol, dithiocarbamates and prosulfocarb contributed most to the PL of Danish produced apples whereas dithiocarbamates and chlorpyrifos were the major contributors to PL in products produced in EU. All non-EU countries were represented with less than 10 samples, having PL 1-15. Only Brazil (eight samples) is shown due to a high PL for dithiocarbamates.

It is important to recall that PL is based on historical data (2012 to 2017 in this report). Thus, there can be changes during this period in ADI and/or the legal use of pesticides. Dithiocarbamates contributed to PL in most of the apple samples whereas consumers preferring Danish produced apples would have an exposure from bitertanol and proculfocarb, but none from chlorpyrifos. Bitertanol has not been authorised for use in Denmark since 2012. Prosulfocarb has never been authorised for use in apples in Denmark, but it is authorised for use in winter cereals; due to use in the autumn and evaporation of the substance, apples have been contaminated with the substance. Chlorpyrifos has never been authorised for agricultural use in Denmark; it has been authorised as a biocide against ants and insects, but is not allowed to use today.

In wheat flour (refined, white) pirimiphos-methyl and chlormequat contribute to the PL for wheat produced outside Denmark whereas pirimiphos-methyl (detected in three out of 83 samples) and chlorpyrifos-methyl (detected in one out of 83 samples) are the major contributors to the PL for Danish produced wheat flour. These two substances have never been authorised for use in Denmark. The contents might be caused by cross-contamination during milling from imported cereals containing the residues. Pirimiphos-methyl is authorised for use in countries outside Denmark as post-harvest treatment against insects with application direct to seeds, whereas chlorpyriphos-methyl is authorised for used in countries outside Denmark as foliar treatment in cereals.

The PL values of pesticides in tomatoes are often found to be less than one. In 157 samples of Danish produced tomatoes nine different pesticides contributed to the overall PL, but all below one. For tomatoes grown outside Denmark 48 different pesticides occurred in 208 samples with up to 25 different pesticides from one country.

A notable difference in the PL was found for strawberries grown in Denmark (PL 4.7) compared to foreign countries (PL 39). Eighteen pesticides were detected in Danish strawberries, but only boscalid showed a PL higher than one. For non-DK samples a very high PL (116) was found for dichlorvos and a high PL (18) for omethoate.

Carrots were found to have a fairly high PL and are consumed in larger amounts. For countries outside Denmark higher PLs were found for linuron (PL 4.0-5.5), prosulfocarb (PL 1.8), and in samples from one country, aldrin and dieldrin (PL 76). Linuron was not renewed in the EU and the approval of the substance expired in July 2017. Aldrin and dieldrin have been banned since 1970s and are included in the Stockholm Convention on persistent organic pollutants (POPs). Since the substance is very persistant in the environment residues of the substance is still present in the environment, which can explain the detections in carrots and meat. The substance has a very low ADI, which can explain the considerable contribution to the overall PL. In 261 samples of Danish carrots PL was 0.7 with five pesticides detected.

Conclusion

PL is a very valuable tool to approach quantification of the pesticide load in food commodities on consumer health risk. PL makes it possible to rank both commodities and pesticides according to their PL and for the consumer to obtain information on how HI of their food intake can be affected.

On basis of PL combined with consumption the general conclusion is, as previously stated, that consumers exposure can be reduced by choosing Danish grown commodities whenever available. For children 4-6 years a well-considered selection of Danish products could reduce their higher exposure to pesticides.

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6 Annexes

6.1 Exposure calculations

Exposure to pesticide residues from food has been calculated from an estimate of the average content in foods of pesticides included in the monitoring programmes combined with the estimated average consumption of Danish consumer groups.

As previously explained, most pesticides and all important food items in the monitoring programmes have been included all six years (2012-2017). All pesticides found in the monitoring programmes were used in the exposure calculations, but the available data for recently included pesticides do not necessarily cover all years.

The monitoring programme primarily includes fresh fruit, vegetables and cereals. For some commodities, a part of the samples were sampled as frozen food. Results from these samples have been included in the results for fresh items.

In general, commodities were analysed with peels conforming to the definitions of maximum residue levels and thus, the measured content might include parts that are not normally consumed. For citrus fruits, banana and melons, processing factors have been used for the reduction of pesticide contents due to peeling (see below). No other processing factors have been included for the reduction of residues that may occur during preparation of the food, e.g. heating and washing, as this is the most conservative approach.

The organically grown food items have been excluded from the exposure calculations, since the consumption of organically grown foods are expected to be very unevenly distributed between consumers. In the report on pesticide residues 1998-2003 (Poulsen et al., 2004) it was estimated that including the organically grown samples (4% of total samples) the exposure would be reduced by approximately 6%. In the present report, organically grown samples (8% of total samples) were excluded from exposure calculations. Since the organically grown samples have not been taking into account in the eating habits the estimations of the exposure calculations and HI is considered to be conservative.

Consumption data for children from 4 years and adults (15-75 years of age)

For children age 4 -6 years and adults 15-75 years, the data were collected as a part of DANSDA (DAnish National Survey of Diet and physical Activity) in 2011-2013 and is a subset of the data reported in “Danskernes kostvaner 2011-13” (Pedersen et al. 2015). The subset was chosen taking into account the most recently published data matching the period for chemical analysis best. The dataset covers exposure of food and beverages recorded for seven consecutive days collected from a representative sample of 3946 Danish consumers aged 4 to 75 years. The population was drawn as simple random sample from the civil population registration system. In comparison with census data from Statistics Denmark, the distribution of gender and age of the participants could be characterized as representative for the Danish population. The participants recorded their food intake for seven consecutive days in a precoded (semi-closed) food diary with answering categories for the most commonly consumed foods and dishes in the Danish diet. The food diary was organized according to the typical Danish daily meal pattern. For food items not found in the pre-coded categories it was possible to note type and amount eaten. The amounts of food eaten were given in household measures and estimated from photos of different portion sizes. The information collected represents information about the current dietary exposure in the population. The Danish National Centre for Social Research carried out an interview on socioeconomic background and lifestyle, the instruction in registration of the dietary exposure as well as measured height, weight and waist circumference of participants.

Consumption data for children age 1-3 years

For children below 4 years of age the data were from the National dietary survey among young children aged 6-36 month. Data were collected during one year in 2014-2015. Only children aged 12-36 month were included in the assessment, since children aged 6-11 month still mostly consume porridge, purée and milk. The dataset covers 386 children 12-23 months old and 347 children 24-36 months old. A random sample of the children were selected through the Danish Civil Registry and invited to participate in the study. In comparison with census data from Statistics Denmark, the distribution of gender and age of the children could be characterized as representative for the Danish population, however overrepresentation of mothers with medium long and long education occurs.The diet of the children was recorded for seven consecutive days using a web-based structured dietary program. The program was built to be similar to our pre-coded dietary booklets used in previous studies (Trolle et al., 2013). For food items not found in the pre-coded categories it was possible to note type and amount eaten. Description of the web-based structured dietary program is validated and described elsewhere (Biltoft-Jensen et al., 2013, 2014). The Danish National Centre for Social Research carried out an interview on socioeconomic background and lifestyle, the instruction in registration of the diet well as measured height and weight of participants.

Calculation of consumption data

For each participant consumption and the self-reported body weight were combined giving the consumption in g/kg bw/day (or mg/kg bw/day). For food the avereages were then calculated for the relevant consumer group, e.g. children 4-6 years of age.

Consumption data have been disintegrated to ingredients or raw commodities by recipes and then the commodities analysed have been connected to this food item. This means for example that bread, cakes, pasta, tomato ketchup etc. have been disintegrated and do not exist as individual foods. E.g. ketchup has been disintegrated into vinegar, onion, sugar, corn starch, tomato, apples, salt, and mustard. Ingredients as flour has not been disintegrated further.

Calculation of the average content of pesticides

Data have been extracted from the data management system of the Danish Veterinary and Food Administration and transformed to the EFSA Standard Sample Description (Andersen, 2011), expanding the data on detected residues to include full information on the analytical profile for each sample, including the actual reporting limit for non-detected pesticides.

An average content has been calculated for each combination of pesticide, food item and origin if the number of analysed samples were five or more.

Also samples exceeding the MRLs or residues from illegal uses have been included in the calculation of the average concentration. Some of these samples have been withdrawn from the market, but it is likely that other samples would have the same residues and therefore have been consumed. Three samples have, however, been excluded as they were considered not to be representative for food on the Danish market: A sample of bovine meat from New Zealand with a content of dieldrin (0.032 mg/kg), a sample of carrots from Albania with a content of dieldrin (0.31 mg/kg) and a sample of dried maize from Argentina with a content of dichlorvos (1.5 mg/kg). If these samples were included in the calculation of the average content these foods would have had a very high HQ. For bovine meat the sample from New Zealand was the only positive detection at all in bovine meat. Normally carrots and dried maize do not contribute substantially to the HI and not many carrots from Albania are consumed in Denmark. Furthermore, dieldrin and dichlorvos are banned in the EU and therefore, exposure to these substances to a high degree is unlikely.

Origin: As previously shown, the residue levels sometimes differ considerably between countries and grouping of samples with different origin can have a high impact on the exposure estimates. Calculations were performed separately for the two groups, domestic or foreign origin. Two different approaches for grouping of non-domestic samples have been used. One approach (Model 2), which is the most conservative has been used to estimate the total exposure for a consumer group. The other approach (Model 3), which is less conservative has been used where exposure has been compared between different commodities, consumer groups, or countries of origin.

Non-detected residues: Even though a pesticide has been used in a commodity, not all samples of that commodity contain that pesticide. Due to technical and economical limitations in the monitoring programme, some samples will contain residues not detected by the analytical procedures either because the pesticides were not included in the programme or because the residue content was lower than the reporting limit used.

For pesticides where more than one substance is included in the residue definition the highest LOR for the individual substances have been used as LOR for the whole residue definition.

Due to the low detection frequency of most pesticides, it is difficult to set up a model for handling of left censored data (EFSA, 2010). The approach used for estimating the contribution of these non-detected residues to the exposure can have a high impact on the result. For calculating the total exposure four different models have been used:

<u>Model 0: Contents of pesticides below the LOR have been assumed to be zero</u>

In this model, the calculated results might be underestimated, since non-detected residues are ignored.

<u>Model 1: Contents of pesticides not detected have been assumed to be ½ LOR</u>

If a pesticide has not been detected in a commodity/origin combination, the average content of the pesticide is assumed to be 0 (zero) in that commodity/origin combination.

If a pesticide has been detected in a commodity/origin combination, content of pesticides not detected in a sample of that commodity/origin combination (<LOR) have been assumed to be ½LOR.

In this model, the average content is over-estimated because of sometimes very small frequencies of detection, the contribution from the ½ LOR-correction can be very high (in extreme cases up to nearly 3000 times more than the result using Model 0, see previous report 2004-2011 (Petersen et al.)

<u>Model 2: Contents of pesticides not detected have been assumed to be ½LOR with limitations and samples from all foreign countries are merged</u>

The average content is calculated in the same way as in Model 1. But the result from the ½LOR-correction is limited to 25 times the result that has been calculated using Model 0. In this model extreme corrections from the ½LOR-contribution are prevented. The background for this model in the is discussed in the report 2004-2011 (Petersen et al.)

In this model all non-detect samples from foreign countries were corrected with ½LOR even though no residues were found in samples from this country, e.g. if a residue was found in an apple from the Netherlands, all apple samples with a content <LOR were corrected with a value of ½ LOR for all non-domestic samples. This approach is considered to be very conservative and was used to calculate the total exposure and HI in Table 12, 13 and 14, as well as the exposure and HQ for the individual pesticides in Annex 7.8.

<u>Model 3: Contents of pesticides from foreign contries have been calculated separately for each country when more than ten samples was analysed.</u>

In this model the average contents were calculated separately for each country when more than ten samles were analysed, i.e. if a residue of a pesticide was only found in an apple from the Netherlands only samples of apples from the Netherlands have been corrected with ½LOR while for countries without any positive of this pesticide/commodity combination the content was set to zero. A weighted average taking into account the number of samples for each country was calculated, but limited to 25 times the result that was calculated using model 1.

Model 3 is considered to be less conservative than Model 2, but will produce less biased comparisons between origins and commodities. This model has been used for the calculations of the average content in the section describing which commodities and pesticides contributes most to the exposure and HI (Tables 15-16 and Figures 8-11), as well as in the Section 4.4 describing the pesticide load.

Processing factors: Detailed information on the actual processing performed by consumers, as well as the effect on the residue levels is limited. The Federal Institute for Risk Assessment in Germany has collected information on processing factors from different sources, e.g. EFSA reports and reports from JMPR. A processing factor is the ratio between the concentrations in the prepared food compared to the raw food. Exposure to citrus fruits, bananas and melons contributes significantly to the total exposure of pesticides. As these food items mostly are consumed after peeling, corrections have been made for this process (see Appendix 7.5). In general, data have shown that approximately 90% of residues in these food items are found in the peel, and only 10% remains in the edible part except for thiabendazole and pesticides from the benomyl group (carbendazim, thiophanat-methyl and benomyl) where about 25% remains in the edible parts (Appendix 7.5).

Exposure calculations

The contribution to exposure of pesticide residues for each combination of pesticide and food item and origin was calculated from the average content of that pesticide (see previous section) and the estimated average consumption of that food item for different consumer groups. Different approaches have been used to calculate the exposure throughout the report.

For each group of consumers, the individual contributions to the exposure have been summed for food items, pesticides and origin divided into samples of Danish or foreign origin. Since the food surveys did not include information of the origin of the foods eaten it has been assumed that the origin of food items consumed have the same distribution between domestic and foreign produce as the distribution between the samples analysed. However, in the case denoted “Domestic preferred” only the domestic products are consumed whenever available, e.g. the apples consumed are all of Danish origin while oranges are of non-domestic origin.

Not all foods included in the dietary survey were included in the exposure calculations since they were not analysed in the monitoring programme or no residues were found. The contribution to the exposure from foods not analysed is considered to be low either because they are consumed in only small amounts or because they are not expected to contain measurable amounts of residues. Many of the non-included foods were dairy products or processed foods, e.g. strong alcoholic drinks, yeast and chewing gum that were not expected to contain measurable pesticide residues.

However, for some foods it could be anticipated that pesticides could be present in the food. This is the case for mixed juices (concentrate for juice) that should be diluted with water before consumption. These concentrates are produced from fruits and berries, e.g. apples and strawberries, in which pesticides are found, but the composition of the juices are not known. It was therefore not possible to apply a concentration to the consumption.

Also juices prepared from apple, lemon and tomato concentrates have not been analysed, but for these a concentration was calculated using a processing factor from the concentrations in tomato, lemon, and apple, respectively.

Vegetable oils are prepared from raw agricultural commodities that could contain pesticides. Except for olive oil they were not analysed. Residues were found in olive oils in three samples and due to the processing it is expected that vegetable oils will contain no or only a small amount of pesticides.

On the other hand not all foods analysed were included in the dietary survey, but except for a very few cases these foods were either assigned a theoretical consumption or exposure was included through the calculated consumption of raw commodities. As an example of the first cassava, yams, tapioca were grouped into ‘Tropical root and tuber’ and the consumption was set to 0.1% of the consumption of potatoes). As an example of the latter is that analytical results for pasta was not used, only results from flour and kernels.

Uncertainties in the exposure calculations

Calculated results for the exposure to pesticides are subject to some uncertainty partly caused by differences between the real world and the calculating models used and partly because the data used in the modelling is sampled with some statistical uncertainty.

While the uncertainty of the residue contents in the single samples is well described, as determinations were performed by accredited methods (normally an analytical reproducibility standard deviation of 15-25% would be expected), the bias of the average content is not known due to the unknown contribution of non-detected residues and the origin of the food in the diet.

Calculations with different models for the compensation of non-detected residues reveals that differences can be quite high for some pesticides, while in other cases the compensation has a little influence. These effects are described in more details in the reports from 1998-2004 and 2004-2011 (Petersen et al., 2013) and in Annex 6.2 the text from the previous report is reproduced.

As previously mentioned, the food consumption study did not provide information on the origin of the consumed food. The sample plans from the monitoring programmes normally target samples to the expected distribution between consumption of domestic and foreign grown items, but the actual distribution might differ from this estimate.

In Model 2 the foreign grown samples may include samples from different countries with different uses of pesticides, so the algorithm used for corrections overestimate the contribution from non-detected residues.

6.2 Correction for samples with non-detected residues

The influence of the correction of non-detect with a ½LOR has been evaluated in the previous reports (Poulsen et al., 2004, Petersen et al,. 2013. For the present report even when using ½LOR for all the non-detects the HI is below 100% (1) (see Table 13). The HI has decreased for both children and adults compared to the period 2004-2011and therefore, no new examples on the influence of replacing non-detects have been demonstrated and for further explanations please refer to the previous reports.

7 Appendices

7.1 Pesticide residues analysed in fruit and vegetables, and cereals in 2012-2017 and their frequency of detection in conventionally grown crops

Pesticide	Fruit and vegetables				Cereals			
	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)
2,4-D (sum)	8565	57	(0.7%)	0.01-0.04	1342	0	(0.0%)	0.01-0.15
2-Naphthoxyacetic acid	5987	0	(0.0%)	0.01-0.096	1342	0	(0.0%)	0.01-0.15
4-Chlorophenoxy acetic acid	8565	0	(0.0%)	0.01-0.085	1342	0	(0.0%)	0.01-0.33
Abamectin (sum)	1128	6	(0.5%)	0.01	15	0	(0.0%)	0.01
Acephate	8565	4	(0.0%)	0.01	1342	2	(0.1%)	0.01-0.06
Acetamiprid	8565	204	(2.4%)	0.01-0.02	1342	2	(0.1%)	0.01-0.06
Acetochlor	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Acibenzolar-S-methyl (sum)	115	0	(0.0%)	0.01	13	0	(0.0%)	0.02
Acifluorfen	115	0	(0.0%)	0.1				
Aclonifen	8367	15	(0.2%)	0.01-0.02	1233	0	(0.0%)	0.01-0.02
Acrinathrin	5929	1	(0.0%)	0.01-0.095	1327	0	(0.0%)	0.01-0.04
Aldicarb (sum)	8565	0	(0.0%)	0.01-0.019	879	0	(0.0%)	0.01
Aldrin and Dieldrin	8367	7	(0.1%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Allidochlor	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Amidosulfuron	2636	0	(0.0%)	0.01	15	0	(0.0%)	0.01
Amitraz (sum)	2636	0	(0.0%)	0.01	28	0	(0.0%)	0.01
AMPA	29	0	(0.0%)	0.05	305	0	(0.0%)	0.05
Ancymidol	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Anilofos	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Aspon	115	0	(0.0%)	0.01	13	0	(0.0%)	0.02
Atraton	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Atrazine	8565	1	(0.0%)	0.01	989	0	(0.0%)	0.008-0.01
Azaconazole	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Azamethiphos	226	0	(0.0%)	0.01				
Azimsulfuron	2925	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Azinphos-ethyl	8367	2	(0.0%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Azinphos-methyl	5929	1	(0.0%)	0.01-0.114	1328	0	(0.0%)	0.008-0.01
Aziprotryne	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Azoxystrobin	8367	456	(5.4%)	0.01-0.02	1343	2	(0.1%)	0.008-0.01
Beflubutamid	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Benalaxyl	8367	5	(0.1%)	0.01	1233	0	(0.0%)	0.01
Bendiocarb	2636	0	(0.0%)	0.01	28	0	(0.0%)	0.01
Benfuracarb					13	0	(0.0%)	0.1
Benodanil	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Benoxacor	115	0	(0.0%)	0.1	13	0	(0.0%)	0.1
Bensulfuron-methyl	2636	0	(0.0%)	0.01	28	0	(0.0%)	0.01

Pesticide	Fruit and vegetables: Number of samples analysed	Fruit and vegetables: Number of samples with detected residues	Fruit and vegetables: Reporting limit (mg/kg)	Cereals: Number of samples analysed	Cereals: Number of samples with detected residues	Cereals: Reporting limit (mg/kg)
Bensulide	115	0 (0.0%)	0.01	13	0 (0.0%)	0.01
Bentazone (sum)	8565	1 (0.0%)	0.01	1342	0 (0.0%)	0.01-0.03
Benzobicyclon	2636	0 (0.0%)	0.01	15	0 (0.0%)	0.01
Benzoximate	115	0 (0.0%)	0.01	13	0 (0.0%)	0.01
Benzoylprop-Ethyl	115	0 (0.0%)	0.01	13	0 (0.0%)	0.01
Bifenthrin	8367	42 (0.5%)	0.01-0.04	1343	0 (0.0%)	0.01-0.042
Binapacryl				110	0 (0.0%)	0.042
Bitertanol	6552	8 (0.1%)	0.01	463	0 (0.0%)	0.008-0.019
Boscalid	8017	910 (11.4%)	0.01	879	46 (5.2%)	0.01
Bromadiolone	72	0 (0.0%)	0.01			
Bromide ion	100	4 (4.0%)	2.5	29	5 (17.2%)	2.5-5
Bromophos	8367	0 (0.0%)	0.01-0.02	1343	0 (0.0%)	0.008-0.02
Bromophos-ethyl	8367	0 (0.0%)	0.01-0.02	1343	0 (0.0%)	0.008-0.02
Bromopropylate	8367	2 (0.0%)	0.01	1343	0 (0.0%)	0.01-0.042
Bromoxynil (sum)	8565	0 (0.0%)	0.01-0.018	1342	0 (0.0%)	0.01-0.04
Bromuconazole (sum)	8367	0 (0.0%)	0.01	1233	0 (0.0%)	0.01
Bupirimate	7071	15 (0.2%)	0.01	1342	0 (0.0%)	0.008-0.02
Buprofezin	8565	57 (0.7%)	0.01-0.05	1342	21 (1.6%)	0.01-0.03
Butachlor				13	0 (0.0%)	0.01
Butafenacil	115	0 (0.0%)	0.01	13	0 (0.0%)	0.01
Butamifos	115	0 (0.0%)	0.1	13	0 (0.0%)	0.01
Butylate	115	0 (0.0%)	0.02	13	0 (0.0%)	0.01
Cadusafos	8011	0 (0.0%)	0.01	15	0 (0.0%)	0.01
Captafol				110	0 (0.0%)	0.42
Captan				110	0 (0.0%)	0.083
Carbaryl	8399	9 (0.1%)	0.01-0.05	1343	0 (0.0%)	0.01-0.33
Carbendazim and benomyl	8565	195 (2.3%)	0.01-0.25	1342	4 (0.3%)	0.01-0.07
Carbetamide	115	0 (0.0%)	0.02	13	0 (0.0%)	0.01
Carbofuran (sum)	2575	0 (0.0%)	0.01-0.04	424	0 (0.0%)	0.01-0.02
Carbophenothion	8367	0 (0.0%)	0.01-0.02	1343	0 (0.0%)	0.008-0.02
Carbosulfan	2925	0 (0.0%)	0.01	123	0 (0.0%)	0.008-0.1
Carboxin	8395	0 (0.0%)	0.01	1233	0 (0.0%)	0.01
Carfentrazone-ethyl	115	0 (0.0%)	0.01			
Chinomethionat	115	0 (0.0%)	0.1	13	0 (0.0%)	0.1
Chlorantraniliprol	2636	34 (1.3%)	0.01	109	0 (0.0%)	0.01
Chlordane (sum)				110	0 (0.0%)	0.008
Chlordimeform	115	0 (0.0%)	0.01	13	0 (0.0%)	0.01
Chlorfenapyr	8367	2 (0.0%)	0.01-0.08	1233	0 (0.0%)	0.01-0.04
Chlorfenson	8367	0 (0.0%)	0.01	1343	0 (0.0%)	0.008-0.01
Chlorfenvinphos	8367	0 (0.0%)	0.01	1343	0 (0.0%)	0.01-0.042
Chloridazon	115	0 (0.0%)	0.1	13	0 (0.0%)	0.01
Chlorimuron-Ethyl	115	0 (0.0%)	0.01	13	0 (0.0%)	0.01
Chlormephos	8367	0 (0.0%)	0.01	1343	0 (0.0%)	0.008-0.01
Chlormequat	1133	41 (3.6%)	0.01	1101	211 (19.2%)	0.005-0.01
Chlorobenzilate	2921	0 (0.0%)	0.01	464	0 (0.0%)	0.01-0.042
Chloropropylate				110	0 (0.0%)	0.042
Chlorothalonil				110	0 (0.0%)	0.008

Pesticide	Fruit and vegetables				Cereals			
	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)
Chloroxuron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Chlorpropham (sum)	8367	46	(0.5%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Chlorpyrifos	8367	571	(6.8%)	0.01	1343	6	(0.4%)	0.01-0.042
Chlorpyrifos-methyl	8367	22	(0.3%)	0.01-0.05	1343	2	(0.1%)	0.01-0.05
Chlorsulfuron	115	0	(0.0%)	0.01				
Chlorthal-dimethyl	8367	1	(0.0%)	0.01-0.02	1233	0	(0.0%)	0.01-0.02
Chlorthiamid	115	0	(0.0%)	0.1				
Chromafenozide	115	0	(0.0%)	0.01	13	0	(0.0%)	0.02
Cinidon-ethyl	8559	0	(0.0%)	0.01	15	0	(0.0%)	0.01
Cinosulfuron	2636	0	(0.0%)	0.01	28	0	(0.0%)	0.01
Clethodim (sum)	8565	0	(0.0%)	0.01	1342	0	(0.0%)	0.01-0.11
Clodinafop	5634	0	(0.0%)	0.01-0.02	15	0	(0.0%)	0.01
Clodinafop-propargyl	2925	0	(0.0%)	0.02	13	0	(0.0%)	0.01
Clofentezine	8565	13	(0.2%)	0.01-0.023	5	0	(0.0%)	0.01
Clofentezine (sum)					874	0	(0.0%)	0.01
Clomazone	8565	0	(0.0%)	0.01-0.015	1342	0	(0.0%)	0.01-0.05
Clopyralid	8011	2	(0.0%)	0.01-0.1	15	0	(0.0%)	0.01
Clothianidin	1128	1	(0.1%)	0.01				
Coumachlor	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Coumaphos	341	0	(0.0%)	0.01				
Crimidine	115	0	(0.0%)	0.1	13	0	(0.0%)	0.01
Cyanazine	2643	0	(0.0%)	0.01	879	0	(0.0%)	0.01
Cyanofenphos	115	0	(0.0%)	0.1				
Cyazofamid	8011	8	(0.1%)	0.01	15	0	(0.0%)	0.01
Cycloate	115	0	(0.0%)	0.1	13	0	(0.0%)	0.01
Cycloprothrin	115	0	(0.0%)	0.1				
Cycloxydim (sum)	8011	0	(0.0%)	0.01-0.04	15	0	(0.0%)	0.01
Cycluron	115	0	(0.0%)	0.01				
Cyfluthrin	8367	7	(0.1%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Cyhalothrin, lambda-	8367	120	(1.4%)	0.01	1233	0	(0.0%)	0.01
Cyhexatin (sum)	28	0	(0.0%)	0.01				
Cymoxanil	8011	4	(0.0%)	0.01	15	0	(0.0%)	0.01
Cypermethrin	8367	127	(1.5%)	0.01-0.05	1343	3	(0.2%)	0.008-0.01
Cyproconazole	8367	4	(0.0%)	0.01-0.02	1233	0	(0.0%)	0.01-0.02
Cyprodinil	8367	471	(5.6%)	0.01-0.02	1233	0	(0.0%)	0.01
Cyromazine	8565	8	(0.1%)	0.01-0.2	1342	0	(0.0%)	0.01-0.14
Cythioate	115	0	(0.0%)	0.02	13	0	(0.0%)	0.1
Daimuron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
DDT (sum)	8367	2	(0.0%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Deltamethrin	8367	44	(0.5%)	0.01-0.04	1343	28	(2.1%)	0.008-0.02
Demeton-S-Methyl	5929	0	(0.0%)	0.01-0.07	1327	0	(0.0%)	0.01-0.33
Desethyl-Atrazine	115	0	(0.0%)	0.02	13	0	(0.0%)	0.01
Desmedipham	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Diafenthiuron	5375	0	(0.0%)	0.01-0.04				
Dialifos	8367	0	(0.0%)	0.01-0.02	1233	0	(0.0%)	0.01-0.02
Diallate	115	0	(0.0%)	0.1				
Diazinon	8367	10	(0.1%)	0.01	1343	0	(0.0%)	0.008-0.01

Pesticide	Fruit and vegetables				Cereals			
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Dicamba	7	0	(0.0%)	0.01	864	0	(0.0%)	0.01
Dichlofenthion	8367	0	(0.0%)	0.01-0.02	1233	0	(0.0%)	0.01-0.02
Dichlofluanid	8367	0	(0.0%)	0.01	1343	0	(0.0%)	0.008-0.01
Dichlormid	115	0	(0.0%)	0.01	13	0	(0.0%)	0.1
Dichloroaniline, 3,5-	1446	0	(0.0%)	0.01	236	0	(0.0%)	0.01
Dichlorophen	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Dichlorprop (sum)	1128	0	(0.0%)	0.01	188	0	(0.0%)	0.01
Dichlorvos	5564	1	(0.0%)	0.01	1343	2	(0.1%)	0.008-0.01
Diclobutrazol	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Diclofop (sum)	8367	0	(0.0%)	0.01	1233	0	(0.0%)	0.01
Dicloran	8385	1	(0.0%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Dicofol (sum)	8367	7	(0.1%)	0.01	1343	0	(0.0%)	0.01-0.083
Dicrotophos	8011	0	(0.0%)	0.01	15	0	(0.0%)	0.01
Diethofencarb	8565	0	(0.0%)	0.01-0.02	1342	0	(0.0%)	0.01-0.05
Diethyl-m-toluamid, N,N-	72	0	(0.0%)	0.01				
Difenoconazole	8367	169	(2.0%)	0.01-0.02	1233	1	(0.1%)	0.01
Difenoxuron	115	0	(0.0%)	0.01				
Diflubenzuron	2643	4	(0.2%)	0.01-0.02	879	0	(0.0%)	0.01-0.02
Diflufenican	8565	0	(0.0%)	0.01-0.021	879	0	(0.0%)	0.01-0.02
Diflufenzopyr	115	0	(0.0%)	0.1	13	0	(0.0%)	0.1
Dikegulac	115	0	(0.0%)	0.1	13	0	(0.0%)	0.1
Dimethenamid (sum)	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Dimethoate (sum)	8565	18	(0.2%)	0.01	1342	0	(0.0%)	0.01-0.04
Dimethomorph	8559	104	(1.2%)	0.01-0.05	478	0	(0.0%)	0.01-0.1
Dimethylvinphos	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Dimoxystrobin	8559	0	(0.0%)	0.01	15	0	(0.0%)	0.01
Dinex	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Diniconazole	8367	1	(0.0%)	0.01	1233	0	(0.0%)	0.01
Dinocap (sum)	8011	5	(0.1%)	0.01-0.02	15	0	(0.0%)	0.02
Dinotefuran	2751	0	(0.0%)	0.01	28	0	(0.0%)	0.01
Dinoterb	5956	0	(0.0%)	0.01	918	0	(0.0%)	0.01-0.07
Dinoterb (sum)	2609	0	(0.0%)	0.01	424	0	(0.0%)	0.01
Dioxathion	8367	0	(0.0%)	0.01-0.04	1343	0	(0.0%)	0.008-0.04
Diphenamid	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Diphenylamine	8367	12	(0.1%)	0.01-0.05	1343	0	(0.0%)	0.008-0.05
Disulfoton (sum)	8367	0	(0.0%)	0.01-0.05	1233	0	(0.0%)	0.01-0.05
Ditalimfos	8367	0	(0.0%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Dithiocarbamates	2674	181	(6.8%)	0.04-1.5	280	0	(0.0%)	0.04
Dithiopyr	115	0	(0.0%)	0.1	13	0	(0.0%)	0.1
Diuron	2636	1	(0.0%)	0.01	15	0	(0.0%)	0.01
Diuron (sum)					13	0	(0.0%)	0.01
DMST					13	0	(0.0%)	0.1
DNOC	8565	0	(0.0%)	0.01-0.046	1342	0	(0.0%)	0.01-0.08
Doramectin	226	0	(0.0%)	0.01				
Edifenphos	115	0	(0.0%)	0.01				
Emamectin	226	0	(0.0%)	0.01				
Endosulfan (sum)	8367	5	(0.1%)	0.01-0.05	1343	0	(0.0%)	0.008-0.05

Pesticide	Fruit and vegetables				Cereals		
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Endrin	8367	0 (0.0%)	0.01-0.02		1343	0 (0.0%)	0.008-0.02
EPN	8011	0 (0.0%)	0.01-0.1		15	0 (0.0%)	0.01
Epoxiconazole	8565	1 (0.0%)	0.01-0.016		1342	2 (0.1%)	0.01-0.02
Etaconazole	115	0 (0.0%)	0.01		13	0 (0.0%)	0.01
Ethiofencarb	5929	0 (0.0%)	0.01		1327	0 (0.0%)	0.01-0.03
Ethion	8367	1 (0.0%)	0.01		1343	0 (0.0%)	0.008-0.01
Ethiprole	115	0 (0.0%)	0.01		13	0 (0.0%)	0.02
Ethirimol	629	0 (0.0%)	0.01				
Ethofumesate (sum)	115	0 (0.0%)	0.01		13	0 (0.0%)	0.02
Ethoprophos	8011	1 (0.0%)	0.01		15	0 (0.0%)	0.01
Ethoxyquin	2925	0 (0.0%)	0.04-0.05		354	0 (0.0%)	0.04
Etofenprox	8367	116 (1.4%)	0.01		1233	0 (0.0%)	0.01
Etoxazole	320	1 (0.3%)	0.01				
Etrimfos	8367	0 (0.0%)	0.02-0.04		1343	0 (0.0%)	0.02-0.042
Famoxadone	8559	20 (0.2%)	0.01		15	0 (0.0%)	0.01
Famphur	115	0 (0.0%)	0.01		13	0 (0.0%)	0.01
Fenamidone	8011	1 (0.0%)	0.01		15	0 (0.0%)	0.01
Fenamiphos (sum)	8011	1 (0.0%)	0.01-0.02		15	0 (0.0%)	0.01
Fenarimol	8367	1 (0.0%)	0.01		1343	0 (0.0%)	0.008-0.01
Fenazaquin	8559	3 (0.0%)	0.01		478	0 (0.0%)	0.01-0.02
Fenbuconazole	8367	23 (0.3%)	0.01		1233	0 (0.0%)	0.01
Fenbutatin oxide	28	0 (0.0%)	0.01				
Fenchlorphos (sum)	2921	0 (0.0%)	0.04		464	0 (0.0%)	0.04-0.042
Fenfuram					13	0 (0.0%)	0.01
Fenhexamid	8565	305 (3.6%)	0.01-0.02		879	0 (0.0%)	0.01
Fenitrothion	8367	0 (0.0%)	0.01-0.02		1343	0 (0.0%)	0.01-0.042
Fenobucarb	115	0 (0.0%)	0.01		13	0 (0.0%)	0.1
Fenoxaprop	5634	0 (0.0%)	0.01-0.018		15	0 (0.0%)	0.01
Fenoxaprop-P-Ethyl	8371	0 (0.0%)	0.01-0.05		1233	0 (0.0%)	0.01-0.05
Fenoxycarb	8011	1 (0.0%)	0.01		15	0 (0.0%)	0.01
Fenpiclonil	115	0 (0.0%)	0.01				
Fenpropathrin	8367	12 (0.1%)	0.01		1343	0 (0.0%)	0.01-0.083
Fenpropidin	8565	3 (0.0%)	0.01		879	1 (0.1%)	0.01
Fenpropimorph	8367	18 (0.2%)	0.01		1233	0 (0.0%)	0.01
Fenpyroximate	701	0 (0.0%)	0.01				
Fenson	8367	0 (0.0%)	0.01		1343	0 (0.0%)	0.008-0.01
Fensulfothion	115	0 (0.0%)	0.01		13	0 (0.0%)	0.01
Fensulfothion-sulfon	115	0 (0.0%)	0.01		13	0 (0.0%)	0.01
Fenthion (sum)	8559	1 (0.0%)	0.01		138	0 (0.0%)	0.008-0.01
Fentin	28	0 (0.0%)	0.01				
Fenvalerate and esfenvalerate (sum)	8367	5 (0.1%)	0.01-0.02		1343	0 (0.0%)	0.008-0.04
Fipronil (sum)	8011	6 (0.1%)	0.01-0.02		15	0 (0.0%)	0.01
Fipronil sulfide	8011	0 (0.0%)	0.01		15	0 (0.0%)	0.01
Flamprop	115	0 (0.0%)	0.1				
Flamprop-isopropyl	115	0 (0.0%)	0.01				
Flamprop-methyl	2751	0 (0.0%)	0.01		15	0 (0.0%)	0.01

Pesticide	Fruit and vegetables				Cereals			
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Flamprop-M-isopropyl	7	0	(0.0%)	0.01	864	0	(0.0%)	0.01
Flonicamid (sum)	1128	3	(0.3%)	0.01	28	0	(0.0%)	0.01-0.02
Florasulam	2636	0	(0.0%)	0.01	15	0	(0.0%)	0.01
Fluacrypyrim	115	0	(0.0%)	0.01				
Fluazifop-P-butyl	8565	0	(0.0%)	0.01	1342	0	(0.0%)	0.01-0.14
Fluazinam	72	0	(0.0%)	0.01				
Fluazuron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Flucycloxuron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.02
Flucythrinate	8367	0	(0.0%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Fludioxonil	8367	578	(6.9%)	0.01	1233	0	(0.0%)	0.01
Flufenacet (sum)	8559	0	(0.0%)	0.01	15	0	(0.0%)	0.01
Flufenoxuron	8011	3	(0.0%)	0.01	15	0	(0.0%)	0.01
Fluopicolid	2636	15	(0.6%)	0.01	15	0	(0.0%)	0.01
Fluopyram					94	0	(0.0%)	0.01
Fluoxastrobin	8565	1	(0.0%)	0.01	879	0	(0.0%)	0.01
Flupyrsulfuron-methyl	8559	0	(0.0%)	0.01-0.04	15	0	(0.0%)	0.01
Fluquinconazole	8367	0	(0.0%)	0.01	1233	0	(0.0%)	0.01
Fluridone	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Fluroxypyr	1128	0	(0.0%)	0.01	188	0	(0.0%)	0.01
Flurprimidole	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Flurtamone	8367	0	(0.0%)	0.01-0.02	1233	0	(0.0%)	0.01-0.02
Flusilazole	8545	3	(0.0%)	0.01-0.017	1233	2	(0.2%)	0.01
Flutolanil	8367	1	(0.0%)	0.01	1233	0	(0.0%)	0.01
Flutriafol	8395	89	(1.1%)	0.01-0.05	1233	0	(0.0%)	0.01-0.05
Fluvalinate, tau-	8367	2	(0.0%)	0.01-0.05	1233	0	(0.0%)	0.01-0.05
Fluxapyroxad					94	1	(1.1%)	0.01
Folpet					110	0	(0.0%)	0.008
Fomesafen	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Fonofos	8367	0	(0.0%)	0.01-0.02	1233	0	(0.0%)	0.01-0.02
Formetanate	5375	0	(0.0%)	0.01-0.04				
Formothion					110	0	(0.0%)	0.008
Fosthiazate	2921	0	(0.0%)	0.04	354	0	(0.0%)	0.04
Fuberidazole	8367	0	(0.0%)	0.01	1233	1	(0.1%)	0.01
Furalaxyl	115	0	(0.0%)	0.01				
Furathiocarb	5818	0	(0.0%)	0.01	919	0	(0.0%)	0.008-0.02
Glyphosate	49	6	(12.2%)	0.05	1046	64	(6.1%)	0.05-0.2
Halofenozide	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Haloxyfop	1128	0	(0.0%)	0.01	15	0	(0.0%)	0.01
HCH (sum)	8367	0	(0.0%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Heptachlor (sum)	8367	0	(0.0%)	0.04-0.05	1343	0	(0.0%)	0.008-0.05
Heptenophos	8559	0	(0.0%)	0.01	125	0	(0.0%)	0.008-0.01
Hexachlorobenzene	8367	0	(0.0%)	0.01-0.05	1343	0	(0.0%)	0.008-0.05
Hexaconazole	8395	2	(0.0%)	0.01	1233	4	(0.3%)	0.01
Hexaflumuron	629	0	(0.0%)	0.01				
Hexazinone	2715	0	(0.0%)	0.01-0.02	879	0	(0.0%)	0.01
Hexythiazox	8565	48	(0.6%)	0.01	1342	0	(0.0%)	0.01-0.06
Imazalil	8565	1088	(12.7%)	0.01-0.05	1342	0	(0.0%)	0.01-0.05

Pesticide	Fruit and vegetables				Cereals			
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Imazamethabenz-Methyl	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Imibenconazole	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Imidacloprid	8017	270	(3.4%)	0.01-0.05	879	10	(1.1%)	0.01
Inabenfide	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Indoxacarb	8011	22	(0.3%)	0.01-0.04	15	0	(0.0%)	0.01
Iodosulfuron-methyl	8565	0	(0.0%)	0.01-0.04	879	0	(0.0%)	0.01
Ioxynil (sum)	7	0	(0.0%)	0.01	864	0	(0.0%)	0.01
Iprobenfos	72	0	(0.0%)	0.01				
Iprodione	8367	204	(2.4%)	0.01-0.04	1343	0	(0.0%)	0.008-0.04
Iprovalicarb	8565	5	(0.1%)	0.01	879	0	(0.0%)	0.01
Isazofos	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Isocarbamid	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Isocarbophos	701	0	(0.0%)	0.01				
Isofenphos	8367	0	(0.0%)	0.01	1343	0	(0.0%)	0.01-0.042
Isofenphos-Methyl	8367	0	(0.0%)	0.01	1233	0	(0.0%)	0.01
Isoprocarb	2636	1	(0.0%)	0.01	28	0	(0.0%)	0.01
Isoprothiolane	2009	0	(0.0%)	0.01-0.02	1227	23	(1.9%)	0.01-0.02
Isoproturon	8565	0	(0.0%)	0.01	1342	0	(0.0%)	0.008-0.01
Isoxaben	115	0	(0.0%)	0.02				
Isoxadifen-ethyl	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Isoxathion	2636	0	(0.0%)	0.01	28	0	(0.0%)	0.01
Ivermectin	226	0	(0.0%)	0.01				
Jodfenphos	8367	0	(0.0%)	0.01	1343	0	(0.0%)	0.008-0.01
Kresoxim-methyl	8367	11	(0.1%)	0.01-0.04	1343	0	(0.0%)	0.008-0.04
Lenacil	115	0	(0.0%)	0.1				
Lindane	8367	0	(0.0%)	0.01	1343	0	(0.0%)	0.008-0.01
Linuron	8565	24	(0.3%)	0.01-0.04	879	0	(0.0%)	0.01
Lufenuron	8011	6	(0.1%)	0.01	15	0	(0.0%)	0.01
Malathion-Malaoxon (sum)	8565	7	(0.1%)	0.01	989	3	(0.3%)	0.008-0.01
Mandipropamid	8011	70	(0.9%)	0.01	235	0	(0.0%)	0.01
MCPA (sum)	5640	0	(0.0%)	0.01-0.061	785	2	(0.3%)	0.01
Mecarbam	8559	1	(0.0%)	0.01	125	0	(0.0%)	0.008-0.01
Mecoprop (sum)	8565	1	(0.0%)	0.01-0.022	1342	0	(0.0%)	0.01-0.04
Mefenpyr-diethyl	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Mepanipyrim	4116	25	(0.6%)	0.01	15	0	(0.0%)	0.01
Mepanipyrim (sum)	3895	25	(0.6%)	0.01				
Mepiquat	1133	3	(0.3%)	0.01	1101	29	(2.6%)	0.005-0.01
Mesotrion (sum)	1508	0	(0.0%)	0.01	15	0	(0.0%)	0.01
Mesotrione	1128	0	(0.0%)	0.01				
Metaflumizone	2636	1	(0.0%)	0.01	28	0	(0.0%)	0.01
Metalaxyl	8565	94	(1.1%)	0.01-0.02	1342	0	(0.0%)	0.01-0.04
Metamitron	8011	2	(0.0%)	0.01-0.1	15	0	(0.0%)	0.01
Metazachlor	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Metconazole	2643	0	(0.0%)	0.01	879	0	(0.0%)	0.01
Methabenzthiazuron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Methacrifos	8545	0	(0.0%)	0.01-0.074	1233	0	(0.0%)	0.01
Methamidophos	8565	2	(0.0%)	0.01	1342	1	(0.1%)	0.01-0.08

Pesticide	Fruit and vegetables				Cereals		
	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)
Methidathion	8367	4	(0.0%)	0.01	1233	0	(0.0%)	0.01
Methiocarb (sum)	8565	7	(0.1%)	0.01-0.02	1342	0	(0.0%)	0.01-0.04
Methomyl (sum)	8565	10	(0.1%)	0.01	1342	0	(0.0%)	0.01-0.04
Methoxychlor	8367	0	(0.0%)	0.01	1343	0	(0.0%)	0.008-0.01
Methoxyfenozide	6142	6	(0.1%)	0.01-0.1	7	0	(0.0%)	0.01
Metobromuron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Metolachlor	2636	0	(0.0%)	0.01	15	0	(0.0%)	0.01
Metolcarb	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Metoxuron	115	0	(0.0%)	0.1				
Metrafenone	744	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Metribuzin	8565	0	(0.0%)	0.01	879	0	(0.0%)	0.01
Metsulfuron-methyl					13	0	(0.0%)	0.1
Mevinphos	8559	0	(0.0%)	0.01	125	0	(0.0%)	0.008-0.01
Mexacarbate	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Mirex	1551	0	(0.0%)	0.01	7	0	(0.0%)	0.01
Molinate	8367	0	(0.0%)	0.01	1233	0	(0.0%)	0.01
Monocrotophos	8565	3	(0.0%)	0.01	1342	0	(0.0%)	0.008-0.12
Monolinuron	8559	0	(0.0%)	0.01-0.2	478	0	(0.0%)	0.01-0.08
Monuron	115	0	(0.0%)	0.01				
Moxidectin	226	0	(0.0%)	0.01				
Myclobutanil	8367	111	(1.3%)	0.01-0.02	1343	0	(0.0%)	0.01-0.083
Napropamide	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Naptalam	115	0	(0.0%)	0.01	13	0	(0.0%)	0.1
Nicosulfuron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Nitenpyram	2636	0	(0.0%)	0.01	28	0	(0.0%)	0.01
Nitrofen	8367	0	(0.0%)	0.01	1233	0	(0.0%)	0.01
Norflurazon	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Novaluron	115	0	(0.0%)	0.01				
Noviflumuron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Nuarimol	8565	0	(0.0%)	0.01-0.027	989	0	(0.0%)	0.008-0.01
Ofurace	8559	0	(0.0%)	0.01	478	0	(0.0%)	0.01-0.13
Orbencarb	115	0	(0.0%)	0.01				
Orthophenylphenol	8367	175	(2.1%)	0.01-0.05	1233	1	(0.1%)	0.01-0.05
Oryzalin	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Oxadiazon	2636	2	(0.1%)	0.01	15	0	(0.0%)	0.01
Oxadixyl	8565	2	(0.0%)	0.01	1342	0	(0.0%)	0.01-0.04
Oxamyl	6558	1	(0.0%)	0.01-0.02	864	0	(0.0%)	0.02
Oxycarboxin	8565	0	(0.0%)	0.01	1342	0	(0.0%)	0.01-0.12
Oxydemeton-methyl (sum)	8565	0	(0.0%)	0.01-0.053	1342	0	(0.0%)	0.01-0.04
Paclobutrazol	8367	0	(0.0%)	0.01-0.02	1233	2	(0.2%)	0.01-0.02
Parathion	8367	0	(0.0%)	0.04-0.05	1343	0	(0.0%)	0.008-0.05
Parathion-methyl (sum)	8395	0	(0.0%)	0.01-0.05	1343	0	(0.0%)	0.008-0.05
Pebulate	115	0	(0.0%)	0.02				
Penconazole	8367	49	(0.6%)	0.01	1343	0	(0.0%)	0.008-0.01
Pencycuron	8011	26	(0.3%)	0.01	15	0	(0.0%)	0.01
Pendimethalin	8565	12	(0.1%)	0.01-0.02	1342	0	(0.0%)	0.01-0.06
Penfluron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01

Pesticide	Fruit and vegetables				Cereals			
	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)
Pentachloroanisole	8367	0	(0.0%)	0.01-0.05	1233	0	(0.0%)	0.01-0.05
Pentachlorobenzene	8367	0	(0.0%)	0.01	1233	0	(0.0%)	0.01
Pentachlorophenol					110	0	(0.0%)	0.008
Pentachlorothioanisole	8367	0	(0.0%)	0.01-0.02	1233	0	(0.0%)	0.01-0.02
Pentanochlor	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Permethrin (sum)	8367	2	(0.0%)	0.01	1343	8	(0.6%)	0.008-0.01
Pethoxamid	115	0	(0.0%)	0.01				
Phenkapton					110	0	(0.0%)	0.008
Phenmedipham	8011	6	(0.1%)	0.01-0.05	15	0	(0.0%)	0.05
Phenthoate	8367	0	(0.0%)	0.01-0.05	1343	0	(0.0%)	0.008-0.05
Phorate (sum)	8573	2	(0.0%)	0.01-0.05	1233	0	(0.0%)	0.01-0.05
Phosalone	8367	1	(0.0%)	0.01-0.02	1343	0	(0.0%)	0.01-0.042
Phosmet (sum)	8361	16	(0.2%)	0.01	492	0	(0.0%)	0.008-0.1
Phosphamidon	8565	1	(0.0%)	0.01	879	0	(0.0%)	0.01
Phoxim	8559	1	(0.0%)	0.01	125	0	(0.0%)	0.008-0.01
Picolinafen	8545	0	(0.0%)	0.01	1343	0	(0.0%)	0.01-0.04
Picoxystrobin	5929	1	(0.0%)	0.01	864	0	(0.0%)	0.01
Piperonylbutoxid	2636	1	(0.0%)	0.02	15	0	(0.0%)	0.02
Pirimicarb	1128	8	(0.7%)	0.01	188	0	(0.0%)	0.01
Pirimicarb (sum)	7437	45	(0.6%)	0.01	1154	0	(0.0%)	0.009-0.01
Pirimiphos-ethyl	8367	0	(0.0%)	0.01-0.02	1343	0	(0.0%)	0.01-0.042
Pirimiphos-methyl	8395	6	(0.1%)	0.01	1343	35	(2.6%)	0.01-0.042
Prochloraz (sum)	8395	143	(1.7%)	0.01-0.02	1233	0	(0.0%)	0.01-0.02
Procymidone	8367	3	(0.0%)	0.01	1343	0	(0.0%)	0.008-0.01
Profenofos	8367	5	(0.1%)	0.01-0.04	1343	0	(0.0%)	0.01-0.042
Profoxydim	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Prometryn					13	0	(0.0%)	0.01
Propachlor	72	0	(0.0%)	0.01				
Propachlor (sum)	43	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Propamocarb	8565	316	(3.7%)	0.01-0.05	1342	0	(0.0%)	0.01-0.04
Propanil	8367	0	(0.0%)	0.01	1233	1	(0.1%)	0.01
Propaphos	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Propaquizafop	8011	0	(0.0%)	0.01-0.04	15	0	(0.0%)	0.01
Propargite	8367	3	(0.0%)	0.01-0.04	1233	0	(0.0%)	0.01-0.04
Propazine	115	0	(0.0%)	0.01				
Propetamphos	115	0	(0.0%)	0.1				
Propham	8367	3	(0.0%)	0.01	1343	1	(0.1%)	0.01-0.083
Propiconazole	8565	98	(1.1%)	0.01	989	29	(2.9%)	0.008-0.01
Propoxur	8565	4	(0.0%)	0.01	1342	0	(0.0%)	0.01-0.04
Propyzamide	8367	4	(0.0%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Proquinazid	8565	6	(0.1%)	0.01	1342	0	(0.0%)	0.01-0.02
Prosulfocarb	8017	33	(0.4%)	0.01	879	0	(0.0%)	0.01
Prosulfuron	2636	0	(0.0%)	0.01	28	0	(0.0%)	0.01
Prothioconazole	2921	0	(0.0%)	0.1	354	0	(0.0%)	0.1
Prothiofos	8367	0	(0.0%)	0.01	1343	0	(0.0%)	0.008-0.01
Pymetrozine	8565	27	(0.3%)	0.01	1342	0	(0.0%)	0.01-0.06
Pyraclofos	2636	0	(0.0%)	0.01	28	0	(0.0%)	0.01

Pesticide	Fruit and vegetables				Cereals			
	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)	Number of samples analysed	Number of samples with detected residues		Reporting limit (mg/kg)
Pyraclostrobin	8565	438	(5.1%)	0.01	1342	1	(0.1%)	0.01-0.03
Pyraflufen-ethyl	115	0	(0.0%)	0.01				
Pyrazophos	8559	0	(0.0%)	0.01	125	0	(0.0%)	0.008-0.01
Pyridaben	8565	28	(0.3%)	0.01	1342	0	(0.0%)	0.01-0.04
Pyridaphenthion	8565	0	(0.0%)	0.01	1342	0	(0.0%)	0.01-0.05
Pyridate (sum)	2578	0	(0.0%)	0.01	463	0	(0.0%)	0.13
Pyrimethanil	8437	299	(3.5%)	0.01-0.05	879	0	(0.0%)	0.01
Pyriproxyfen	8565	158	(1.8%)	0.01	1342	0	(0.0%)	0.01-0.02
Quinalphos	8367	0	(0.0%)	0.01	1343	0	(0.0%)	0.008-0.01
Quinclorac	115	0	(0.0%)	0.1				
Quinoclamine	115	0	(0.0%)	0.02				
Quinoxyfen	8367	24	(0.3%)	0.01	1233	0	(0.0%)	0.01
Quintozene (sum)	8367	5	(0.1%)	0.01-0.02	1343	0	(0.0%)	0.008-0.02
Quizalofop	8565	2	(0.0%)	0.01-0.04	879	0	(0.0%)	0.01
Quizalofop-Ethyl	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Rabenzazole	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Rimsulfuron	5375	0	(0.0%)	0.01				
Rotenone	115	0	(0.0%)	0.01				
Schradan	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Secbumeton					13	0	(0.0%)	0.01
Siduron	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Simazine	8559	0	(0.0%)	0.01	125	0	(0.0%)	0.008-0.01
Spinosad (sum)	8011	114	(1.4%)	0.01	15	0	(0.0%)	0.01
Spirodiclofen	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Spiromesifen	2568	0	(0.0%)	0.01	15	0	(0.0%)	0.01
Spiroxamine	8565	11	(0.1%)	0.01	1342	0	(0.0%)	0.01-0.03
Sulcotrione	115	0	(0.0%)	0.02	13	0	(0.0%)	0.1
Sulfometuron-Methyl	115	0	(0.0%)	0.01				
Sulfotep	8367	0	(0.0%)	0.01-0.05	1343	0	(0.0%)	0.01-0.05
Sulprofos	115	0	(0.0%)	0.1				
Tebuconazole	8367	235	(2.8%)	0.01	1343	41	(3.1%)	0.01-0.042
Tebufenozide	6558	0	(0.0%)	0.01	864	0	(0.0%)	0.01
Tebufenpyrad	8565	31	(0.4%)	0.01	1342	0	(0.0%)	0.01-0.1
Tebupirimphos	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Tebutam	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Tecnazene	8367	0	(0.0%)	0.01	1343	0	(0.0%)	0.01-0.042
Teflubenzuron	8367	0	(0.0%)	0.01	1233	0	(0.0%)	0.01
Temephos	115	0	(0.0%)	0.01				
TEPP	8559	0	(0.0%)	0.01	125	0	(0.0%)	0.008-0.01
Tepraloxydim (sum)	2636	0	(0.0%)	0.01	28	0	(0.0%)	0.01
Terbacil	115	0	(0.0%)	0.1				
Terbufos Sulfone	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Terbufos Sulfoxide	115	0	(0.0%)	0.01	13	0	(0.0%)	0.01
Terbumeton	115	0	(0.0%)	0.01				
Terbuthylazine	2643	0	(0.0%)	0.01	879	0	(0.0%)	0.01
Terbutryn					13	0	(0.0%)	0.01
Tetrachlorvinphos	8559	0	(0.0%)	0.01	125	0	(0.0%)	0.01-0.083

Pesticide	Fruit and vegetables				Cereals		
	Number of samples analysed	Number of samples with detected residues	Reporting limit (mg/kg)		Number of samples analysed	Number of samples with detected residues	Reporting limit (mg/kg)
Tetraconazole	8367	1 (0.0%)	0.01-0.04		1233	0 (0.0%)	0.01-0.04
Tetradifon	8367	1 (0.0%)	0.01		1343	0 (0.0%)	0.01-0.042
Tetramethrin	115	0 (0.0%)	0.01				
Tetrasul	8367	0 (0.0%)	0.01		1343	0 (0.0%)	0.008-0.01
Thenylchlor	115	0 (0.0%)	0.01		13	0 (0.0%)	0.01
Thiabendazole	8565	562 (6.6%)	0.01-0.02		1342	1 (0.1%)	0.01-0.05
Thiacloprid	8017	128 (1.6%)	0.01-0.02		879	0 (0.0%)	0.01
Thiamethoxam	1128	9 (0.8%)	0.01		188	1 (0.5%)	0.01
Thiamethoxam (sum)	6889	44 (0.6%)	0.01-0.04		691	7 (1.0%)	0.01
Thiazopyr	115	0 (0.0%)	0.01		13	0 (0.0%)	0.01
Thidiazuron	115	0 (0.0%)	0.01				
Thifensulfuron-methyl	2636	0 (0.0%)	0.01		478	0 (0.0%)	0.01-0.14
Thiobencarb	2636	0 (0.0%)	0.01		28	0 (0.0%)	0.01
Thiocyclam					13	0 (0.0%)	0.1
Thiometon	8367	0 (0.0%)	0.01-0.05		1233	0 (0.0%)	0.01-0.05
Thiophanate-methyl	8565	29 (0.3%)	0.01-0.05		879	0 (0.0%)	0.01
Tiocarbazil	115	0 (0.0%)	0.01		13	0 (0.0%)	0.01
Tolclofos-methyl	8559	6 (0.1%)	0.01-0.019		125	0 (0.0%)	0.008-0.01
Tolfenpyrad	72	0 (0.0%)	0.01				
Tolylfluanid	8367	0 (0.0%)	0.01-0.05		1343	0 (0.0%)	0.01-0.05
Tralkoxydim	2751	0 (0.0%)	0.01		28	0 (0.0%)	0.01
Triadimefon (sum)	8565	88 (1.0%)	0.01-0.05		989	0 (0.0%)	0.008-0.05
Triallate	8565	0 (0.0%)	0.01-0.1		879	0 (0.0%)	0.01
Triasulfuron					476	0 (0.0%)	0.01-0.04
Triazophos	8565	5 (0.1%)	0.01		989	3 (0.3%)	0.008-0.01
Tribenuron-methyl	2636	0 (0.0%)	0.01		28	0 (0.0%)	0.01-0.1
Tribufos	115	0 (0.0%)	0.01		13	0 (0.0%)	0.01
Trichlorfon	8559	0 (0.0%)	0.01-0.02		15	0 (0.0%)	0.02
Trichloronat	8367	0 (0.0%)	0.01		1343	0 (0.0%)	0.01-0.042
Tricyclazole	2643	0 (0.0%)	0.01		879	42 (4.8%)	0.01
Trifloxystrobin	8367	140 (1.7%)	0.01		1343	0 (0.0%)	0.008-0.01
Triflumizol (sum)	2636	3 (0.1%)	0.01		15	0 (0.0%)	0.01
Triflumuron	8565	10 (0.1%)	0.01		879	0 (0.0%)	0.01
Trifluralin	8367	0 (0.0%)	0.01-0.02		1233	0 (0.0%)	0.01-0.02
Triflusulfuron-Methyl	115	0 (0.0%)	0.01		13	0 (0.0%)	0.01
Triforine	7943	0 (0.0%)	0.01-0.04		15	0 (0.0%)	0.01
Triticonazole	8367	0 (0.0%)	0.01		1233	0 (0.0%)	0.01
Vamidothion	8559	0 (0.0%)	0.01		15	0 (0.0%)	0.01
Vernolate					13	0 (0.0%)	0.01
Vinclozolin (sum)	8367	1 (0.0%)	0.01		1343	0 (0.0%)	0.01-0.042
XMC	115	0 (0.0%)	0.02		13	0 (0.0%)	0.02
Zoxamide	8011	2 (0.0%)	0.01		15	0 (0.0%)	0.01

7.2 Pesticides included in the monitoring and commodities where residues were found.

The left side of the table lists all pesticides found during the monitoring programmes 2012 – 2017 with representative sampling. The number of samples (of Danish respective foreign origin) analysed for each pesticide is listed together with the number of samples where residues of that pesticide were found (or not).

The right side of the table shows the commodities where the pesticide in question was found, the number of samples of the commodity that was analysed for the pesticide and the number of samples where the pesticide was found.

Commodities are listed alphabetically. The list includes all (conventional or organic) commodity groups.

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
2,4-D (sum)	F	8629	8572	57	Grapefruit	158	25
					Lemons	143	5
					Limes	19	3
					Mandarins, clementines	306	7
					Mineola	4	1
					Oranges	310	14
					Tea, herbal	21	1
					Teas	167	1
Abamectin (sum)	F	2379	2362	17	Basil	3	2
					Blackberries	13	1
					Chives, fresh	11	4
					Coriander, leaves	4	1
					Spinach	39	1
					Strawberries	65	4
					Table grapes	94	1
					Tarragon	6	2
					Tomatoes	57	1
Acephate	F	8629	8623	6	Chilli peppers	39	1
					Chives	14	1
					Mango	54	1
					Passion fruits	25	1
					Rice, white	144	2
Acetamiprid	DK	3346	3336	10	Apples	151	2
					Cherries	3	3
					Courgettes	14	1
					Cucumbers	140	2
					Lettuce	100	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Pears	121	1
Acetamiprid	F	8622	8408	214	Apples	183	10
					Apricot, dried	11	1
					Apricots	29	1
					Aubergines	67	5
					Beans with pods	219	4
					Blood oranges	3	1
					Blueberries	46	3
					Cherries	22	2
					Chilli peppers	39	4
					Chilli powder	7	3
					Chives	14	2
					Coriander, leaves	11	1
					Courgettes	37	4
					Cucumbers	152	3
					Cumin seed	3	2
					Curry powder	1	1
					Gojiberries, dried	12	12
					Grapefruit	158	17
					Lemons	143	1
					Lettuce	121	9
					Lettuce, baby leaves	1	1
					Mandarins, clementines	306	3
					Melons	191	3
					Mint leaves	4	1
					Nectarines	166	11
					Oranges	310	3
					Papayas	42	1
					Parsley	11	2
					Parsley, flat-leaved	12	3
					Peaches	125	5
					Pears	162	4
					Peppers, sweet	316	12
					Pistachios	6	2
					Pomegranate	31	6
					Pomelos	38	17
					Raisin	17	1
					Raspberries	94	1
					Rice, white	144	2
					Rosemary	9	2
					Ruccola	34	10
					Spearmint	4	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Spinach	124	4
					Table grapes	296	2
					Tarragon	8	3
					Tea leaves, black	4	1
					Teas	167	16
					Thyme	9	1
					Tomatoes	166	7
					Vine leaves	3	1
					Watermelon	28	1
					Wine, white	56	1
Aclonifen	DK	3403	3392	11	Carrots	230	4
					Celeriac	23	3
					Coriander, leaves	2	1
					Parsnips	30	3
Aclonifen	F	7992	7988	4	Carrots	104	1
					Celeriac	21	1
					Spinach	123	1
					Tarragon	8	1
Acrinathrin	F	6250	6249	1	Strawberries	134	1
Aldrin and Dieldrin	F	8275	8267	8	Beef meat	88	1
					Carrots	104	4
					Courgettes	37	1
					Parsley	11	1
					Radish	17	1
Atrazine	F	8373	8372	1	Teas	167	1
Azinphos-ethyl	F	8235	8233	2	Pomelos	38	2
Azinphos-methyl	F	6251	6249	2	Blueberry, dried	3	1
					Pears	112	1
Azoxystrobin	DK	3474	3372	102	Carrots	230	1
					Celeriac	23	9
					Celery	31	4
					Cucumbers	140	7
					Kale	15	3
					Leek	31	1
					Lettuce	100	7
					Lettuce	27	1
					Parsley	12	1
					Parsley Root	9	2
					Parsnips	30	4
					Peas with pods	84	5
					Peas without pods	30	1
					Raspberries	13	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Spring onions	4	1
					Strawberries	257	45
					Tarragon	1	1
					Tomatoes	142	8
Azoxystrobin	F	8080	7719	361	Aubergines	67	2
					Bananas	219	74
					Bananas (organic)	35	1
					Beans with pods	218	23
					Blackberries	40	1
					Blueberries	46	2
					Broad beans	2	1
					Broccoli	28	1
					Carambola	25	6
					Carrots	104	17
					Celeriac	21	6
					Celery	21	4
					Chilli peppers	39	6
					Chilli powder	7	1
					Chives	14	2
					Cucumbers	152	11
					Dill	5	1
					Grapefruit	158	15
					Kiwi	292	1
					Lettuce	121	9
					Lettuce	51	1
					Limes	19	4
					Mandarins, clementines	306	3
					Mango	53	2
					Melons	191	7
					Mint leaves	4	1
					Okra	5	2
					Oranges	310	12
					Papayas	42	6
					Parsley	11	2
					Parsley, flat-leaved	12	10
					Passion fruits	25	5
					Peas with pods	69	17
					Peas without pods	35	1
					Peppers, sweet	316	19
					Peppers, sweet, marinated	1	1
					Pitaya	6	1
					Plums	177	7

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Potatoes	86	1
					Radish	17	2
					Raisin	17	2
					Raspberries	94	11
					Rice, white	144	1
					Rice, white	33	1
					Rosemary	9	2
					Spearmint	4	1
					Spinach	123	2
					Spring onions	21	2
					Strawberries	200	14
					Table grapes	295	24
					Tarragon	8	3
					Tomatoes	166	9
					Vine leaves	3	1
Benalaxyl	F	7992	7987	5	Tomatoes	166	5
Bentazone (sum)	F	8622	8621	1	Tea, herbal	21	1
Bifenthrin	F	8235	8193	42	Bananas	219	11
					Beans with pods	218	3
					Blackberries	40	4
					Chilli peppers	39	1
					Melons	191	2
					Oranges	310	4
					Papayas	42	9
					Persimmon	70	1
					Raspberries	94	1
					Soya beans, fresh	2	1
					Soyabeans (with pods)	4	1
					Strawberries	200	1
					Table grapes	295	1
					Tarragon	8	1
					Thyme	9	1
Bitertanol	DK	2180	2173	7	Apples	114	3
					Pears	96	4
Bitertanol	F	6170	6169	1	Peaches	101	1
Boscalid	DK	3014	2651	363	Apples	142	21
					Barley (malting)	10	1
					Barley kernels	9	1
					Beans with pods	5	2
					Blackberries	2	1
					Blueberries	5	4
					Brussels sprouts	13	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Carrots	211	50
					Cherries	3	2
					Cucumbers	134	4
					Currants, black	3	3
					Currants, red	3	2
					Kale	15	3
					Leek	31	2
					Lettuce	100	19
					Lettuce	27	1
					Lettuce (organic)	7	1
					Parsley Root	8	1
					Parsnips	27	6
					Pearl onion	1	1
					Pears	121	23
					Peas with pods	84	13
					Peas without pods	30	4
					Plums	17	6
					Pumpkin	9	1
					Raspberries	13	2
					Ruccola	9	4
					Savoy cabbage	8	1
					Spinach	33	13
					Strawberries	256	129
					Wheat	3	1
					Wheat flour	30	1
					Wheat groats	10	1
					Wheat kernels	120	34
					Wheat, wholemeal	29	3
Boscalid	F	7743	7087	656	Apples	159	34
					Apricot, dried	11	1
					Apricots	28	2
					Aubergines	58	2
					Basil	5	1
					Beans with pods	211	22
					Beetroot leaves	3	1
					Blackberries	40	7
					Blueberries	43	12
					Blueberry, dried	3	1
					Broccoli	24	1
					Broccoli, chopped, frozen	2	1
					Brussels sprouts	11	3
					Carrots	100	19

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Celery	20	1
					Chards	2	2
					Chars	1	1
					Cherries	20	1
					Chervil, root	1	1
					Chilli peppers	39	2
					Chinese cabbage	6	1
					Chives	14	3
					Coriander, leaves	11	1
					Courgettes	35	1
					Cucumbers	132	4
					Currants, black	7	1
					Currants, red	22	16
					Dill	5	1
					Grapefruit	139	1
					Green Flageolet	1	1
					Head cabbage, red	8	2
					Kale	3	3
					Kiwi	267	4
					Leafy vegetables, Unspecified	1	1
					Leek	29	7
					Lettuce	109	31
					Lettuce	42	1
					Lettuce, baby leaves	1	1
					Mandarins, clementines	292	4
					Melons	180	10
					Nectarines	161	39
					Onions	21	2
					Oranges	283	1
					Pak choi	3	1
					Parsley, dried	2	1
					Parsley, flat-leaved	12	3
					Peaches	124	15
					Pears	139	54
					Peas with pods	68	1
					Peas without pods	33	11
					Peppers, sweet	289	22
					Plums	150	14
					Pomegranate	30	3
					Radish	15	3
					Raisin	17	9
					Raspberries	91	23

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Rosemary	9	1
					Ruccola	33	23
					Shallots	12	3
					Spinach	119	14
					Spring onions	20	3
					Strawberries	182	60
					Sweet basil	2	1
					Table grapes	259	56
					Tarragon	8	1
					Thyme	9	1
					Tomatoes	143	24
					Turnips	2	1
					Vine leaves	3	2
					Watermelon	26	1
					Wheat kernels	56	4
					Wine, red	284	40
					Wine, rosé	2	1
					Wine, white	56	9
Bromide ion	F	124	114	10	Lettuce	12	3
					Peppers, sweet (organic)	2	1
					Rice, white	21	5
					Tomatoes	13	1
Bromopropylate	F	8080	8078	2	Grapefruit	158	1
					Tarragon	8	1
Bupirimate	F	7378	7363	15	Apples	147	2
					Gooseberries	4	1
					Peaches	106	1
					Peppers, sweet	264	2
					Strawberries	167	8
					Tomatoes	141	1
Buprofezin	F	8629	8551	78	Bananas	219	26
					Grapefruit	158	1
					Lemons	143	1
					Melons	191	5
					Oranges	310	1
					Peppers, sweet	316	1
					Pomegranate	31	1
					Pomelos	38	3
					Rice, brown	5	1
					Rice, white	144	20
					Rosemary	9	2
					Table grapes	296	3

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Tarragon	8	2
					Tea leaves, black	4	1
					Teas	167	10
Carbaryl	F	8229	8219	10	Blueberry, dried	3	1
					Carrots	104	1
					Cranberries	4	1
					Mandarins, clementines	306	1
					Parsley	11	1
					Pineapples	91	4
					Walnuts	14	1
Carbendazim and benomyl	DK	3318	3317	1	Courgettes	14	1
Carbendazim and benomyl	F	8622	8364	258	Apples	183	7
					Apricot, dried	11	5
					Apricots	29	5
					Bananas	219	1
					Beans with pods	219	21
					Blueberries	46	1
					Carambola	25	1
					Cherries	22	4
					Chia seeds	5	1
					Chilli peppers	39	1
					Chilli powder	7	2
					Chives	14	1
					Chives, dried	1	1
					Courgettes	37	2
					Cucumbers	152	2
					Cumin seed	3	2
					Currants, black	7	1
					Currants, red	24	2
					Curry powder	1	1
					Dill, dried	1	1
					Fungi, cultivated	4	1
					Gojiberries, dried	12	11
					Gooseberries	4	1
					Grapefruit	158	11
					Kaffir lime leaves, dried	1	1
					Lemons	143	12
					Limes	19	3
					Mandarin, canned	1	1
					Mandarins, clementines	306	6
					Mango	54	1
					Melons	191	6

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Mushroom (Agaricus bisporus)	25	1
					Nectarines	166	7
					Onions	24	1
					Oranges	310	6
					Oranges, juice	91	6
					Oranges, juice, conc.	9	2
					Oregano, dried	1	1
					Papayas	42	6
					Paprika	5	2
					Passion fruits	25	2
					Peaches	125	3
					Pears	162	2
					Peas with pods	69	1
					Peas without pods	35	2
					Peppers, sweet	316	1
					Pineapples	91	1
					Pitaya	3	1
					Pitaya	6	2
					Plums	177	4
					Pomelos	38	4
					Quinces	2	1
					Raisin	17	1
					Rambutan	7	3
					Raspberries	94	4
					Rice, white	144	2
					Rice, white	33	1
					Shallots	13	2
					Soya beans, fresh	2	1
					Soyabeans (with pods)	4	1
					Strawberries	199	13
					Table grapes	296	6
					Tamarillo	2	2
					Tea, herbal	21	2
					Tea, herbal (organic)	3	1
					Teas	167	14
					Teas (organic)	31	1
					Tomatoes	166	2
					Vine leaves	3	1
					Watermelon	28	1
					Wine, red	285	25
					Wine, white	56	1
					Yardbeans	6	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
Chlorantraniliprol	DK	847	845	2	Tomatoes	42	2
Chlorantraniliprol	F	2441	2407	34	Apricots	16	1
					Beans with pods	62	1
					Celery	8	1
					Chars	1	1
					Chilli peppers	19	2
					Chilli powder	4	1
					Chinese cabbage, dark	1	1
					Chives, fresh	11	1
					Lettuce	40	2
					Mint leaves	3	2
					Nectarine	53	2
					Oranges	102	1
					Paprika	3	1
					Pear	50	3
					Peppers, sweet	102	2
					Plum	44	1
					Ruccola	6	2
					Spinach	39	1
					Table grapes	94	3
					Thyme	4	1
					Tomatoes	57	4
Chlorfenapyr	F	7992	7990	2	Table grapes	295	1
					Tarragon	8	1
Chlormequat	DK	1286	1218	68	Barley kernels	11	2
					Breakfast cereals	3	3
					Malting barley	3	1
					Mushroom (Agaricus bisporus)	23	1
					Oat kernels	16	4
					Pears	116	5
					Rolled oat	38	4
					Spelt	7	1
					Spelt, flour	29	18
					Wheat flour	49	6
					Wheat kernels	200	23
Chlormequat	F	1493	1291	202	Barley (malting)	3	2
					Barley kernels	5	1
					Buckwheat flour	1	1
					Bulgur	2	1
					Corn flakes	4	1
					Flour mix	3	1
					Malting barley	4	3

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Malting barley (organic)	1	1
					Pasta, dried	74	6
					Pears	154	21
					Pears (organic)	25	2
					Rolled oat	61	21
					Rye flour	10	5
					Rye flour	12	7
					Rye flour (organic)	7	1
					Rye kernels	30	1
					Rye kernels	7	3
					Spelt	9	6
					Spelt, flour	38	36
					Table grapes	199	14
					Wheat flakes	1	1
					Wheat flour	76	51
					Wheat kernels	98	11
					Wheat, wholemeal	20	5
Chlorpropham	DK	1864	1853	11	Potato crisps	1	1
					Potatoes	193	10
Chlorpropham	F	3890	3855	35	Kale	3	1
					Oranges	151	1
					Potatoes	86	33
Chlorpropham (sum)	F	4190	4189	1	Parsley	4	1
Chlorpyrifos	DK	4609	4608	1	Onions	139	1
Chlorpyrifos	F	8275	7690	585	Apples	183	20
					Bananas	219	17
					Beans with pods	218	3
					Blood oranges	3	2
					Broccoli	28	1
					Buckwheat flour	1	1
					Carambola	25	3
					Carrots	104	1
					Celery	21	1
					Cherries	22	1
					Chilli peppers	39	5
					Chilli powder	7	1
					Coriander, leaves	11	1
					Cumin seed	3	2
					Date	8	1
					Dill	5	1
					Dill, dried	1	1
					Fungi, cultivated	4	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Gojiberries, dried	12	2
					Grapefruit	158	74
					Kiwi	292	1
					Lemons	143	61
					Limes	19	1
					Mandarins, clementines	306	155
					Melons	191	2
					Mineola	4	1
					Mint leaves	4	2
					Nectarines	166	1
					Olive oil	20	1
					Olive oil, virgin or extra-virgin	29	1
					Oranges	310	142
					Oranges, juice (organic)	10	1
					Parsley	11	1
					Parsley, flat-leaved	12	2
					Peaches	124	14
					Pears	161	2
					Peppers, sweet	316	2
					Pomelos	38	26
					Potatoes	86	1
					Quinces	2	1
					Raisin	17	2
					Rambutan	7	3
					Raspberries	94	3
					Rice, brown	5	1
					Rice, white	144	3
					Spearmint	4	1
					Spring onions	21	1
					Strawberries	200	2
					Table grapes	295	9
					Tarragon	8	1
					Turnips	2	1
					Wheat kernels	97	1
Chlorpyrifos-methyl	DK	4609	4608	1	Wheat flour	42	1
Chlorpyrifos-methyl	F	8275	8252	23	Chilli peppers	39	2
					Mandarins, clementines	306	13
					Oranges	310	4
					Parsley, flat-leaved	12	1
					Peaches	124	1
					Peppers, sweet	316	1
					Wheat kernels	97	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
Chlorthal-dimethyl	F	7992	7991	1	Thyme	9	1
Clofentezine	F	7669	7656	13	Chilli peppers	39	1
					Currants, red	24	1
					Mandarins, clementines	306	1
					Raspberries	94	1
					Strawberries	199	9
Clopyralid	DK	2420	2419	1	Gooseberries	4	1
Clopyralid	F	7137	7136	1	Spinach	119	1
Clothianidin	F	1048	1047	1	Tomatoes	26	1
Cyazofamid	F	7137	7129	8	Cucumbers	132	4
					Table grapes	259	2
					Tomatoes	143	2
Cyfluthrin	DK	4609	4607	2	Lettuce	100	2
Cyfluthrin	F	8275	8270	5	Lettuce	121	1
					Oranges	310	1
					Peaches	124	1
					Ruccola	34	1
					Tarragon	8	1
Cyhalothrin, lambda-	DK	3402	3398	4	Apples	152	1
					Celery	31	1
					Leek	31	1
					Plums	19	1
Cyhalothrin, lambda-	F	7985	7862	123	Apricots	29	1
					Avocados	53	1
					Beans with pods	218	8
					Blackberries	40	1
					Broccoli	28	2
					Carambola	25	3
					Celeriac	21	1
					Chars	1	1
					Chives	14	9
					Coriander, leaves	11	2
					Currants, black	7	1
					Gojiberries, dried	12	5
					Kiwi	292	1
					Lemons	143	1
					Lettuce	121	4
					Limes	19	1
					Mandarins, clementines	306	10
					Mango	53	1
					Mint leaves	4	3
					Nectarines	166	4

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Okra	5	1
					Oranges	310	9
					Parsley	11	3
					Parsley, flat-leaved	12	5
					Passion fruits	25	1
					Peaches	124	7
					Pears	161	1
					Peas with pods	69	3
					Quinces	2	1
					Radish	17	1
					Raisin	17	2
					Raspberries	94	1
					Spinach	123	17
					Strawberries	200	7
					Table grapes	295	3
					Tarragon	8	1
Cymoxanil	F	7137	7133	4	Cucumbers	132	1
					Peas with pods	68	1
					Pepino	1	1
					Tomatoes	143	1
Cypermethrin	DK	4609	4582	27	Apples	152	1
					Celery	31	1
					Currants, black	3	1
					Currants, red	3	1
					Kale	15	3
					Lettuce	100	6
					Parsley	12	2
					Peas with pods	84	2
					Ruccola	9	4
					Spinach	33	4
					Strawberries	257	2
Cypermethrin	F	8275	8162	113	Apricots	29	2
					Aubergines	67	3
					Beans with pods	218	9
					Bitter gourd (Momordica charantia)	1	1
					Blackberries	40	8
					Broccoli	28	1
					Carambola	25	10
					Celery	21	1
					Cherries	22	1
					Chilli peppers	39	1
					Chives	14	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Chives, dried	1	1
					Coriander, leaves	11	1
					Currants, black	7	1
					Fungi, cultivated	4	1
					Gojiberries, dried	12	9
					Grapefruit	158	3
					Lettuce	121	6
					Mango	53	2
					Melons	191	1
					Mint leaves	4	1
					Nectarines	166	5
					Papayas	42	1
					Pasta, dried	74	1
					Peaches	124	5
					Pears	161	1
					Peas with pods	69	4
					Peppers, sweet	316	1
					Pineapples	91	1
					Plums	177	2
					Pomegranate	29	1
					Pomelos	38	3
					Prickly pear (cactus fruit)	6	1
					Rambutan	7	4
					Soyabeans (with pods)	4	1
					Spinach	123	10
					Tomatoes	166	2
					Turnips	2	1
					Wheat kernels	97	3
					Yardbeans	6	1
Cyproconazole	F	7992	7988	4	Coriander, leaves	11	1
					Nectarines	166	2
					Peaches	124	1
Cyprodinil	DK	3282	3184	98	Apples	152	4
					Blackberries	2	1
					Blueberries	5	2
					Cherries	3	2
					Cucumbers	140	15
					Lettuce	100	2
					Pears	121	3
					Peas with pods	84	1
					Strawberries	257	67
					Tomatoes	142	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
Cyprodinil	F	7985	7607	378	Apples	183	5
					Aubergines	67	9
					Beans with pods	218	25
					Blackberries	40	13
					Blueberries	46	10
					Celeriac	21	1
					Cherries	22	3
					Chilli peppers	39	1
					Cucumbers	152	39
					Currants, black	7	1
					Currants, red	24	16
					Fennel	13	4
					Lettuce	121	7
					Lettuce	51	1
					Mint leaves	4	1
					Nectarines	166	8
					Parsley, flat-leaved	12	1
					Peaches	124	12
					Pears	161	43
					Peas with pods	69	2
					Peas without pods	35	1
					Peppers, sweet	316	19
					Plums	177	2
					Raisin	17	3
					Raspberries	94	23
					Rosemary	9	2
					Ruccola	34	7
					Spring onions	21	2
					Strawberries	200	72
					Table grapes	295	24
					Tomato, dried	1	1
					Tomatoes	166	19
					Wine, red	47	1
Cyromazine	F	8629	8621	8	Beans with pods	219	1
					Cucumbers	152	1
					Melons	191	4
					Passion fruits	25	1
					Tomatoes	166	1
DDT (sum)	DK	4609	4608	1	Parsley Root	9	1
DDT (sum)	F	8275	8271	4	Carrots	104	1
					Lambs meat	82	2
					Thyme (organic)	4	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
Deltamethrin	DK	4609	4605	4	Durum	3	1
					Rye kernels	170	1
					Wheat flour	42	2
Deltamethrin	F	8275	8202	73	Aubergines	67	1
					Barley (malting)	3	1
					Barley kernels	5	1
					Beans with pods	218	1
					Broccoli	28	1
					Bulgur	2	1
					Chilli peppers	39	2
					Chinese cabbage, dark	1	1
					Chives	14	4
					Coriander, leaves	11	1
					Dill	5	1
					Figs, fresh	33	1
					Flour mix	2	1
					Lettuce	121	1
					Maize	30	7
					Malting barley	4	3
					Mint leaves	4	2
					Nectarines	166	6
					Oranges	310	1
					Parsley, flat-leaved	12	1
					Passion fruits	25	1
					Pasta, dried	74	2
					Peaches	124	6
					Pears	161	1
					Peppers, sweet	316	1
					Radish	17	1
					Rice, short grained	8	2
					Rice, white	144	4
					Rice, white	33	1
					Rice, wild	3	1
					Ruccola	34	3
					Spearmint	4	1
					Spinach	123	6
					Wheat flour	72	1
					Wheat kernels	97	4
Diazinon	F	8235	8225	10	Coriander, leaves	11	1
					Oranges	310	1
					Pineapples	91	8
Dichlorprop (sum)	F	8629	8628	1	Tea, herbal	21	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
Dichlorvos	F	5848	5845	3	Maize	30	2
					Strawberries	133	1
Dicloran	F	8189	8188	1	Pomelos	38	1
Dicofol (sum)	F	8080	8073	7	Beans with pods	218	1
					Grapefruit	158	1
					Lemons	143	1
					Melons	191	1
					Oranges	310	3
Difenoconazole	DK	3403	3381	22	Apples	152	1
					Barley kernels	10	1
					Celeriac	23	6
					Celery	31	2
					Kale	15	2
					Leek	31	4
					Lettuce	100	1
					Parsley	12	1
					Parsnips	30	1
					Pears	121	2
					Spring onions	4	1
Difenoconazole	F	7992	7841	151	Apples	183	1
					Basil	5	2
					Beans with pods	218	7
					Broad beans	2	1
					Carambola	25	3
					Carrots	104	8
					Celeriac	21	17
					Celery	21	10
					Chervil, root	1	1
					Chilli powder	7	1
					Chives	14	8
					Coriander seed	1	1
					Coriander, leaves	11	1
					Cucumbers	152	1
					Currants, black	7	2
					Dill	5	3
					Fennel	13	1
					Gojiberries, dried	12	1
					Leek	32	3
					Lettuce	121	3
					Limes	19	1
					Mango	53	1
					Medlars	2	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Melons	191	1
					Nectarines	166	5
					Papayas	42	8
					Parsley	11	1
					Parsley, dried	2	1
					Parsley, flat-leaved	12	5
					Passion fruits	25	7
					Peaches	124	3
					Pears	161	4
					Peas with pods	69	5
					Peppers, sweet	316	1
					Pitaya	6	1
					Pomelos	38	8
					Radish	17	1
					Rosemary	9	2
					Strawberries	200	1
					Table grapes	295	9
					Tarragon	8	2
					Tomatoes	166	7
					Turnips	2	1
Diflubenzuron	F	2986	2982	4	Fungi, cultivated	2	1
					Grapefruit	16	2
					Vine leaves	3	1
Dimethoate (sum)	F	8609	8591	18	Beans with pods	219	1
					Blackberries	40	1
					Cherries	22	6
					Limes	19	1
					Medlars	2	1
					Oranges	310	2
					Papayas	42	2
					Radish	17	1
					Raspberries	94	1
					Strawberries	199	1
					Turnips	2	1
Dimethomorph	DK	2752	2749	3	Strawberries	257	3
Dimethomorph	F	8016	7865	151	Basil	5	2
					Chives	14	9
					Chives, dried	1	1
					Cucumbers	152	8
					Lettuce	121	5
					Lettuce	51	1
					Melons	191	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Nectarines	166	1
					Onions	24	1
					Parsley, dried	2	1
					Parsley, flat-leaved	12	2
					Parsley, flat-leaved (organic)	2	1
					Raspberries	94	1
					Rosemary (organic)	6	1
					Shallots	13	1
					Spinach	124	1
					Spring onions	21	8
					Strawberries	199	4
					Sweet basil	2	1
					Table grapes	296	45
					Tarragon	8	4
					Tomatoes	166	3
					Tomatoes, purée, conc.	1	1
					Vine leaves	3	1
					Wine, red	285	39
					Wine, rosé	2	1
					Wine, white	56	6
Diniconazole	F	7992	7991	1	Table grapes	295	1
Dinocap (sum)	F	7137	7132	5	Apples	159	1
					Blueberries	43	1
					Lemons	118	1
					Strawberries	182	2
Diphenylamine	F	8080	8068	12	Apples	183	11
					Pears	161	1
Dithiocarbamates	DK	982	965	17	Apples	99	4
					Blueberries	3	1
					Lettuce	62	1
					Pears	89	10
					Ruccola	1	1
Dithiocarbamates	F	2245	2081	164	Apples	119	9
					Apricots	5	2
					Beans with pods	124	6
					Broccoli	3	2
					Cauliflowers	8	3
					Chilli peppers	13	1
					Courgettes	14	1
					Cucumbers	96	15
					Leek	21	1
					Lettuce	70	6

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Lettuce	35	2
					Mango	20	2
					Melons	73	2
					Nectarines	110	3
					Oranges	13	1
					Papayas	22	14
					Parsley, flat-leaved	2	1
					Passion fruits	12	1
					Peaches	88	11
					Pears	116	21
					Peas with pods	35	9
					Peppers, sweet	197	2
					Ruccola	4	2
					Strawberries	61	7
					Table grapes	185	16
					Tomatoes	112	23
					Watermelon	9	1
Diuron	F	2379	2378	1	Tea	25	1
Endosulfan (sum)	F	8275	8270	5	Beans with pods	218	1
					Chives	14	2
					Tarragon	8	1
					Yardbeans	6	1
Epoxiconazole	DK	3346	3344	2	Barley kernels	10	1
					Wheat kernels	198	1
Epoxiconazole	F	8629	8628	1	Bananas	219	1
Ethion	F	8080	8077	3	Chilli powder	7	2
					Teas	2	1
Ethoprophos	F	7137	7136	1	Beans with pods	211	1
Etofenprox	F	7992	7876	116	Apples	183	5
					Chars	1	1
					Figs, fresh	33	1
					Kiwi	292	9
					Lemons	143	3
					Mandarins, clementines	306	7
					Nectarines	166	44
					Oranges	310	6
					Parsley	11	2
					Parsley, flat-leaved	12	2
					Peaches	124	14
					Pears	161	1
					Persimmon	70	4
					Plums	177	8

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Ruccola	34	1
					Soya beans, fresh	2	1
					Soyabeans (with pods)	4	1
					Spinach	123	5
					Table grapes	295	1
Etoxazole	F	326	325	1	Mandarins, clementines	35	1
Famoxadone	F	7672	7652	20	Beans with pods	219	1
					Leek	32	4
					Table grapes	296	10
					Tomatoes	166	5
Fenamidone	F	7137	7136	1	Tomatoes	143	1
Fenamiphos (sum)	F	7137	7136	1	Teas	167	1
Fenarimol	F	8080	8079	1	Gooseberries	4	1
Fenazaquin	F	8016	8013	3	Apples	183	1
					Mandarins, clementines	306	1
					Raspberries	94	1
Fenbuconazole	F	7992	7968	24	Apricots	29	3
					Blueberry, dried	3	1
					Grapefruit	158	5
					Nectarines	166	8
					Peaches	124	4
					Plums	177	3
Fenhexamid	DK	3085	3046	39	Blueberries	5	1
					Lettuce	100	2
					Strawberries	257	35
					Tarragon	1	1
Fenhexamid	F	8285	7958	327	Apricots	29	1
					Aubergines	67	1
					Basil	5	2
					Blackberries	40	8
					Blueberries	46	6
					Cucumbers	152	2
					Currants, red	24	11
					Kiwi	292	59
					Lettuce	121	3
					Nectarines	166	7
					Peaches	125	8
					Peppers, sweet	316	9
					Plums	177	4
					Raisin	17	4
					Raspberries	94	24
					Rosemary	9	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Ruccola	34	1
					Strawberries	199	45
					Sweet peppers, sliced and frozen	1	1
					Table grapes	296	57
					Tarragon	8	1
					Tea, fruit	3	1
					Tomatoes	166	14
					Wine, red	285	44
					Wine, white	56	13
Fenoxycarb	F	7137	7136	1	Apples	159	1
Fenpropathrin	F	8080	8068	12	Grapefruit	158	4
					Mineola	4	1
					Oranges	310	2
					Papayas	42	1
					Pomelos	38	4
Fenpropidin	DK	3085	3083	2	Strawberries	257	1
					Wheat kernels	120	1
Fenpropidin	F	8278	8276	2	Bananas	219	2
Fenpropimorph	F	7985	7967	18	Bananas	219	17
					Leek	32	1
Fenthion (sum)	F	7926	7925	1	Mandarins, clementines	306	1
Fenvalerat, esfenvalerat, RR- and SS-	F	2898	2894	4	Gojiberries, dried	12	4
Fenvalerat, esfenvalerat, RS- and SR-	F	2898	2894	4	Gojiberries, dried	12	4
Fenvalerate and esfenvalerate (sum)	F	5377	5372	5	Apricots	22	1
					Clementine	198	2
					Currants, black	4	1
					Grapefruit	56	1
Fipronil (sum)	F	7137	7131	6	Chilli peppers	39	1
					Oranges	283	1
					Rambutan	6	2
					Teas	167	2
Flonicamid (sum)	DK	849	847	2	Apples	56	2
Flonicamid (sum)	F	2470	2467	3	Nectarine	53	3
Fludioxonil	DK	3403	3327	76	Apples	152	4
					Blackberries	2	1
					Blueberries	5	1
					Cucumbers	140	2
					Lettuce	100	2
					Pears	121	5
					Strawberries	257	60
					Tomatoes	142	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
Fludioxonil	F	7992	7487	505	Apples	183	29
					Aubergines	67	3
					Beans with pods	218	3
					Blackberries	40	12
					Blueberries	46	7
					Boysenberries	1	1
					Celeriac	21	1
					Cherries	22	6
					Chilli peppers	39	2
					Cucumbers	152	25
					Currants, black	7	1
					Currants, red	24	17
					Kiwi	292	47
					Lettuce	121	4
					Mandarins, clementines	306	6
					Melons	191	1
					Nectarines	166	35
					Oranges	310	4
					Peaches	124	19
					Pears	161	61
					Peas with pods	69	2
					Peas without pods	35	1
					Peppers, sweet	316	40
					Persimmon	70	1
					Pineapples	91	1
					Plums	177	23
					Pomegranate	29	2
					Potatoes	86	1
					Raisin	17	2
					Raspberries	94	19
					Ruccola	34	6
					Strawberries	200	73
					Sweet potatoes	24	16
					Table grapes	295	21
					Tomatoes	166	12
					Wine, red	47	1
Flufenoxuron	F	7137	7134	3	Apples	159	1
					Soya beans, fresh	2	1
					Soyabeans (with pods)	4	1
Fluopicolid	F	2379	2363	16	Coriander, leaves	4	1
					Cucumbers	49	4
					Melon	44	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Spinach	39	6
					Table grapes	94	2
					Wine, red	46	1
Fluoxastrobin	F	8285	8284	1	Peas with pods	69	1
Flusilazole	F	8441	8433	8	Chilli powder	7	1
					Dill, dried	1	1
					Pomelos	38	1
					Raisin	17	1
					Rice, white	136	2
					Table grapes	296	2
Flutolanil	F	7992	7991	1	Potatoes	86	1
Flutriafol	F	8091	8002	89	Beans with pods	218	1
					Chilli peppers	39	3
					Chinese cabbage, dark	1	1
					Mandarins, clementines	306	1
					Melons	191	2
					Papayas	42	1
					Peppers, sweet	316	72
					Strawberries	200	3
					Tomatoes	166	5
Fluvalinate, tau-	F	7992	7990	2	Mandarins, clementines	306	1
					Oranges	310	1
Fluxapyroxad	F	62	61	1	Wheat kernels	6	1
Fuberidazole	DK	3403	3402	1	Wheat kernels	180	1
Glyphosate	DK	833	787	46	Barley (malting)	13	9
					Barley kernels	11	4
					Malting barley	3	3
					Oat kernels	16	4
					Rolled oat	38	2
					Rye flour	34	1
					Spelt, flour	29	1
					Wheat flour	42	6
					Wheat kernels	198	16
Glyphosate	F	642	602	40	Buckwheat flour	1	1
					Chick pea	7	4
					Corn flakes	3	1
					Lentils	13	2
					Pasta, dried	73	12
					Rolled oat	62	10
					Rye flour	12	1
					Rye kernels	30	1
					Wheat flour	72	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Wheat kernels	97	6
Haloxyfop	F	7098	7097	1	Beans, kidney	4	1
Hexaconazole	DK	3405	3404	1	Courgettes	14	1
Hexaconazole	F	8091	8085	6	Chilli powder	7	1
					Coriander seed	1	1
					Rice, white	136	3
					Rice, white	31	1
Hexythiazox	DK	3346	3342	4	Apples	151	1
					Strawberries	257	3
Hexythiazox	F	8629	8585	44	Blackberries	40	2
					Chilli peppers	39	1
					Cucumbers	152	4
					Lemons	143	9
					Mandarins, clementines	306	9
					Mineola	4	1
					Oranges	310	3
					Peppers, sweet	316	5
					Raspberries	94	2
					Strawberries	199	6
					Teas	167	2
Imazalil	DK	3346	3339	7	Cucumbers	140	3
					Orange, juice, conc.	9	3
					Potatoes	193	1
Imazalil	F	8629	7539	1090	Bananas	219	173
					Blood oranges	3	2
					Courgettes	37	1
					Grapefruit	158	152
					Kumquates	6	1
					Lemons	143	110
					Limes	19	16
					Mandarin, canned	1	1
					Mandarins, clementines	306	258
					Melons	191	53
					Mineola	4	4
					Oranges	310	280
					Oranges, juice	91	3
					Oranges, juice (organic)	10	1
					Oranges, juice, conc.	9	1
					Peaches	125	1
					Pears	162	11
					Pomelos	38	16
					Teas	167	2

Pesticide	**Origin of samples (DK=Domestic; F=Foreign)**	**Number of samples analysed**	**No. of samples without detected pesticides**	**Number of samples with detected pesticides**	**Commodity**	**Number of samples analysed**	**Number of samples with detected residues**
					Tomatoes	166	1
					Ugli	1	1
					Watermelon	28	2
Imidacloprid	DK	3014	3007	7	Lettuce	100	4
					Peppers, sweet	5	1
					Potatoes	187	1
					Tomatoes	137	1
Imidacloprid	F	7750	7459	291	Apples	159	1
					Apricots	28	7
					Aubergines	58	3
					Avocados	50	1
					Basil	5	1
					Beans with pods	211	3
					Bitter gourd (Momordica charantia)	1	1
					Blackberries	40	1
					Broccoli	24	3
					Carrots	100	1
					Cauliflowers	25	1
					Celeriac	21	1
					Celery	20	7
					Chilli peppers	39	3
					Chilli powder	7	3
					Chinese cabbage	6	1
					Chives	14	2
					Coffee beans, green	1	1
					Coriander, leaves	11	2
					Courgettes	35	10
					Cucumbers	132	1
					Cumin seed	3	2
					Dill	5	1
					Gojiberries, dried	12	4
					Grapefruit	139	19
					Head cabbage, spring	11	1
					Kumquates	6	2
					Lemons	118	1
					Lettuce	109	16
					Lettuce	42	12
					Limes	13	1
					Mandarins, clementines	292	2
					Mango	51	1
					Melons	180	33
					Mint leaves	4	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Nectarines	161	11
					Okra	5	2
					Oranges	283	16
					Oranges, juice	85	1
					Papayas	38	4
					Passion fruits	24	1
					Peaches	124	9
					Pears	139	1
					Peas with pods	68	1
					Peppers, sweet	289	7
					Persimmon	69	1
					Pistachios	6	2
					Plums	150	1
					Pomegranate	30	2
					Pomelos	36	3
					Potatoes	82	1
					Raisin	17	4
					Rice, white	97	7
					Rice, white	22	3
					Ruccola	33	8
					Soya beans, fresh	2	1
					Soyabeans (with pods)	4	1
					Spinach	119	1
					Spring onions	20	1
					Table grapes	259	23
					Tarragon	8	3
					Tea leaves, black	4	1
					Teas	167	11
					Tomatoes	143	2
					Watermelon	26	4
					Wine, red	284	4
					Wine, white	56	2
					Yardbeans	6	2
Indoxacarb	DK	2420	2418	2	Cucumbers	134	1
					Lettuce	100	1
Indoxacarb	F	7137	7117	20	Celery	20	2
					Chilli peppers	39	1
					Currants, red	22	1
					Lettuce	109	1
					Nectarines	161	1
					Pears	139	1
					Peppers, sweet	289	4

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Spinach	119	6
					Sweet basil	2	1
					Table grapes	259	1
					Vine leaves	3	1
Iprodione	DK	3337	3336	1	Lettuce	100	1
Iprodione	F	8073	7869	204	Apples	183	13
					Beans with pods	218	10
					Blackberries	40	2
					Blueberries	46	2
					Cherries	22	1
					Cucumbers	152	1
					Currants, red	24	11
					Kiwi	292	19
					Lettuce	121	13
					Nectarines	166	15
					Pak choi	3	1
					Peaches	124	8
					Pears	161	2
					Peppers, sweet	316	2
					Plums	177	49
					Raisin	17	1
					Raspberries	94	5
					Spinach	123	1
					Spring onions	21	4
					Strawberries	200	12
					Table grapes	295	26
					Tomatoes	166	6
Iprovalicarb	F	8285	8259	26	Beans with pods	219	1
					Table grapes	296	4
					Wine, red	285	17
					Wine, rosé	2	1
					Wine, white	56	3
Isoprocarb	F	2393	2392	1	Pomelo	32	1
Isoprothiolane	F	2552	2529	23	Rice, brown	5	1
					Rice, white	136	19
					Rice, white	31	3
Kresoxim-methyl	F	8073	8062	11	Chilli peppers	39	1
					Currants, red	24	2
					Peppers, sweet	316	1
					Strawberries	200	5
					Table grapes	295	2
Linuron	DK	3085	3084	1	Parsnips	30	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
Linuron	F	8285	8261	24	Carrots	104	9
					Celeriac	21	4
					Celery	21	1
					Chervil	1	1
					Coriander, leaves	11	2
					Fennel	13	1
					Parsley	11	2
					Parsley, dried	2	1
					Parsley, flat-leaved	12	1
					Tea, herbal	21	1
					Thyme	9	1
Lufenuron	F	7137	7131	6	Carambola	23	3
					Rosemary	9	1
					Tarragon	8	1
					Tomatoes	143	1
Malathion-Malaoxon (sum)	F	8413	8402	11	Cumin seed	3	1
					Figs, dried	16	1
					Grapefruit	158	1
					Maize	28	2
					Mandarins, clementines	306	2
					Oranges	310	1
					Pomelos	38	1
					Rice, white	105	1
					Table grapes	296	1
Mandipropamid	DK	2552	2526	26	Celeriac	22	1
					Cucumbers	134	2
					Lettuce	100	16
					Potatoes	187	1
					Ruccola	9	6
Mandipropamid	F	7297	7253	44	Lettuce	109	3
					Lettuce, baby leaves	1	1
					Parsley	10	3
					Parsley, flat-leaved	12	1
					Ruccola	33	12
					Spinach	119	7
					Table grapes	259	15
					Tomatoes	143	2
MCPA (sum)	DK	2189	2187	2	Barley kernels	8	1
					Wheat kernels	107	1
Mecarbam	F	7760	7759	1	Tarragon	8	1
Mecoprop (sum)	F	8629	8628	1	Teas	167	1
Mepanipyrim	DK	1235	1222	13	Strawberries	129	13

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
Mepanipyrim	F	3791	3779	12	Coriander, leaves	10	1
					Strawberries	101	11
Mepanipyrim (sum)	DK	1185	1172	13	Strawberries	127	13
Mepanipyrim (sum)	F	3346	3334	12	Strawberries	81	11
					Tomatoes	58	1
Mepiquat	DK	1286	1271	15	Barley kernels	11	3
					Malting barley	3	1
					Mushroom (Agaricus bisporus)	23	2
					Rye kernels	174	2
					Wheat kernels	200	7
Mepiquat	F	1493	1473	20	Barley (malting)	3	3
					Barley kernels	5	2
					Malting barley	4	1
					Malting barley (organic)	1	1
					Mushroom (Agaricus bisporus)	14	1
					Rolled oat	61	1
					Rye flour	10	1
					Rye flour	12	4
					Spelt, flour	38	4
					Wheat flour	76	1
					Wheat kernels	98	1
Metaflumizone	F	2393	2392	1	Tomatoes	57	1
Metalaxyl	DK	3346	3345	1	Basil	2	1
Metalaxyl	F	8629	8460	169	Basil	5	2
					Broccoli	28	1
					Brussels sprouts	12	1
					Chilli peppers	39	2
					Chilli powder	7	1
					Chives	14	3
					Cucumbers	152	12
					Ginger	8	1
					Lemons	143	2
					Lettuce	121	12
					Lettuce	51	7
					Mandarins, clementines	306	3
					Melons	191	1
					Mint leaves	4	1
					Oranges	310	4
					Peas with pods	69	3
					Pepper, white	1	1
					Peppers, sweet	316	3
					Potatoes	86	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Radish	17	4
					Rosemary	9	2
					Ruccola	34	3
					Soya beans, fresh	2	1
					Soyabeans (with pods)	4	1
					Spring onions	21	1
					Strawberries	199	4
					Table grapes	296	12
					Tea, herbal	21	1
					Tomatoes	166	3
					Vine leaves	3	1
					Wine, red	285	67
					Wine, rosé	2	1
					Wine, white	56	7
Metamitron	F	7137	7135	2	Teas	167	1
					Thyme	9	1
Methamidophos	F	8629	8625	4	Chilli peppers	39	1
					Chilli powder	7	1
					Chives	14	1
					Rice, white	144	1
Methidathion	F	8035	8031	4	Papayas	42	1
					Pomelos	38	2
					Raspberries	94	1
Methiocarb (sum)	F	8629	8622	7	Chives	14	2
					Mint leaves	4	1
					Strawberries	199	2
					Table grapes	296	1
					Thyme	9	1
Methomyl (sum)	F	8629	8619	10	Beans with pods	219	1
					Papayas	42	5
					Spearmint	4	1
					Table grapes	296	1
					Teas	167	1
					Thyme	9	1
Methoxyfenozide	F	5519	5509	10	Beans with pods	168	1
					Melons	151	1
					Peaches	94	1
					Pears	107	2
					Table grapes	186	1
					Wine, red	238	4
Monocrotophos	F	8629	8626	3	Chilli peppers	39	1
					Teas	167	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
Myclobutanil	F	8073	7961	112	Apricots	29	1
					Bananas	219	7
					Blackberries	40	1
					Chilli peppers	39	1
					Cucumbers	152	4
					Melons	191	1
					Nectarines	166	3
					Papayas	42	1
					Peaches	124	4
					Peppers, sweet	316	9
					Pomelos	38	6
					Raisin	17	1
					Raspberries	94	2
					Strawberries	200	28
					Table grapes	295	40
					Tomatoes	166	1
					Vine leaves	3	1
					Watermelon	28	1
Orthophenylphenol	F	7992	7815	177	Aubergines	67	1
					Barley grit	2	1
					Grapefruit	158	34
					Lemons	143	23
					Limes	19	1
					Mandarins, clementines	306	26
					Mineola	4	3
					Oranges	310	86
					Oranges, juice	91	1
					Ugli	1	1
Oxadiazon	F	2379	2377	2	Spring onions	13	1
					Tarragon	6	1
Oxadixyl	F	8629	8626	3	Parsley, flat-leaved (organic)	2	1
					Ruccola	34	1
					Tea, herbal	21	1
Oxamyl	F	6439	6438	1	Beans with pods	174	1
Paclobutrazol	F	7992	7990	2	Rice, white	136	2
Penconazole	F	8080	8030	50	Cucumbers	152	1
					Dill	5	1
					Dill, dried	1	1
					Melons	191	1
					Peaches	124	1
					Peas with pods	69	4
					Strawberries	200	17

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Table grapes	295	23
					Vine leaves	3	1
Pencycuron	DK	2420	2396	24	Potatoes	187	8
					Potatoes, new	59	16
Pencycuron	F	7137	7135	2	Coriander, leaves	11	1
					Potatoes	82	1
Pendimethalin	DK	3346	3343	3	Carrots	229	2
					Kale	15	1
Pendimethalin	F	8629	8619	10	Avocados	53	1
					Blood oranges	3	1
					Carrots	104	1
					Coriander, leaves	11	1
					Dill, dried	1	1
					Grapefruit	158	1
					Kale	3	1
					Parsley	11	1
					Ruccola	34	1
					Spinach	124	1
Permethrin (sum)	DK	4609	4606	3	Rye flour	34	1
					Tarragon	1	1
					Wheat flour	42	1
Permethrin (sum)	F	8275	8264	11	Pasta, dried	74	2
					Raisin	17	1
					Rambutan	7	1
					Rice, brown	5	1
					Rice, white	144	4
					Rice, white	33	1
					Wheat flour (organic)	18	1
Phenmedipham	DK	2420	2419	1	Strawberries	256	1
Phenmedipham	F	7137	7132	5	Spinach	119	5
Phorate (sum)	F	8547	8545	2	Cumin seed	3	2
Phosalone	F	8080	8079	1	Raspberries	94	1
Phosmet (sum)	F	7481	7463	18	Apples	183	5
					Blueberries	46	1
					Blueberry, dried	3	1
					Currants, red	24	2
					Mandarins, clementines	306	1
					Nectarines	166	2
					Olive oil, virgin or extra-virgin	29	1
					Oranges	310	2
					Pears	161	1
					Plums	177	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
Phosphamidon	F	8285	8284	1	Cumin seed	3	1
Phoxim	F	7760	7759	1	Pomelos	38	1
Picoxystrobin	F	5906	5905	1	Blueberries	33	1
Piperonylbutoxid	F	2379	2378	1	Sweet potatoes	16	1
Pirimicarb	DK	435	433	2	Strawberries	37	2
Pirimicarb	F	1190	1184	6	Apples	23	1
					Beans with pods	31	2
					Blackberries	6	1
					Cucumbers	24	1
					Strawberries	33	1
Pirimicarb (sum)	DK	2911	2899	12	Apples	128	1
					Blueberries	5	1
					Raspberries	9	1
					Strawberries	220	9
Pirimicarb (sum)	F	7439	7406	33	Apples	160	13
					Beans with pods	188	1
					Cherries	22	1
					Courgettes	37	1
					Currants, red	23	3
					Mint leaves	4	2
					Pak choi	3	1
					Parsley, flat-leaved	12	1
					Peppers, sweet	269	3
					Spearmint	4	1
					Strawberries	166	5
					Tomatoes	140	1
Pirimiphos-methyl	DK	4611	4607	4	Breakfast cereals	3	1
					Wheat flour	42	3
Pirimiphos-methyl	F	8374	8300	74	Barley (malting)	3	1
					Barley kernels	5	3
					Buckwheat flour	1	1
					Bulgur	2	1
					Chick pea, dry	5	1
					Chilli peppers	39	2
					Cornflour	41	3
					Malting barley	4	3
					Pasta	10	5
					Pasta, dried	74	27
					Peppers, sweet	316	2
					Rice, white	144	1
					Rice, white	33	1
					Rolled oat	62	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Rye flour	8	1
					Rye kernels	30	2
					Soy sausage	1	1
					Spelt, flour	38	2
					Tomatoes	166	1
					Wheat flour	72	9
					Wheat kernels	97	4
					Wheat, wholemeal	18	1
Prochloraz (sum)	F	8091	7948	143	Avocados	53	6
					Grapefruit	158	14
					Lemons	143	13
					Limes	19	4
					Mandarins, clementines	306	5
					Mango	53	16
					Mushroom (Agaricus bisporus)	25	10
					Oranges	310	11
					Papayas	42	23
					Pineapples	91	23
					Pomelos	38	18
Procymidone	F	8113	8110	3	Peppers, sweet	316	1
					Strawberries	200	2
Profenofos	F	8235	8229	6	Aubergines	67	1
					Chilli peppers	39	1
					Chilli powder	7	1
					Cumin seed	3	1
					Oranges	310	2
Propamocarb	DK	3346	3255	91	Basil	2	1
					Cucumbers	140	68
					Lettuce	100	4
					Potatoes	193	9
					Potatoes, new	59	1
					Ruccola	9	2
					Snake gourd	2	2
					Tomatoes	141	4
Propamocarb	F	8629	8399	230	Aubergines	67	3
					Beans with pods	219	1
					Beetroot leaves	3	1
					Brussels sprouts	12	3
					Cape gooseberry	15	2
					Carrots	104	2
					Chilli powder	7	1
					Coriander, leaves	11	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Courgettes	37	4
					Cucumbers	152	80
					Head cabbage, spring	13	1
					Leek	32	2
					Lettuce	121	11
					Lettuce	51	2
					Lettuce, baby leaves	1	1
					Melons	191	19
					Mint leaves	4	1
					Onions	24	1
					Pak choi	3	1
					Paprika	5	1
					Parsley	11	3
					Parsley, flat-leaved	12	1
					Passion fruits	25	1
					Peppers, sweet	316	12
					Potatoes	86	11
					Radish	17	10
					Raisin	17	1
					Ruccola	34	15
					Spinach	124	16
					Strawberries	199	2
					Table grapes	296	1
					Tomato, canned	7	1
					Tomatoes	166	15
					Wine, white	56	1
					Yardbeans	6	1
Propanil	F	7992	7991	1	Rice, white	31	1
Propargite	F	7992	7989	3	Oranges	310	2
					Tomatoes	166	1
Propham	F	8080	8076	4	Blueberries	46	2
					Pears	161	1
					Wheat, wholemeal	18	1
Propiconazole	DK	3337	3336	1	Peas without pods	30	1
Propiconazole	F	8413	8286	127	Blueberries	46	1
					Chilli peppers	39	1
					Chilli powder	7	1
					Cumin seed	3	2
					Grapefruit	158	3
					Lemons	143	14
					Mandarins, clementines	306	27
					Melons	191	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Oranges	310	33
					Peaches	125	2
					Pears	162	3
					Peppers, sweet	316	1
					Pomegranate	31	1
					Pomelos	38	5
					Rice flour	4	1
					Rice, brown	4	1
					Rice, white	105	23
					Rice, white	24	4
					Table grapes	296	1
					Teas	167	2
Propoxur	F	8629	8625	4	Aubergines	67	1
					Cucumbers	152	1
					Currants, red	24	1
					Peanut	7	1
Propyzamide	F	8073	8069	4	Lettuce	121	3
					Mandarins, clementines	306	1
Proquinazid	F	8629	8623	6	Table grapes	296	6
Prosulfocarb	DK	3014	2999	15	Apples	142	5
					Carrots	211	1
					Celery	31	1
					Kale	15	2
					Parsley	12	2
					Parsley Root	8	1
					Parsley, flat-leaved (organic)	5	1
					Parsnips	27	1
					Strawberries	256	1
Prosulfocarb	F	7750	7730	20	Carrots	100	8
					Celeriac	21	5
					Fennel seed	1	1
					Rosemary	9	2
					Spring onions	20	1
					Tea, herbal	21	2
					Wine, red	284	1
Prothioconazole	DK	3405	3403	2	Celeriac	23	1
					Wheat kernels	180	1
Prothioconazole	F	8084	8083	1	Oat kernels	12	1
Pymetrozine	DK	3346	3342	4	Cucumbers	140	3
					Tomatoes	141	1
Pymetrozine	F	8629	8606	23	Aubergines	67	1
					Chilli peppers	39	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Courgettes	37	1
					Cucumbers	152	10
					Lettuce	121	1
					Peppers, sweet	316	6
					Strawberries	199	1
					Tomatoes	166	1
Pyraclostrobin	DK	3346	3234	112	Apples	151	19
					Blueberries	5	1
					Cherries	3	2
					Currants, black	3	3
					Currants, red	3	2
					Kale	15	1
					Lettuce	100	11
					Pears	121	12
					Peas with pods	84	4
					Plums	19	1
					Potatoes, new	59	1
					Raspberries	13	1
					Ruccola	9	2
					Spinach	33	4
					Strawberries	257	47
					Wheat kernels	198	1
Pyraclostrobin	F	8629	8298	331	Apples	183	26
					Apricots	29	1
					Aubergines	67	1
					Blackberries	40	4
					Blueberries	46	5
					Blueberry, dried	3	1
					Chars	1	1
					Chilli peppers	39	1
					Currants, red	24	16
					Dill	5	1
					Grapefruit	158	28
					Head cabbage, red	8	1
					Kiwi	292	2
					Leek	32	4
					Lemons	143	1
					Lettuce	121	12
					Lettuce, baby leaves	1	1
					Mandarins, clementines	306	1
					Melons	191	1
					Nectarines	166	16

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Oranges	310	13
					Papayas	42	1
					Parsley	11	1
					Parsley, dried	2	1
					Parsley, flat-leaved	12	3
					Passion fruits	25	1
					Peaches	125	6
					Pears	162	60
					Peppers, sweet	316	13
					Plums	177	4
					Pomegranate	31	1
					Pomelos	38	6
					Raisin	17	1
					Raspberries	94	9
					Rosemary	9	1
					Ruccola	34	6
					Shallots	13	1
					Spinach	124	4
					Strawberries	199	33
					Sweet basil	2	1
					Table grapes	296	18
					Tarragon	8	1
					Teas	167	1
					Tomatoes	166	19
					Turnips	2	1
					Wine, white	56	1
Pyridaben	F	8629	8600	29	Gojiberries, dried	12	1
					Grapefruit	158	9
					Lemons	143	1
					Limes	19	2
					Mandarins, clementines	306	2
					Mineola	4	1
					Oranges	310	1
					Peppers, sweet	316	3
					Teas	167	4
					Tomatoes	166	4
					Yardbeans	6	1
Pyrimethanil	DK	3085	3060	25	Cucumbers	140	8
					Lettuce	100	2
					Strawberries	257	15
Pyrimethanil	F	8132	7847	285	Apples	183	6
					Apricots	29	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Aubergines	67	2
					Blackberries	40	1
					Blood oranges	3	1
					Chives	14	2
					Chives, dried	1	1
					Cucumbers	152	2
					Grapefruit	128	14
					Lemons	108	19
					Mandarins, clementines	292	52
					Nectarines	166	9
					Oranges	269	43
					Oranges, juice	85	2
					Peaches	125	1
					Pears	162	23
					Peas without pods	35	1
					Peppers, sweet	316	7
					Plums	177	26
					Raisin	17	3
					Raspberries	94	24
					Strawberries	199	8
					Table grapes	296	22
					Tea, herbal	21	1
					Tomatoes	166	7
					Vine leaves	3	1
					Wine, red	285	6
Pyriproxyfen	DK	3346	3345	1	Onions	139	1
Pyriproxyfen	F	8629	8471	158	Aubergines	67	1
					Blood oranges	3	1
					Chilli peppers	39	1
					Grapefruit	158	25
					Lemons	143	46
					Mandarins, clementines	306	36
					Oranges	310	24
					Papayas	42	2
					Peppers, sweet	316	5
					Plums	177	1
					Pomegranate	31	3
					Pomelos	38	2
					Tomato, dried	1	1
					Tomatoes	166	10
Quinoxyfen	F	7992	7967	25	Currants, red	24	2
					Gooseberries	4	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Peaches	124	1
					Peas with pods	69	2
					Raisin	17	1
					Strawberries	200	8
					Table grapes	295	9
Quintozene (sum)	DK	4609	4607	2	Parsnip (organic)	1	1
					Parsnips	30	1
Quintozene (sum)	F	8275	8271	4	Carrots	104	3
					Peppers, sweet	316	1
Quizalofop	F	8285	8283	2	Beetroot leaves	3	1
					Spearmint	4	1
Spinosad (sum)	DK	2420	2417	3	Basil	2	1
					Lettuce	100	1
					Tomatoes	137	1
Spinosad (sum)	F	7137	7011	126	Aubergines	58	3
					Bananas	200	1
					Basil	5	2
					Beans with pods	211	2
					Blackberries	40	3
					Cherries	20	1
					Chilli peppers	39	2
					Chives	14	7
					Cucumbers	132	2
					Cucumbers (organic)	18	4
					Lettuce	109	6
					Lettuce (organic)	11	2
					Lettuce, baby leaves (organic)	1	1
					Mandarins, clementines	292	1
					Nectarines	161	24
					Okra	5	1
					Pak choi (organic)	2	1
					Parsley	10	1
					Parsley, flat-leaved	12	1
					Parsley, flat-leaved (organic)	2	1
					Peaches	124	13
					Pears (organic)	25	1
					Peppers, sweet	289	1
					Raspberries	91	2
					Rosemary	9	2
					Rosemary (organic)	6	1
					Ruccola	33	4
					Ruccola (organic)	3	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Spearmint	4	1
					Spinach	119	4
					Spinach (organic)	7	2
					Strawberries	182	6
					Table grapes	259	17
					Tarragon	8	3
					Tea, herbal (organic)	3	1
					Tomatoes	143	1
Spiroxamine	F	8622	8611	11	Chives	14	1
					Rosemary	9	1
					Table grapes	296	9
Tebuconazole	DK	3474	3465	9	Blueberries	5	1
					Celeriac	23	1
					Kale	15	1
					Rye flakes	4	1
					Rye kernels	170	2
					Spring onions	4	1
					Strawberries	257	1
					Wheat kernels	198	1
Tebuconazole	F	8080	7806	274	Apples	183	2
					Apricots	29	2
					Aubergines	67	1
					Basil	5	1
					Beans with pods	218	3
					Blueberries	46	2
					Carrots	104	5
					Celery	21	1
					Cherries	22	5
					Chilli peppers	39	3
					Chilli powder	7	2
					Chives	14	2
					Coriander seed	1	1
					Coriander, leaves	11	1
					Currants, red	24	2
					Figs, fresh	33	2
					Leek	32	7
					Limes	19	1
					Mandarins, clementines	306	1
					Melons	191	2
					Mint leaves	4	1
					Nectarines	166	61
					Oranges	310	3

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Papayas	42	5
					Passion fruits	25	4
					Peaches	124	31
					Pears	161	1
					Peas with pods	69	12
					Peppers, sweet	316	7
					Plums	177	22
					Pomelos	38	3
					Raisin	17	5
					Raspberries	94	2
					Rice, brown	5	2
					Rice, white	144	17
					Rice, white	33	4
					Rice, wild	3	1
					Rye kernels	30	2
					Shallots	13	1
					Table grapes	295	14
					Tomatoes	166	18
					Watermelon	28	1
					Wheat kernels	97	11
Tebufenpyrad	F	8629	8598	31	Beans with pods	219	1
					Lemons	143	2
					Mandarins, clementines	306	24
					Peaches	125	1
					Strawberries	199	2
					Tomatoes	166	1
Tetraconazole	F	7992	7991	1	Table grapes	295	1
Tetradifon	F	8080	8079	1	Melons	191	1
Thiabendazole	DK	3318	3317	1	Orange, juice, conc.	9	1
Thiabendazole	F	8622	8056	566	Apples	183	3
					Avocados	53	6
					Avocados (organic)	11	1
					Bananas	219	147
					Beans with pods	219	1
					Grapefruit	158	106
					Kiwi	292	3
					Lemons	143	37
					Limes	19	6
					Mandarins, clementines	306	75
					Mango	54	30
					Mineola	4	4
					Oranges	310	114

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Oranges, juice	91	2
					Papayas	42	17
					Peaches	125	1
					Pomelos	38	2
					Rice, black	1	1
					Spinach	124	1
					Sweet potatoes	24	5
					Teas	167	2
					Ugli	1	1
					Witloof	3	1
Thiacloprid	DK	3014	2986	28	Blueberries	5	1
					Honey	28	6
					Strawberries	256	21
Thiacloprid	F	7750	7643	107	Apples	159	10
					Apricots	28	2
					Basil	5	2
					Beans with pods	211	3
					Blackberries	40	3
					Blueberries	43	5
					Cherries	20	2
					Chilli powder	7	1
					Chives	14	1
					Coriander, leaves	11	1
					Courgettes	35	1
					Cucumbers	132	1
					Currants, red	22	7
					Lettuce	109	1
					Melons	180	4
					Mint leaves	4	1
					Nectarines	161	1
					Peaches	124	6
					Pears	139	12
					Peas with pods	68	1
					Peppers, sweet	289	1
					Pomegranate	30	1
					Quinces	2	1
					Rosemary	9	2
					Strawberries	182	19
					Table grapes	259	1
					Teas	167	13
					Thyme	9	3
					Tomatoes	143	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
Thiamethoxam	DK	435	432	3	Lettuce	12	3
Thiamethoxam	F	1190	1182	8	Chilli powder	3	1
					Lettuce, iceberg	7	1
					Rice, white	27	1
					Strawberries	33	1
					Tea	23	3
					Tomatoes	26	1
Thiamethoxam (sum)	DK	2579	2572	7	Kale	14	1
					Lettuce	88	5
					Spinach	31	1
Thiamethoxam (sum)	F	6560	6516	44	Aubergines	58	1
					Broccoli	23	1
					Chilli peppers	26	2
					Chinese cabbage	5	1
					Chives	7	1
					Coffee beans, green	1	1
					Coriander, leaves	10	1
					Courgettes	35	2
					Cucumbers	108	2
					Cumin seed	3	2
					Lettuce	91	6
					Lettuce	35	1
					Melons	159	4
					Peppers, sweet	242	1
					Pomelos	21	1
					Rice, brown	3	1
					Rice, white	70	6
					Ruccola	33	2
					Table grapes	213	3
					Teas	144	4
					Tomatoes	117	1
Thiophanate-methyl	F	8278	8237	41	Beans with pods	219	1
					Chives, dried	1	1
					Cumin seed	3	1
					Gojiberries, dried	12	2
					Gooseberries	4	1
					Grapefruit	158	2
					Melons	191	4
					Nectarines	166	3
					Papayas	42	3
					Peaches	125	1
					Peas without pods	35	1

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analy-sed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analy-sed	Number of samples with detected residues
					Pomelos	38	1
					Raspberries	94	1
					Shallots	13	1
					Strawberries	199	4
					Table grapes	296	2
					Tomatoes	166	2
					Wine, red	285	9
					Wine, white	56	1
Tolclofos-methyl	DK	2562	2561	1	Lettuce	100	1
Tolclofos-methyl	F	7760	7755	5	Lettuce	121	3
					Radish	17	2
Triadimefon (sum)	F	8373	8283	90	Carambola	25	1
					Chilli peppers	39	1
					Cucumbers	152	1
					Gojiberries, dried	12	1
					Melons	191	1
					Peppers, sweet	316	14
					Pineapples	91	62
					Raisin	17	1
					Strawberries	199	3
					Table grapes	296	1
					Tomatoes	166	4
Triazophos	F	8525	8514	11	Chilli powder	7	1
					Cumin seed	3	1
					Gojiberries, dried	12	2
					Rice, brown	4	1
					Rice, white	105	2
					Teas	167	4
Tricyclazole	F	2993	2951	42	Rice, white	97	33
					Rice, white	22	9
Trifloxystrobin	DK	3384	3383	1	Strawberries	257	1
Trifloxystrobin	F	8073	7932	141	Apples	183	16
					Apricots	29	5
					Beans with pods	218	2
					Cherries	22	1
					Chilli peppers	39	1
					Currants, black	7	1
					Currants, red	24	3
					Gooseberries	4	2
					Grapefruit	158	4
					Leek	32	1
					Lemons	143	2

Pesticide	Origin of samples (DK=Domestic; F=Foreign)	Number of samples analysed	No. of samples without detected pesticides	Number of samples with detected pesticides	Commodity	Number of samples analysed	Number of samples with detected residues
					Melons	191	1
					Nectarines	166	3
					Oranges	310	8
					Passion fruits	25	3
					Peaches	124	8
					Pears	161	4
					Peppers, sweet	316	5
					Raisin	17	2
					Strawberries	200	49
					Table grapes	295	19
					Tomatoes	166	1
Triflumizol (sum)	F	2379	2376	3	Cucumbers	49	3
Triflumuron	F	8285	8274	11	Apples	183	1
					Date	8	2
					Dates, dried	8	1
					Nectarines	166	1
					Peaches	125	3
					Pears	162	1
					Plums	177	1
					Teas	167	1
Vinclozolin (sum)	F	5547	5546	1	Strawberries	135	1
Zoxamide	F	7137	7135	2	Table grapes	259	2

7.3 Consumption used for exposure calculation

Consumer group	Children	Adults	Male	Female	Male High F&V a)	Female High F&V a)	Assumed domestic consumption
Age (years)	4-6	15-75	15-75	15-75	15-75	15-75	
Avg. weight (kg)							
No. of individuals in group							
	Average consumption (g/kg bw/day)						
Almonds	0.0736	0.0336	0.0232	0.0434	0.0413	0.0767	0%
Apples	3.26	1.01	0.914	1.09	1.89	1.76	46%
Apricot, dried	0.028	0.00616	0.0039	0.00828	0.00949	0.0149	0%
Apricots	0.0126	0.00665	0.00677	0.00653	0.00891	0.00779	0%
Aspargus	0.029	0.0216	0.0162	0.0268	0.027	0.0507	21%
Aubergines	0.0106	0.016	0.0144	0.0174	0.0277	0.0324	0%
Avocados	0.0504	0.0413	0.022	0.0594	0.0481	0.123	0%
Bananas	1.33	0.414	0.355	0.47	0.831	0.759	0%
Barley kernels	0.00334	0.00222	0.00251	0.00195	0.00461	0.0028	71%
Barley, malted	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	43%
Beans with pods	0.0607	0.0309	0.024	0.0373	0.0419	0.0551	2%
Beans, dried	0.021	0.00928	0.00667	0.0117	0.0172	0.0231	0%
Beef liver	0	0.00141	0.00126	0.00155	0.00101	0.00247	100%
Beef meat	0.81	0.579	0.673	0.49	0.729	0.535	48%
Beetroot	0.0477	0.0397	0.0405	0.039	0.0616	0.0664	94%
Blueberries	0.00925	0.00433	0.00349	0.00512	0.00636	0.00962	10%
Broccoli	0.0727	0.0639	0.0559	0.0714	0.112	0.126	31%
Brussels sprouts	0.0117	0.00897	0.00737	0.0105	0.0153	0.0192	50%
Buckwheat	0	0.0000963	0.0000228	0.000165	0.0000455	0.000565	7%
Bulgur	0.033	0.0142	0.0164	0.0121	0.0218	0.0153	0%
Carrots	1.59	0.418	0.331	0.5	0.732	0.908	68%
Cauliflower	0.123	0.0824	0.0748	0.0895	0.134	0.144	42%
Celeriac	0.0405	0.0261	0.0228	0.0292	0.0299	0.0401	53%
Celery	0.00426	0.00504	0.00246	0.00746	0.0056	0.0157	56%
Cherries	0.0158	0.00645	0.0037	0.00904	0.00927	0.0208	12%
Chick pea	0.00102	0.00126	0.000702	0.00178	0.000799	0.0022	0%
Chicken meat	0.632	0.274	0.274	0.274	0.353	0.33	100%
Chilli peppers	0.000141	0.000139	0.000135	0.000143	0.000234	0.000195	0%
Chinese cabbage	0.0264	0.0261	0.0254	0.0268	0.0439	0.0365	62%
Chives	0.00249	0.00198	0.00167	0.00227	0.00216	0.00297	19%
Citrus, other	0	0.0000528	0.000109	0	0.000117	0	0%
Coconuts	0.00113	0.000309	0.000289	0.000328	0.00132	0.000408	0%
Coconuts, flakes	0.00611	0.00191	0.00188	0.00193	0.00356	0.00242	0%
Coffee beans, green	0	0.0000575	0.0000617	0.0000536	0	0.0000193	0%
Coriander, leaves	0.0000643	0.000241	0.0000912	0.000381	0.000164	0.000816	14%
Corn flour	0.243	0.0313	0.033	0.0296	0.0357	0.0279	5%
Courgettes	0.0232	0.0316	0.0277	0.0353	0.0575	0.0725	30%
Cucumbers	1.95	0.311	0.249	0.369	0.466	0.617	47%
Currants	0.0112	0.00603	0.00627	0.00581	0.0082	0.00744	20%

Consumer group	Children	Adults	Male	Female	Male High F&V [a)]	Female High F&V [a)]	Assumed domestic consumption
Age (years)	4-6	15-75	15-75	15-75	15-75	15-75	
Avg. weight (kg)							
No. of individuals in group							
	Average consumption (g/kg bw/day)						
Dates	0.0168	0.000959	0.000612	0.00128	0.00188	0.00206	0%
Dill	0.0000643	0.000241	0.0000912	0.000381	0.000164	0.000816	14%
Duck meat	0.0109	0.0187	0.02	0.0174	0.0283	0.0177	0%
Fat, pork	0.000714	0.00152	0.00274	0.000374	0.0021	0.000377	100%
Figs, dried	0.0524	0.00769	0.00576	0.00951	0.0111	0.0154	0%
Figs, fresh	0.00388	0.000659	0.000594	0.000719	0.000302	0.000962	0%
Fruit, canned	0.0126	0.00665	0.00677	0.00653	0.00891	0.00779	0%
Fruit, dried	0.0168	0.000959	0.000612	0.00128	0.00188	0.00206	3%
Fruit, exotic	0	0.0000528	0.000109	0	0.000117	0	0%
Fruit, other	0	0.000155	0.000109	0.000199	0.0000417	0.000338	14%
Garlics	0.000959	0.0012	0.00108	0.00132	0.00136	0.002	0%
Globe artichokes	0	0.00109	0.000311	0.00181	0.000246	0.00704	0%
Gooseberries	0	0.000155	0.000109	0.000199	0.0000417	0.000338	64%
Grapefruit	0.032	0.0155	0.0097	0.0209	0.0209	0.0349	0%
Hazelnuts	0.0618	0.0207	0.0154	0.0257	0.0305	0.0488	0%
Head cabbage	0.0427	0.0482	0.0449	0.0513	0.0715	0.0738	53%
Head cabbage, red	0.0131	0.0163	0.0181	0.0146	0.0191	0.0174	69%
Herbs	0.00249	0.00198	0.00167	0.00227	0.00216	0.00297	19%
Herbs, dried	0.0000643	0.000241	0.0000912	0.000381	0.000164	0.000816	0%
Honey	0.014	0.00633	0.00698	0.00572	0.0111	0.00715	100%
Horseradish	0	0.0000475	0.0000832	0.0000139	0	0	67%
Iceberg	0.00608	0.0121	0.0103	0.0138	0.02	0.0201	34%
Jerusalem artichokes	0	0.000694	0.000155	0.0012	0	0.0017	88%
Kale	0.00115	0.00459	0.00421	0.00495	0.00614	0.0108	84%
Kiwi	0.169	0.0273	0.0159	0.038	0.0587	0.0878	0%
Lambs meat	0.0146	0.0273	0.029	0.0258	0.0405	0.0347	2%
Leek	0.062	0.0482	0.0481	0.0483	0.0711	0.0649	49%
Lemons, lime	0.00888	0.00693	0.00515	0.00861	0.0095	0.0141	0%
Lentils	0.00115	0.00149	0.00145	0.00152	0.00264	0.00363	0%
Lettuce etc,	0.112	0.159	0.136	0.181	0.24	0.262	44%
Mandarins, clementines	0.183	0.0885	0.0554	0.12	0.12	0.199	0%
Mango	0.0337	0.00961	0.00433	0.0146	0.0107	0.0294	0%
Melons	1.21	0.155	0.0873	0.219	0.303	0.51	0%
Mushrooms	0.0858	0.0495	0.0477	0.0513	0.0608	0.0717	56%
Nectarines	0.128	0.0672	0.0368	0.0957	0.13	0.232	0%
Nuts, other	0.0141	0.00595	0.00385	0.00792	0.00745	0.0158	0%
Olive oil	0.021	0.0189	0.0148	0.0228	0.0212	0.0306	0%
Onions	0.383	0.182	0.196	0.169	0.231	0.202	77%
Oranges	0.263	0.127	0.0837	0.168	0.172	0.277	0%
Oranges, juice	1.18	0.449	0.429	0.468	0.662	0.614	8%
Papayas	0.0039	0.00111	0.000502	0.00169	0.00124	0.00341	0%
Parsley	0.00155	0.00119	0.000911	0.00146	0.00131	0.00227	34%
Parsley Root	0.00178	0.00422	0.003	0.00537	0.00576	0.00837	91%
Parsnips	0.00734	0.0158	0.011	0.0203	0.0223	0.0332	91%

Consumer group	Children	Adults	Male	Female	Male High F&V a)	Female High F&V a)	Assumed domestic consumption
Age (years)	4-6	15-75	15-75	15-75	15-75	15-75	
Avg. weight (kg)							
No. of individuals in group							
	Average consumption (g/kg bw/day)						
Peaches	0.13	0.0686	0.0378	0.0975	0.134	0.234	0%
Peanut	0.0454	0.0222	0.0224	0.0219	0.0279	0.0241	0%
Pears	0.725	0.205	0.171	0.238	0.481	0.489	42%
Peas with pods	0.0265	0.0122	0.0113	0.0131	0.0193	0.0196	56%
Peas without pods	0.2	0.106	0.0981	0.114	0.166	0.163	46%
Peppers, sweet	0.701	0.156	0.124	0.187	0.238	0.312	1%
Persimmon	0.0112	0.0032	0.00144	0.00486	0.00356	0.00981	0%
Pine nuts	0.00542	0.00275	0.00186	0.00358	0.00233	0.00675	0%
Pineapples	0.0671	0.0315	0.0189	0.0433	0.0522	0.0799	0%
Plums	0.181	0.0514	0.0444	0.058	0.198	0.106	9%
Pomegranate	0	0.0000528	0.000109	0	0.000117	0	0%
Pomelos	0	0.0000528	0.000109	0	0.000117	0	0%
Pork liver	0.253	0.0665	0.0881	0.0461	0.0765	0.0424	100%
Pork meat	2.13	0.891	1.06	0.735	0.984	0.688	100%
Potatoes	1.79	1.21	1.43	0.996	1.5	0.982	74%
Prune	0.00431	0.00197	0.00221	0.00175	0.00572	0.00316	0%
Pumpkin	0.00266	0.00243	0.00197	0.00287	0.00483	0.00691	92%
Pumpkin seeds	0.0141	0.00595	0.00385	0.00792	0.00745	0.0158	0%
Radish	0.00166	0.00176	0.000751	0.00271	0.00197	0.00585	33%
Raisin	0.171	0.0324	0.0253	0.039	0.0582	0.0652	0%
Raspberries, blackber-ries	0.0588	0.0219	0.0166	0.0268	0.0317	0.0525	11%
Rhubarb	0.0085	0.00473	0.00472	0.00474	0.00915	0.00798	58%
Rice	0.197	0.0703	0.0768	0.0642	0.106	0.0806	0%
Rice flour	0.00181	0.00103	0.00112	0.000945	0.00208	0.00132	0%
Rice, short grained	0.102	0.007	0.00484	0.00902	0.00618	0.00953	0%
Rice, wild	0.00442	0.00157	0.00159	0.00155	0.00288	0.00192	0%
Rolled oat	0.777	0.2	0.228	0.174	0.309	0.21	44%
Ruccola	0.00164	0.00343	0.00291	0.00391	0.00568	0.00572	23%
Rye flour, bolted	0.0159	0.00553	0.00604	0.00505	0.00649	0.00495	67%
Rye grain and flour	1.68	0.503	0.533	0.476	0.589	0.528	80%
Sesame seed	0.0367	0.011	0.0114	0.0105	0.0134	0.0123	0%
Spices	0.00115	0.000737	0.000726	0.000748	0.00108	0.000904	0%
Spinach	0.0208	0.0228	0.0216	0.024	0.0279	0.0423	19%
Spring onions	0.000731	0.00245	0.00227	0.00261	0.00386	0.0048	16%
Strawberries	0.351	0.117	0.0911	0.141	0.193	0.277	56%
Sunflower seed	0.118	0.037	0.0387	0.0355	0.0467	0.0427	0%
Swedes	0	0.000463	0.000308	0.000609	0.00117	0.00293	50%
Sweet corn	0.219	0.0831	0.0735	0.0921	0.136	0.128	17%
Table grapes	0.337	0.0928	0.0517	0.131	0.165	0.246	0%
Tea	0.38	1.85	1.12	2.54	1.92	3.96	0%
Tofu	0.00298	0.000988	0.00129	0.000704	0.00483	0.000634	0%
Tomatoes	1.31	0.632	0.565	0.695	0.983	1.08	43%
Total	31.4	14.1	13	15.1	19.4	21.4	
Tropical roots and	0.000141	0.000139	0.000135	0.000143	0.000234	0.000195	0%

Consumer group	Children	Adults	Male	Female	Male High F&V [a]	Female High F&V [a]	Assumed domestic consumption
Age (years)	4-6	15-75	15-75	15-75	15-75	15-75	
Avg. weight (kg)							
No. of individuals in group							
	Average consumption (g/kg bw/day)						
tubers							
Turnips	0	0.0000169	0.000035	0	0.000248	0	0%
Vegetables, leafy, other	0.00249	0.00198	0.00167	0.00227	0.00216	0.00297	13%
Vegetables, other	0.000731	0.00245	0.00227	0.00261	0.00386	0.0048	4%
Vine leaves	0.000383	0.000496	0.000483	0.000507	0.000878	0.00121	0%
Walnuts	0.0141	0.00595	0.00385	0.00792	0.00745	0.0158	0%
Watermelon	0.362	0.0463	0.0261	0.0654	0.0904	0.152	0%
Wheat flour, white	3.45	1.1	1.16	1.03	1.15	0.97	41%
Wheat, wholemeal	0.77	0.189	0.17	0.208	0.26	0.246	66%
Wine, red	0	0.756	0.778	0.736	0.9	0.771	1%
Wine, white/rosé	0.000436	0.288	0.213	0.357	0.286	0.405	0%

[a] Consumption over 600 g of fruits and vegetables (excluding potatoes)

7.4 Consumption used for exposure calculation, for children

Consumer group	Children
Age (years)	1-3
Avg. weight (kg)	
No. of individuals in group	
	Average consumption (g/kg bw/day)
Almonds	0.0169
Apples	3
Apricot, dried	0
Apricots	0.0629
Aspargus	0.0264
Aubergines	0.00909
Avocados	0.0986
Bananas	2.5
Barley kernels	0.0139
Barley, malted	0
Beans with pods	0.0299
Beans, dried	0.0203
Beef liver	0.00145
Beef meat	0.664
Beetroot	0.0536
Blueberries	0.173
Broccoli	0.113
Brussels sprouts	0.00248
Buckwheat	0.0104
Bulgur	0.0178
Carrots	0.553
Cauliflower	0.0885
Celeriac	0.0395
Celery	0.00459
Cherries	0.0169
Chick pea	0.012
Chicken meat	0.579
Chilli peppers	0
Chinese cabbage	0.0196
Chinese radish	0.000586
Chives	0.00198
Citrus, other	0
Coconuts	0.0018
Coconuts, flakes	0.0054
Coffee beans, green	0.0000132
Coriander, leaves	0
Corn flour	0.179
Courgettes	0.017
Cucumbers	0.927
Currants	0.0194
Dates	0.0187

Consumer group	Children
Age (years)	1-3
Avg. weight (kg)	
No. of individuals in group	
	Average consumption (g/kg bw/day)
Dill	0.000166
Duck meat	0.0162
Egg, hen, dried	0.000377
Fat, pork	0.00154
Figs, dried	0
Figs, fresh	0.505
Fruit, canned	0
Fruit, dried	0
Fruit, exotic	0.00104
Fruit, other	0.0146
Garlics	0.0051
Globe artichokes	0.000871
Gooseberries	0.00257
Grapefruit	0.00899
Hazelnuts	0.00961
Head cabbage	0.0325
Head cabbage, red	0.0145
Herbs	0.0000227
Herbs, dried	0
Honey	0.0139
Horseradish	0
Iceberg	0.0112
Infant formula, milk-based, powder	1.95
Jerusalem artichokes	0.00107
Kale	0.00305
Kiwi	0.141
Lambs meat	0.019
Leek	0.0499
Lemons, lime	0.00898
Lentils	0.011
Lettuce etc.	0.0316
Mandarins, clementines	0.307
Mango	0.0782
Melons	0.368
Millet	0.00737
Mushrooms	0.0957
Nectarines	0.114
Nuts, other	0.00106
Olive oil	0.0265
Onions	0.325
Oranges	1.41
Oranges, juice	0
Papayas	0
Parsley	0.00288
Parsley Root	0.00157
Parsnips	0.0104

Consumer group	Children
Age (years)	1-3
Avg. weight (kg)	
No. of individuals in group	
	Average consumption (g/kg bw/day)
Peaches	0.0787
Peanut	0.0124
Pears	0.894
Peas with pods	0.0183
Peas without pods	0.189
Peppers, sweet	0.291
Persimmon	0.0175
Pine nuts	0.00134
Pineapples	0.0843
Plums	0.077
Pomegranate	0.00635
Pomelos	0
Pork liver	0.273
Pork meat	1.43
Potatoes	1.57
Prune	0.0105
Pumpkin	0
Pumpkin seeds	0
Radish	0.00101
Raisin	0.211
Raspberries, blackberries	0.147
Rhubarb	0.0472
Rice	0.162
Rice flour	0.00255
Rice, short grained	0.0714
Rice, wild	0
Rolled oat	1.34
Ruccola	0
Rye flour, bolted	0
Rye grain and flour	1.55
Salsify	0
Sesame seed	0.0134
Spices	0.00179
Spinach	0.0213
Spring onions	0.00516
Strawberries	0.791
Sunflower seed	0.0509
Swedes	0.0000513
Sweet corn	0.243
Table grapes	0.461
Tea	0.314
Tofu	0
Tomatoes	1.25
Tropical roots and tubers	0
Turnips	0
Vegetables, leafy, other	0.000671

Consumer group	**Children**
Age (years)	1-3
Avg. weight (kg)	
No. of individuals in group	
	Average consumption (g/kg bw/day)
Vegetables, other	0.00217
Vine leaves	0.00176
Walnuts	0.00213
Watermelon	0.624
Wheat flour, white	2.45
Wheat, wholemeal	0.731
Wine, red	0.000499
Wine, white/rosé	0.00147

7.5 ADIs for pesticides included in the risk assessment.

The ADIs used for calculation of the HQs for the individual pesticides are predominantly those set by the EU (Commission (COM) or EFSA). For pesticides where no ADI has been set by the EU, e.g. for substances not approved in the EU, the ADI set by the Joint FAO/WHO Meeting on Pesticide Residues (JMPR), when available, is used if considered adequate by the National Food Institute. In all other cases an ADI, only to be used for the present report, has been set by the National Food Institute (see below the table).

Pesticide	ADI mg/kg bw/day	Source	Pesticide	ADI mg/kg bw/day	Source
2.4-D (sum)	0.02	COM 2017	Dimethoate	0.001	COM 2013
Abamectin (sum)	0.0025	COM 2008	Dimethomorph	0.05	COM 2007
Acephate	0.03	JMPR 2005	Diniconazole	0.05	DTU Food 2018
Acetamiprid	0.025	COM 2017	Dinocap (sum)	0.004	COM 2006
Aclonifen	0.07	COM 2008	Diphenylamine	0.075	EFSA 2008
Acrinathrin	0.01	COM 2017	Dithiocarbamates	0.01	DTU Food 2018
Aldrin and Dieldrin	0.0001	JMPR 1994	Diuron (sum)	0.007	COM 2008
Atrazine	0.02	JMPR 2007	Endosulfan (sum)	0.006	JMPR 1998
Azinphos-ethyl	0.00005	DTU Food 2018	Epoxiconazole	0.008	COM 2008
Azinphos-methyl	0.005	COM 2006	Ethion	0.002	JMPR 1990
Azoxystrobin	0.2	EFSA 2010	Ethoprophos	0.0004	EFSA 2006
Benalaxyl	0.04	EFSA 2013	Etofenprox	0.03	EFSA 2008
Bentazone (sum)	0.1	COM 2000	Etoxazole	0.04	05/34/EC
Bifenthrin	0.015	COM 2018	Famoxadone	0.012	COM 2002
Bitertanol	0.003	COM 2011	Fenamidone	0.03	COM 2003
Boscalid	0.04	COM 2008	Fenamiphos (sum)	0.0008	COM 2006
Bromopropylate	0.03	JMPR 1993	Fenarimol	0.01	COM 2006
Bupirimate	0.05	EFSA 2010	Fenazaquin	0.005	EFSA 2013
Buprofezin	0.01	COM 2017	Fenbuconazole	0.006	EFSA 2010
Carbaryl	0.0075	EFSA 2006	Fenhexamid	0.2	COM 2015
Carbendazim and benomyl	0.02	COM 2010	Fenoxycarb	0.053	EFSA 2010
Chlorantraniliprol	1.56	EFSA 2013	Fenpropathrin	0.03	JMPR 2012
Chlorfenapyr	0.03	COM 2000	Fenpropidin	0.02	COM 2008
Chlormequat	0.04	EFSA 2008	Fenpropimorph	0.003	EFSA 2008
Chlorpropham	0.05	COM 2004	Fenthion (sum)	0.007	JMPR 1997
Chlorpyrifos	0.001	EFSA 2014	Fenvalerate and esfenvalerate (sum)	0.02	JMPR 2012
Chlorpyrifos-methyl	0.01	COM 2005	Fipronil (sum)	0.0002	EFSA 2006
Chlorthal-dimethyl	0.01	DAR 2007. EL	Flonicamid (sum)	0.025	COM 2010
Clofentezine	0.02	COM 2008	Fludioxonil	0.37	COM 2007
Clopyralid	0.15	Dir 06/64	Flufenoxuron	0.01	EFSA 2011
Clothianidin	0.097	COM 2006	Fluopicolid	0.08	COM 2010
Cyazofamid	0.17	COM 2003	Fluoxastrobin	0.015	COM 2008
Cyfluthrin	0.003	COM 2003	Flusilazole	0.002	COM 2006
Cyhalothrin. lambda-	0.0025	COM 2016	Flutolanil	0.09	COM 2008
Cymoxanil	0.013	EFSA 2008	Flutriafol	0.01	COM 11
Cypermethrin	0.05	COM 2005	Fluvalinate. tau-	0.005	EFSA 2010
Cyproconazole	0.02	COM 2011	Fluxapyroxad	0.02	EFSA 2012
Cyprodinil	0.03	COM 2006	Fuberidazole	0.0072	COM 2008
Cyromazine	0.06	COM 2009	Glyphosate	0.5	COM 2017
DDT (sum)	0.0003	Beltoft et al. 2000	Haloxyfop	0.00065	EFSA 2006
Deltamethrin	0.01	Com 2003	Hexaconazole	0.005	JMPR 1990
Diazinon	0.0002	EFSA 2006	Hexythiazox	0.03	COM 2011
Dichlorprop (sum)	0.06	COM 2006	Imazalil	0.025	EFSA 2010
Dichlorvos	0.00008	EFSA 2006. tentative	Imidacloprid	0.06	COM 2008
Dicloran	0.005	EFSA 2010	Indoxacarb	0.006	COM 2006
Dicofol (sum)	0.002	JMPR 2011	Iprodione	0.06	COM 2003
Difenoconazole	0.01	COM 2008	Iprovalicarb	0.015	COM 2016
Diflubenzuron	0.1	COM 2017	Isoprocarb	0.004	Japan 2010

Pesticide	ADI mg/kg bw/day	Source	Pesticide	ADI mg/kg bw/day	Source
Isoprothiolane	0.1	JMPR 2017	Procymidone	0.025	DTU Food 2018
Kresoxim-methyl	0.4	COM 1999	Profenofos	0.03	JMPR 2007
Linuron	0.003	COM 2003	Propamocarb	0.29	COM 2007
Lufenuron	0.015	COM 2009	Propanil	0.02	EFSA 2011
Malathion-Malaoxon (sum)	0.03	EFSA 2006	Propargite	0.03	EFSA 2018
Mandipropamid	0.15	EFSA 2012	Propham	0.06	DTU Food 2018
MCPA (sum)	0.05	COM 2008	Propiconazole	0.04	COM 2003
Mecarbam	0.002	JMPR 1986	Propoxur	0.02	JMPR 1989
Mecoprop (sum)	0.01	COM 2003	Propyzamide	0.02	COM 2003
Mepanipyrim	0.02	COM 2004	Proquinazid	0.01	EFSA 2009
Mepiquat	0.2	COM 2008	Prosulfocarb	0.005	COM 2007
Metaflumizone	0.01	EFSA 2013	Prothioconazole	0.01	COM 2008
Metalaxyl	0.08	COM 2010	Pymetrozine	0.03	COM 2001
Metamitron	0.03	EFSA 2008	Pyraclostrobin	0.03	COM 2004
Methamidophos	0.001	COM 2006	Pyridaben	0.01	EFSA 2010
Methidathion	0.001	JMPR 1992	Pyrimethanil	0.17	COM 2006
Methiocarb (sum)	0.013	COM 2007	Pyriproxyfen	0.1	COM 2008
Methomyl (sum)	0.0025	EFSA 2006	Quinoxyfen	0.2	COM 2004
Methoxyfenozide	0.1	COM 2005	Quintozene (sum)	0.01	JMPR 1995
Monocrotophos	0.0006	JMPR 1993	Quizalofop	0.01	DTU Food 2018
Myclobutanil	0.025	EFSA 2010	Spinosad (sum)	0.024	COM 2007
Omethoate	0.0003	EFSA 2013	Spiroxamine	0.025	EFSA 2010
Orthophenylphenol	0.4	EFSA 2008	Tebuconazole	0.03	EFSA 2008
Oxadiazon	0.0036	EFSA 2010	Tebufenpyrad	0.01	COM 2009
Oxadixyl	0.01	DTU Food 2018	Tetraconazole	0.004	EFSA 2008
Oxamyl	0.001	COM 2006	Tetradifon	0.02	DTU Food 2018
Paclobutrazol	0.022	11/55/EU	Thiabendazole	0.1	COM 2017
Penconazole	0.03	COM 2009	Thiacloprid	0.01	COM 2004
Pencycuron	0.2	COM 2011	Thiamethoxam	0.026	COM 2007
Pendimethalin	0.125	COM 2017	Thiophanate-methyl	0.08	COM 2005
Permethrin (sum)	0.05	JMPR 1999	Tolclofos-methyl	0.064	COM 2006
Phenmedipham	0.03	COM 3004	Triadimefon (sum)	0.05	EFSA 2008
Phorate (sum)	0.0007	JMPR 2004	Triallate	0.025	COM 2009
Phosalone	0.01	EFSA 2006	Triazophos	0.001	JMPR 2002
Phosmet (sum)	0.01	COM 2007	Tricyclazole	0.008	DTU Food 2018
Phosphamidon	0.0005	JMPR 1986	Trifloxystrobin	0.1	COM 2003
Phoxim	0.004	JECFA 1999	Triflumizol (sum)	0.05	COM 2010
Picoxystrobin	0.043	COM 2003	Triflumuron	0.014	EFSA 2011
Pirimicarb	0.035	COM 2006	Vinclozolin	0.005	COM 2006
Pirimiphos-methyl	0.004	EFSA 2005	Zoxamide	0.5	COM 2003
Prochloraz (sum)	0.01	EFSA 2011			

ADIs set by the National Food Institute

Azinphos-ethyl

Based on a NOAEL of 0.25 ppm in food, corresponding to approximately 0.005 mg/kg bw/day for acetyl cholinesterase inhibition in dogs and an assessment factor of 100 (10 for interspecies and 10 for intra-species variation), an ADI of 0.00005 mg/kg bw/day has been set.

Diniconazole

Based on a NOAEL of 5 mg/kg bw/day for general toxicity in a 2-year rat study and an assessment factor of 100 (10 for interspecies and 10 for intra-species variation), an ADI of 0.05 mg/kg bw/day has been set.

Dithiocarbamates

A group ADI of 0.01 mg/kg bw/day has been set based on the ADIs for the following dithiocarbamates: mancozeb (ADI 0.05 mg/kg bw/day), maneb (ADI 0.05 mg/kg bw/day), metiram (ADI 0.03 mg/kg bw/day), propineb (ADI 0.025 mg/kg bw/day), thiram (ADI 0.01 mg/kg bw/day) and ziram (ADI 0.006 mg/kg bw/day).

Isoprocarb

No information regarding adverse health effects has been located. An ADI of 0.004 mg/kg bw/day has been listed in a Japanese list; this ADI has been used in the present report.

Oxadixyl

Based on a NOAEL of 1.3 mg/kg bw/day for an elevated serum enzyme level in a 6-month dietary dog study and an assessment factor of 100 (10 for interspecies and 10 for intra-species variation), an ADI of 0.01 mg/kg bw/day has been set.

Procymidon

Based on a NOAEL of 2.5 mg/kg bw/day for developmental toxicity in male offspring (reduced anogenital distance, hypospadias, testicular atrophy and undescended testes) in a multigeneration rat study and an assessment factor of 100 (10 for interspecies and 10 for intra-species variation), an ADI of 0.025 mg/kg bw/day has been set.

Propham

Based on a NOAEL of 5.7 mg/kg bw/day for haematological effects in a 2-year rat study and an assessment factor of 100 (10 for interspecies and 10 for intra-species variation), an ADI of 0.06 mg/kg bw/day has been set.

Quizalofop

A group ADI of 0.01 mg/kg bw/day (rounded value) has been set based on the ADIs for quizalofop-P and two derivatives: quizalofop-P (ADI 0,013 mg/kg bw/day), quizalofop-P-ethyl (ADI 0,013 mg/kg bw/day), and quizalofop-P-tefuryl (ADI 0,013 mg/kg bw/day).

Tetradifon

No information regarding adverse health effects has been located. An ADI of 0.02 mg/kg bw/day has been listed in Australian list; this ADI has been used in the present report.

Tricyclazole:

Based on a NOAEL of 8 mg/kg bw/day for general toxcity in a 2-year rat and mouse studies and an assessment factor of 1000 (10 for interspecies and 10 for intra-species variation, and an additional factor of 10 to take into account that EFSA could not set an ADI due to incomplete genotoxicity and carcinogenicity assessments), an ADI of 0.008 mg/kg bw/day has been set.

7.6 Reduction factors.

Reductions factors for the pesticides have been found from the literature in citrus fruits, melons and bananas. Reduction factors in citrus fruits from Rapport 7/98 Statens Livsmedelverk, Sweden is shown below.

Reduction factors in citrus fruits found in Sweden:

Commodity/pesticide	**Content of total residue in peel (%)**
Orange	
Azinfosmethyl	≥90
Bromopropylat	≥90
Dicofol	97
Dimethoate	≥90
Fenithrothion	≥95
Phosmet	≥90
Chlorfenvinphos	≥90
Chlorpyrifos	≥90
Quinalphos	≥90
Mecarbam	≥95
Methidathion	≥95
Parathion	≥95
Parathion-methyl	≥95
Tetradifon	≥90
Lemon	
Mecarbam	≥95
Grapefruit	
Ethion	≥97
Small citrus fruits	
Ethion	≥95
Chlorfenvinphos	≥90
Malathion	≥97
Methidathion	≥95

Livsmedelverket has found that for thiabendazol about 15-25% of the pesticide is in the pulp from oranges.

The reduction factors found in the JMPR reports are shown below.

Reduction factors found in JMPR reports

Pesticide	**Commodity**	**Reduction**	**Source**
Thiabendazole	Oranges	<3% in pulp; >97% in peel	JMPR 2000
Imazalil	Melon	About 10% in pulp; about 90% in peel	JMPR 1994
Phenyl-phenol	Oranges	2-4% in pulp; 96-98 % in peel	JMPR 1999
Benomyl	Oranges	From oranges to orange juice the reduction is 17-98%	JMPR 1998
Procymidon	Kiwi	In pulp about 1%; in peel about 99%	JMPR 1998

Conclusion

Most results for reduction factors are for citrus fruits. As bananas and melons also have a thick peel it is estimated that the results for citrus fruits can be transferred to these two commodities. Therefore overall a reduction factor of 90% is used for, both citrus fruits, melons and bananas except for thiabendazole and pesticides from the benomyl group (carbendazim, thiophanat-methyl and benomyl). For these substances a reduction of 75% is used, as it is the lowest reduction found and the worst-case situation.

Processing factors used in present report:

Commodity	Processing factor
Bananas	75% for,thiabendazole, thiophanate-methyl, carbendazim and benomyl 90% for all other pesticides
Grapefruit	
Lemons, lime	
Mandarins, clementines	
Melons	
Mineola	
Oranges	
Pomelos	
Watermelon	

7.7 Hazard Index (HI) for individual commodities (consumer groups “Children 4-6 years” and “Adults”)

Model 2: Non-detects assumed to be ½LOR; correction factor limited to 25.
Model 3: Same as Model 2 except that ½LOR is included only for countries with detected residues for a pesticide/commodity combination

	Children 4-6 years		Adults	
Commodity	**Hazard Index, Model 2, %**	**Hazard Index, Model 3, %**	**Hazard Index, Model 2, %**	**Hazard Quotient, model 3, %**
Apples	6.8	4.8	2.1	1.5
Apricot, dried	0.004	0.0039	0.00088	0.00086
Apricots	0.038	0.035	0.02	0.018
Aubergines	0.0068	0.0035	0.01	0.0053
Avocados	0.05	0.043	0.041	0.035
Bananas	0.26	0.22	0.082	0.069
Barley kernels	0.002	0.0014	0.0013	0.00095
Barley, malted	0.00035	0.00033	0.00035	0.00033
Beans with pods	0.31	0.092	0.16	0.047
Beans, dried	0.051	0.051	0.022	0.022
Blueberries	0.011	0.0089	0.0051	0.0042
Broccoli	0.24	0.15	0.21	0.13
Brussels sprouts	0.00037	0.00032	0.00028	0.00024
Buckwheat	0	0	0.00012	0.00011
Bulgur	0.028	0.028	0.012	0.012
Carrots	8.2	1	2.1	0.26
Cauliflower	0.2	0.12	0.13	0.082
Celeriac	0.044	0.025	0.028	0.016
Celery	0.007	0.0032	0.0083	0.0038
Cherries	0.1	0.094	0.041	0.038
Chick pea	0.0014	0.0014	0.0017	0.0017
Chilli peppers	0.0017	0.0014	0.0017	0.0014
Chinese cabbage	0.0049	0.0027	0.0049	0.0027
Chives	0.033	0.032	0.026	0.026
Citrus, other	0	0	0.000089	0.00007
Coffee beans, green	0	0	0.0000062	0.0000062
Coriander, leaves	0.0013	0.0012	0.0048	0.0046
Corn flour	0.072	0.057	0.0093	0.0073
Courgettes	0.15	0.09	0.21	0.12
Cucumbers	1.9	1.2	0.3	0.2
Currants	0.041	0.036	0.022	0.02
Dates	0.011	0.011	0.0006	0.0006
Dill	0.00018	0.00018	0.00069	0.00066
Figs, dried	0.0013	0.0013	0.00019	0.00019
Figs, fresh	0.00038	0.00022	0.000065	0.000037
Fruit, canned	0.058	0.058	0.031	0.031

Fruit, dried	0.049	0.038	0.0028	0.0022
Fruit, exotic	0	0	0.00023	0.000089
Fruit, other	0	0	0.00063	0.00057
Gooseberries	0	0	0.000065	0.000054
Grapefruit	0.034	0.032	0.016	0.016
Head cabbage	0.0011	0.00047	0.0012	0.00054
Head cabbage, red	0.00077	0.00051	0.00096	0.00064
Herbs	0.021	0.017	0.017	0.014
Herbs, dried	0.00041	0.00041	0.0015	0.0015
Honey	0.003	0.003	0.0014	0.0014
Iceberg	0.0021	0.0014	0.0041	0.0028
Kale	0.0011	0.001	0.0042	0.004
Kiwi	0.1	0.086	0.017	0.014
Lambs meat	0.035	0.015	0.066	0.029
Leek	0.06	0.021	0.047	0.017
Lemons, lime	0.0082	0.0069	0.0064	0.0053
Lentils	0.000049	0.000045	0.000063	0.000059
Lettuce etc.	0.32	0.24	0.45	0.34
Mandarins, clementines	0.18	0.18	0.088	0.085
Mango	0.075	0.067	0.021	0.019
Melons	0.2	0.11	0.025	0.014
Mushrooms	0.066	0.025	0.038	0.014
Nectarines	0.23	0.2	0.12	0.1
Nuts, other	0.00047	0.00025	0.0002	0.00011
Olive oil	0.015	0.0097	0.014	0.0087
Onions	0.23	0.17	0.11	0.082
Oranges	0.29	0.23	0.14	0.11
Oranges, juice	0.11	0.061	0.043	0.023
Papayas	0.026	0.022	0.0076	0.0062
Parsley	0.014	0.0093	0.011	0.0072
Parsley Root	0.0038	0.0035	0.009	0.0083
Parsnips	0.0056	0.0052	0.012	0.011
Peaches	0.35	0.3	0.19	0.16
Peanut	0.0016	0.0016	0.00076	0.00076
Pears	1.4	0.9	0.39	0.25
Peas with pods	0.029	0.017	0.014	0.0077
Peas without pods	0.024	0.015	0.013	0.0082
Peppers, sweet	1.3	0.71	0.28	0.16
Persimmon	0.00074	0.00035	0.00021	0.0001
Pineapples	0.28	0.24	0.13	0.11
Plums	0.12	0.08	0.034	0.023
Pomegranate	0	0	0.000013	0.0000094
Pomelos	0	0	0.000017	0.000017
Potatoes	0.54	0.3	0.36	0.2
Pumpkin	0.000038	0.000035	0.000035	0.000032
Radish	0.011	0.0044	0.012	0.0047

Raisin	0.32	0.32	0.061	0.061
Raspberries, blackberries	0.22	0.096	0.082	0.036
Rice	0.56	0.23	0.2	0.083
Rice flour	0.000028	0.000028	0.000016	0.000016
Rice, short grained	0.03	0.03	0.0021	0.0021
Rice, wild	0.00062	0.00062	0.00022	0.00022
Rolled oat	0.27	0.13	0.069	0.034
Ruccola	0.0087	0.0086	0.018	0.018
Rye grain and flour	0.51	0.24	0.15	0.071
Spices	0.015	0.015	0.0094	0.0094
Spinach	0.035	0.023	0.039	0.025
Spring onions	0.0032	0.003	0.011	0.01
Strawberries	3.4	0.72	1.1	0.24
Table grapes	1	0.61	0.28	0.17
Tea	0.023	0.0092	0.11	0.045
Tomatoes	2	0.71	0.95	0.34
Turnips	0	0	0.00019	0.00019
Vegetables, leafy, other	0.0029	0.0026	0.0023	0.002
Vegetables, other	0.001	0.00064	0.0034	0.0021
Vine leaves	0.00037	0.00037	0.00048	0.00048
Walnuts	0.0011	0.0011	0.00045	0.00045
Watermelon	0.018	0.012	0.0023	0.0015
Wheat flour, white	2.1	1.5	0.66	0.49
Wheat, wholemeal	0.57	0.39	0.14	0.096
Wine, red	0	0	0.17	0.11
Wine, white/rosé	0.0001	0.000071	0.069	0.047
Total	36	17	13	6.4

7.8 Exposure and Hazard Quotient (HQ) for individual pesticides (consumer groups “Children 4-6 years” and “Adults”)

Exposure and Hazard Quotients for individual pesticides (consumer groups “Children 4-6 years” and “Adults”) calculated by Model 2.

Pesticide	Children 4-6 years		Adults	
	Exposure µg/kg bw/day	Hazard Quotient %	Exposure µg/kg bw/day	Hazard Quotient %
2.4-D (sum)	0.00092	0.0046	0.00059	0.003
Abamectin (sum)	0.01	0.42	0.0046	0.18
Acephate	0.00093	0.0031	0.00033	0.0011
Acetamiprid	0.06	0.24	0.022	0.087
Aclonifen	0.0077	0.011	0.0023	0.0032
Acrinathrin	0.0036	0.036	0.0012	0.012
Aldrin and Dieldrin	0.0072	7.2	0.002	2.0
Atrazine	0.0000047	0.000024	0.000023	0.00012
Azinphos-ethyl	0	0	0.000000029	0.000058
Azinphos-methyl	0.0019	0.038	0.00051	0.01
Azoxystrobin	0.07	0.035	0.028	0.014
Benalaxyl	0.007	0.018	0.0034	0.0084
Bentazone (sum)	0.0000062	0.0000062	0.00003	0.00003
Bifenthrin	0.0033	0.022	0.0011	0.0072
Bitertanol	0.024	0.79	0.0075	0.25
Boscalid	0.24	0.61	0.12	0.29
Bromopropylate	0.000037	0.00012	0.000022	0.000074
Bupirimate	0.033	0.066	0.011	0.022
Buprofezin	0.0068	0.068	0.0022	0.022
Carbaryl	0.0026	0.035	0.00076	0.01
Carbendazim and benomyl	0.071	0.36	0.03	0.15
Chlorantraniliprol	0.023	0.0015	0.011	0.00071
Chlorfenapyr	0.0015	0.005	0.00044	0.0015
Chlormequat	0.18	0.45	0.053	0.13
Chlorpropham	0.09	0.18	0.061	0.12
Chlorpyrifos	0.048	4.8	0.017	1.7
Chlorpyrifos-methyl	0.083	0.83	0.026	0.26
Chlorthal-dimethyl	0.000012	0.00012	0.0000095	0.000095
Clofentezine	0.0078	0.039	0.0026	0.013
Clopyralid	0.000092	0.000062	0.00011	0.000072
Clothianidin	0.0058	0.006	0.0028	0.0029
Cyazofamid	0.016	0.0093	0.004	0.0023
Cyfluthrin	0.0015	0.051	0.0015	0.051
Cyhalothrin. lambda-	0.015	0.62	0.0068	0.27
Cymoxanil	0.0059	0.046	0.0022	0.017
Cypermethrin	0.021	0.042	0.0094	0.019
Cyproconazole	0.00071	0.0035	0.00037	0.0019
Cyprodinil	0.12	0.41	0.044	0.15
Cyromazine	0.033	0.056	0.0078	0.013
DDT (sum)	0.00012	0.039	0.00022	0.074
Deltamethrin	0.045	0.45	0.015	0.15
Diazinon	0.00048	0.24	0.00023	0.12

Pesticide	Children 4-6 years		Adults	
	Exposure µg/kg bw/day	Hazard Quotient %	Exposure µg/kg bw/day	Hazard Quotient %
Dichlorprop (sum)	0.000024	0.00004	0.00012	0.00019
Dichlorvos	0.0019	2.3	0.00062	0.78
Dicloran	0	0	0.000000027	0.00000054
Dicofol (sum)	0.0012	0.058	0.00035	0.017
Difenoconazole	0.041	0.41	0.016	0.16
Diflubenzuron	0.00049	0.00049	0.00029	0.00029
Dimethoate	0.001	0.1	0.00045	0.045
Dimethomorph	0.033	0.067	0.02	0.04
Diniconazole	0.00069	0.0014	0.00019	0.00038
Dinocap (sum)	0.0064	0.16	0.0021	0.051
Diphenylamine	0.054	0.073	0.017	0.023
Dithiocarbamates	0.4	4	0.14	1.4
Diuron (sum)	0.00002	0.00029	0.0001	0.0014
Endosulfan (sum)	0.00013	0.0022	0.000085	0.0014
Epoxiconazole	0.0059	0.074	0.0015	0.018
Ethion	0.00017	0.0085	0.00041	0.021
Ethoprophos	0.000077	0.019	0.000039	0.0098
Etofenprox	0.033	0.11	0.012	0.038
Etoxazole	0.000098	0.00024	0.000047	0.00012
Famoxadone	0.0099	0.083	0.0045	0.037
Fenamidone	0.0023	0.0077	0.0011	0.0037
Fenamiphos (sum)	0.0000063	0.00079	0.000031	0.0039
Fenarimol	0	0	0.000001	0.00001
Fenazaquin	0.0038	0.075	0.0012	0.024
Fenbuconazole	0.0026	0.043	0.0011	0.018
Fenhexamid	0.13	0.065	0.045	0.023
Fenoxycarb	0.0049	0.0092	0.0015	0.0029
Fenpropathrin	0.00018	0.00059	0.000082	0.00027
Fenpropidin	0.005	0.025	0.0013	0.0065
Fenpropimorph	0.0012	0.04	0.00053	0.018
Fenthion (sum)	0.00009	0.0013	0.000043	0.00062
Fenvalerate and esfenvalerate (sum)	0.001	0.005	0.00018	0.00091
Fipronil (sum)	0.000058	0.029	0.00012	0.058
Flonicamid (sum)	0.033	0.13	0.011	0.042
Fludioxonil	0.19	0.052	0.069	0.019
Flufenoxuron	0.0046	0.046	0.0015	0.015
Fluopicolid	0.016	0.02	0.0075	0.0094
Fluoxastrobin	0.00014	0.00094	0.000065	0.00043
Flusilazole	0.0042	0.21	0.0011	0.057
Flutolanil	0.0039	0.0043	0.0026	0.0029
Flutriafol	0.022	0.22	0.0071	0.071
Fluvalinate. tau-	0.00018	0.0035	0.000085	0.0017
Fluxapyroxad	0.0041	0.02	0.001	0.005
Fuberidazole	0.00057	0.0079	0.00014	0.0019
Glyphosate	0.3	0.06	0.089	0.018
Haloxyfop	0.00032	0.049	0.00014	0.022
Hexaconazole	0.0012	0.024	0.00055	0.011
Hexythiazox	0.024	0.081	0.0059	0.02
Imazalil	0.16	0.63	0.06	0.24

Pesticide	Children 4-6 years		Adults	
	Exposure µg/kg bw/day	Hazard Quotient %	Exposure µg/kg bw/day	Hazard Quotient %
Imidacloprid	0.049	0.082	0.027	0.046
Indoxacarb	0.022	0.36	0.0085	0.14
Iprodione	0.26	0.43	0.09	0.15
Iprovalicarb	0.0021	0.014	0.0073	0.049
Isoprocarb	0	0	0.000000044	0.0000011
Isoprothiolane	0.0038	0.0038	0.0014	0.0014
Kresoxim-methyl	0.019	0.0049	0.0054	0.0014
Linuron	0.021	0.69	0.006	0.2
Lufenuron	0.0031	0.021	0.0015	0.01
Malathion-Malaoxon (sum)	0.0021	0.0069	0.00062	0.0021
Mandipropamid	0.029	0.019	0.018	0.012
MCPA (sum)	0.0036	0.0072	0.00089	0.0018
Mecarbam	0.000013	0.00064	0.00001	0.00051
Mecoprop (sum)	0.00001	0.0001	0.000049	0.00049
Mepanipyrim	0.0059	0.029	0.0021	0.011
Mepiquat	0.029	0.014	0.0087	0.0043
Metaflumizone	0.0079	0.079	0.0038	0.038
Metalaxyl	0.032	0.039	0.02	0.025
Metamitron	0.000056	0.00019	0.00013	0.00042
Methamidophos	0.00046	0.046	0.00017	0.017
Methidathion	0.00021	0.021	0.000075	0.0075
Methiocarb (sum)	0.0015	0.011	0.00055	0.0042
Methomyl (sum)	0.0022	0.088	0.00067	0.027
Methoxyfenozide	0.0073	0.0073	0.0065	0.0065
Monocrotophos	0.000024	0.004	0.0001	0.017
Myclobutanil	0.026	0.1	0.0064	0.026
Omethoate	0.00099	0.33	0.00042	0.14
Orthophenylphenol	0.033	0.0083	0.014	0.0034
Oxadiazon	0.000024	0.00066	0.000029	0.0008
Oxadixyl	0.000032	0.00032	0.00012	0.0012
Oxamyl	0.00018	0.018	0.000092	0.0092
Paclobutrazol	0.0018	0.008	0.00063	0.0029
Penconazole	0.012	0.04	0.0028	0.0094
Pencycuron	0.013	0.0063	0.0085	0.0042
Pendimethalin	0.0076	0.0061	0.0023	0.0018
Permethrin (sum)	0.0098	0.02	0.0029	0.0058
Phenmedipham	0.00076	0.0025	0.0005	0.0017
Phorate (sum)	0.000014	0.002	0.0000088	0.0013
Phosalone	0.00017	0.0017	0.000062	0.00062
Phosmet (sum)	0.023	0.23	0.0072	0.072
Phosphamidon	0.0000073	0.0015	0.0000047	0.00093
Phoxim	#NUM!	0	0.000000027	0.00000068
Picoxystrobin	0.000048	0.00011	0.000022	0.000052
Pirimicarb	0.04	0.11	0.012	0.033
Pirimiphos-methyl	0.075	1.9	0.023	0.58
Prochloraz (sum)	0.013	0.13	0.0066	0.066
Procymidone	0.0025	0.01	0.00062	0.0025
Profenofos	0.00029	0.00098	0.00021	0.00071
Propamocarb	0.37	0.13	0.12	0.043

Pesticide	Children 4-6 years		Adults	
	Exposure µg/kg bw/day	Hazard Quotient %	Exposure µg/kg bw/day	Hazard Quotient %
Propanil	0.00032	0.0016	0.00011	0.00056
Propargite	0.008	0.027	0.0038	0.013
Propham	0.0013	0.0021	0.00035	0.00059
Propiconazole	0.012	0.03	0.0045	0.011
Propoxur	0.0026	0.013	0.00061	0.0031
Propyzamide	0.00061	0.0031	0.00086	0.0043
Proquinazid	0.0019	0.019	0.00053	0.0053
Prosulfocarb	0.028	0.56	0.0093	0.19
Prothioconazole	0.0047	0.047	0.0013	0.013
Pymetrozine	0.025	0.085	0.008	0.027
Pyraclostrobin	0.079	0.26	0.032	0.11
Pyridaben	0.011	0.11	0.0043	0.043
Pyrimethanil	0.31	0.18	0.12	0.073
Pyriproxyfen	0.014	0.014	0.0057	0.0057
Quinoxyfen	0.0053	0.0027	0.0017	0.00084
Quintozene (sum)	0.0084	0.084	0.0023	0.023
Quizalofop	0.0018	0.018	0.0025	0.025
Spinosad (sum)	0.03	0.12	0.013	0.055
Spiroxamine	0.0028	0.011	0.0008	0.0032
Tebuconazole	0.072	0.24	0.024	0.081
Tebufenpyrad	0.008	0.08	0.0036	0.036
Tetraconazole	0.0012	0.03	0.00033	0.0083
Tetradifon	0.00029	0.0014	0.000037	0.00018
Thiabendazole	0.1	0.1	0.037	0.037
Thiacloprid	0.047	0.47	0.015	0.15
Thiamethoxam	0.027	0.1	0.0093	0.036
Thiophanate-methyl	0.018	0.022	0.013	0.016
Tolclofos-methyl	0.0011	0.0017	0.0015	0.0024
Triadimefon (sum)	0.034	0.068	0.012	0.023
Triallate	0.00047	0.0019	0.00024	0.00098
Triazophos	0.0012	0.12	0.00048	0.048
Tricyclazole	0.0052	0.065	0.0019	0.023
Trifloxystrobin	0.043	0.043	0.014	0.014
Triflumizol (sum)	0.011	0.022	0.0017	0.0034
Triflumuron	0.0062	0.044	0.0021	0.015
Vinclozolin	0.00034	0.0068	0.00011	0.0023
Zoxamide	0.0018	0.00036	0.00049	0.000098
Total	4.8	35.6	1.8	12.5

7.9 Organic production

Commodities from organic production have not been included in the exposure assessments of this report. Consumption of organic commodities is dependent on consumer choice and therefore not easily included in consumer averages.

A few observations from analysis of organic commodities sampled in the period 2012-17 (random samples representative of the Danish market) are presented below.

A total of 1229 samples of 172 different commodities (fruit and vegetables (787 samples), cereals (305 samples), animal products, baby food and other processed foods) were analysed (Table 5).

Table 5. *Samples from 2012-17 declared as organic produced; number of samples analysed and number of samples with residues.*

	Samples analysed (with residues below/above MRL)		
	Total	Domestic	Non domestic
Fruits and vegetables	787(23/2)	240(2/1)	547(21/1)
Cereals	305(2/0)	165(0/0)	140(2/0)
Animal (incl. dairy) products	30(0/0)	30(0/0)	0(0/0)
Baby food	31(0/0)	0(0/0)	31(0/0)
Other processed	76(2/0)	5(0/0)	71(2/0)
Total	1229(27/2)	440(2/1)	789(25/1)

Detected residues were assessed in relation to legislation on organic production as well as maximum residue levels.

Overall, 34 residues distributed in 29 samples were detected in 1229 samples declared as organic production (Table 6). Fifteen different pesticides were detected. Of these, only spinosad could be legally used in organic production. A statistical treatment of the detected residues has not been performed due to the limited number of samples analysed, and the relatively sparse occurrence of residues.

Residues of spinosad were found in 13 samples. In some cases spinosad can be legally used in organic production. Spinosad is a pesticide based on naturally occurring microbiological products; ADI is set at 0.024 mg/kg bw/day with MRLs ranging from 0.02 – 15 mg/kg (60 mg/kg in parsley). Residues of spinosad showed rather high values of pesticide load for some individual samples (parsley (173), spinach (88) and lettuce (51); numbers in parentheses: PL as kg bw/(kg food/day))(Table 7). Due to the limited number of samples, average results should be used with caution.

The remaining residues detected were sporadic. Four samples (five residues) had residues assessed as not intentional (e.g possible contamination during storage or transport); residues in five samples (five residues) might have been present because of previous use (boscalid, chlormequat, DDT, quintozen) while seven samples (11 residues) were assessed as non-compliant according to the rules for organic production due to the nature of the residues.

Table 6. *Detections in samples declared as organic production 2012-17.*

Food	Origin	Country of origin	Pesticide	Analysed samples	Samples with residues	Residue (mg/kg)	MRL (mg/kg)	Assessment
Cucumbers	Domestic	Denmark		11				
Cucumbers	Non-domestic	Non domestic		21	4			
Cucumbers	Non-domestic	- Spain	Spinosad (sum)			0.041	1	Approved for used in organic production
Cucumbers	Non-domestic	- Spain	Spinosad (sum)			0.047	1	Approved for used in organic production
Cucumbers	Non-domestic	- Spain	Spinosad (sum)			0.029	1	Approved for used in organic production
Cucumbers	Non-domestic	- Spain	Spinosad (sum)			0.053	1	Approved for used in organic production
Avocados	Non-domestic	Non domestic		11	1			
Avocados	Non-domestic	- Peru	Thiabendazol			0.052	15	Non-compliant due to the nature of the residue(s)
Bananas	Non-domestic	Non domestic		35	1			
Bananas	Non-domestic	- Dominican Republic	Azoxystrobin			0.025	2	Non-compliant due to the nature of the residue(s)
Pak choi	Non-domestic	Non domestic		2	1			
Pak choi	Non-domestic	- Netherlands	Spinosad (sum)			0.28	2	Approved for used in organic production
Parsnip	Domestic	Denmark		1	1			
Parsnip	Domestic	Denmark	Quintozen (sum)			0.012	0.02	Possibly residue from previous use
Parsley, flat-leaved	Domestic	Denmark		5	1			
Parsley, flat-leaved	Domestic	Denmark	Prosulfocarb			0.1	0.05	Non-compliant due to the nature of the residue(s)
Parsley, flat-leaved	Non-domestic	Non domestic		2	1			
Parsley, flat-leaved[1)]	Non-domestic	- Italy	Dimethomorph			0.015	10	Non-compliant due to the nature of the residue(s)
Parsley, flat-leaved[1)]	Non-domestic	- Italy	Oxadixyl			0.022	0.05	Non-compliant due to the nature of the residue(s)
Parsley, flat-leaved[1)]	Non-domestic	- Italy	Spinosad (sum)			8.3	60	Non-compliant due to the nature of the residue(s)
Pears	Domestic	Denmark		14				
Pears	Non-domestic	Non domestic		26	3			
Pears	Non-domestic	- Netherlands	Chlormequat			0.08	0.1	Possibly residue from previous use
Pears	Non-domestic	- Netherlands	Chlormequat			0.013	0.1	Possibly residue from previous use
Pears	Non-domestic	- Italy	Spinosad (sum)			0.013	1	Approved for used in organic production
Rosemary	Non-domestic	Non domestic		6	2			
Rosemary	Non-domestic	- Israel	Dimethomorph			0.015	10	Non-compliant due to the nature of the residue(s)
Rosemary	Non-domestic	- Italy	Spinosad (sum)			0.14	15	Approved for used in organic production
Ruccola	Non-domestic	Non domestic		3	1			
Ruccola	Non-domestic	- Italy	Spinosad (sum)			0.013	10	Approved for used in organic production
Lettuce	Domestic	Denmark		7	1			
Lettuce	Domestic	Denmark	Boscalid			0.017	30	Possibly residue from previous use
Lettuce	Non-domestic	Non domestic		11	2			
Lettuce	Non-domestic	- Italy	Spinosad (sum)			0.24	10	Approved for used in organic production
Lettuce	Non-domestic	- Italy	Spinosad (sum)			1.4	10	Approved for used in organic production
Lettuce, baby leaves	Non-domestic	Non domestic		1	1			
Lettuce, baby leaves	Non-domestic	- Italy	Spinosad (sum)			3.3	15	Approved for used in organic production
Spinach	Domestic	Denmark		1				
Spinach	Non-domestic	Non domestic		7	2			
Spinach	Non-domestic	- Italy	Spinosad (sum)			9.8	10	Approved for used in organic production
Spinach	Non-domestic	- Italy	Spinosad (sum)			2.8	10	Approved for used in organic production
Teas	Non-domestic	Non domestic		31	1			
Teas	Non-domestic	- Germany	Carbendazim and benomyl			0.05	0.1	Non-intentional occurence
Tea, herbal	Non-domestic	Non domestic		3	1			
Tea, herbal[2)]	Non-domestic	- Germany	Carbendazim and benomyl			0.05	0.1	Non-compliant due to the nature of the residue(s)
Tea, herbal[2)]	Non-domestic	- Germany	Spinosad (sum)			1.1	0.1	Non-compliant due to the nature of the residue(s)
Thyme	Domestic	Denmark		1				
Thyme	Non-domestic	Non domestic		4	1			
Thyme	Non-domestic	- Italy	DDT (sum)			0.031	0.05	Possibly residue from previous use
Wheat flour	Domestic	Denmark		25				
Wheat flour	Non-domestic	Non domestic		18	1			
Wheat flour	Non-domestic	- Italy	Permethrin (sum)			0.033	0.05	Non-intentional occurence
Rye flour	Domestic	Denmark		16				
Rye flour	Non-domestic	Non domestic		7	1			
Rye flour	Non-domestic	- Unknown	Chlormequat			0.01	2	Non-intentional occurence
Orange, juice	Domestic	Denmark		1				
Orange, juice	Non-domestic	Non domestic		10	1			
Orange, juice[3)]	Non-domestic	- Italy	Chlorpyrifos			0.04	0.3	Non-compliant due to the nature of the residue(s)
Orange, juice[3)]	Non-domestic	- Italy	Imazalil			0.014	5	Non-compliant due to the nature of the residue(s)
Malting barley	Domestic	Denmark		1				
Malting barley	Non-domestic	Non domestic		1	1			
Malting barley[4)]	Non-domestic	- Poland	Chlormequat			0.023	2	Non-intentional occurence
Malting barley[4)]	Non-domestic	- Poland	Mepiquat			0.024	3	Non-intentional occurence

[1), 2), 3), 4)] : Multiple residues in the same sample

Table 7. *Pesticide load for samples declared as organic production 2012-17. Only commodity groups were spinosad was detected are shown. Other pesticides detected in the same commodity groups are shown, too.*

Commodity group	Origin	Number of countries	Samples analysed	Residues detected	Pesticide Load	Pesticide
Cucumbers	Denmark	1	12	0	0.000	
Cucumbers	non-DK	2	23	4	0.544	
Cucumbers	Spain	1	21	4	0.576	
Cucumbers	Spain	1	17	4	0.576	Spinosad (sum)
Herbs	Denmark	1	3	0	0.000	
Herbs	non-DK	6	22	3	21.893	
Herbs	Israel	1	3	1	0.167	
Herbs	Israel	1	3	1	0.167	Dimethomorph
Herbs	Italy	1	8	2	32.365	
Herbs	Italy	1	6	1	31.233	DDT (sum)
Herbs	Italy	1	6	1	1.132	Spinosad (sum)
Lettuce etc.	Denmark	1	8	1	0.163	
Lettuce etc.	Denmark	1	8	1	0.163	Boscalid
Lettuce etc.	non-DK	3	16	3	17.177	
Lettuce etc.	Italy	1	6	3	51.114	
Lettuce etc.	Italy	1	4	3	51.114	Spinosad (sum)
Parsley	Denmark	1	10	1	2.900	
Parsley	Denmark	1	10	1	2.900	Prosulfocarb
Parsley	non-DK	1	3	3	174.779	
Parsley	Italy	1	3	3	174.779	
Parsley	Italy	1	2	1	0.200	Dimethomorph
Parsley	Italy	1	2	1	1.350	Oxadixyl
Parsley	Italy	1	2	1	173.229	Spinosad (sum)
Pears	All	7	46	3	0.164	
Pears	Denmark	1	14	0	0.000	
Pears	non-DK	6	32	3	0.256	
Pears	Italy	1	3	1	0.319	
Pears	Italy	1	3	1	0.319	Spinosad (sum)
Pears	Netherlands	1	2	2	1.163	
Pears	Netherlands	1	2	2	1.163	Chlormequat
Ruccola	non-DK	1	3	1	0.319	
Ruccola	Italy	1	3	1	0.319	
Ruccola	Italy	1	3	1	0.319	Spinosad (sum)
Spinach	Denmark	1	1	0	0.000	
Spinach	non-DK	2	7	2	75.149	
Spinach	Italy	1	6	2	87.639	
Spinach	Italy	1	6	2	87.639	Spinosad (sum)
Tea	non-DK	10	41	3	1.879	
Tea	Germany	1	7	3	10.400	
Tea	Germany	1	5	2	1.150	Carbendazim and benomyl
Tea	Germany	1	5	1	9.250	Spinosad (sum)
Vegetables, leafy, other	non-DK	3	7	1	2.132	
Vegetables, leafy, other	Netherlands	1	4	1	4.056	
Vegetables, leafy, other	Netherlands	1	3	1	4.056	Spinosad (sum)

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