



Department
for Environment,
Food & Rural Affairs

Quarter 4 2025 report on the pesticide residues monitoring programme

June 2026

We are responsible for improving and protecting the environment. We aim to grow a green economy and sustain thriving rural communities. We also support our world-leading food, farming and fishing industries.

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1. Introduction, results summary and actions

Future of pesticide residue reporting

The UK and devolved governments have reviewed the arrangements for obtaining expert advice on the pesticide residues in food monitoring programme. They decided that obtaining advice from the Expert Committee on Pesticide Residues in Food (PRiF) was no longer part of the best model. As a result, the committee closed at the end of June 2026, after considering the findings for the final quarter of the 2025 monitoring programme. All other existing arrangements remain in place.

The decision reflects the positive contribution the committee made over a number of years. The Health and Safety Executive (HSE) now have comprehensive systems in place to ensure that the programme and assessment of results are technically and scientifically robust, transparent and meet professional standards. With all these activities now in place, the need for a dedicated standing committee has reduced.

The HSE will continue to get expert advice as needed, from sources including:

- the Expert Committee on Pesticides (ECP)
- the Food Standards Agency (FSA)
- the Veterinary Medicines Directorate (VMD)
- industry bodies
- official laboratories

This will ensure that there is no reduction in standards of safety or the rigour of the food monitoring programme. The programme has demonstrated high levels of compliance over the years that it has been active.

The government remains dedicated to ensuring that:

- its work to regulate and monitor pesticides residues in food remains robust and transparent
- pesticides are applied in accordance with legal requirements
- the food on our shelves is safe for people to eat

All [results of the residue monitoring programme](#) and the [Competent Authority annual report](#) will continue to be published on GOV.UK.

Chair's comments

During this year's surveillance programme, we are measuring up to 420 different pesticides in each of the foods we survey. The Quarter 4 programme for Great Britain (GB) surveyed 630 samples of 22 different foods ([Table 1a GB](#)) in this report contains a full list). The samples were collected between the beginning of October and the end of December 2025. The Quarter 4 programme for Northern Ireland (NI) surveyed 210 samples of 20 different foods ([Table 1b NI](#)) in this report contains a full list. The samples were collected between the beginning of October and the end of December 2025.

Of the 630 Q4 GB samples, we found residues in 386 of them and of these, 21 samples contained residues over the Maximum Residue Level (MRL). Of the 210 Q4 NI samples, we found residues in 108 of them and of these, 5 samples contained residues over the MRL.

HSE undertakes screening and detailed risk assessments, as required, for the pesticide residues found. This is to determine whether the residues present could lead to someone eating an amount above a level that is considered safe. HSE also produces [detailed risk assessments](#) for every case where the actual residue level found could lead to an intake above the safety levels.

Following screening assessment, we needed to consider the potential short-term health effects of only 2 of the residues found in more detail. In both of these cases, we concluded that effects on health were unlikely. Full details are presented in [detailed risk assessments](#). All other residues found did not cause any concern for health. These detailed considerations on the risk assessments as well as links to underlying information are covered in our reports for beans with pods and grapes.

We also needed to consider the potential genotoxic health effects of omethoate found in a sample of beans with pods. Omethoate is not authorised in the UK but can on occasions be found in some imported food. We concluded that at the level present, a risk of an adverse effect on health due to genotoxicity would be low.

Additionally, none of the individual commodity long-term exposure screening assessments performed in this quarter (for each of the pesticides found in this report) indicated any potential for adverse long-term health effects. This was based on the assessment of dietary intakes as below the Acceptable Daily Intake (ADI) or other established long-term health-based reference values.

Read the [Pesticide Residues in Food reports](#) for full analytical results, details of suppliers and retailers of the foods sampled, these are in Open Document Spreadsheet (ODS) files. We hope this data format is useful for people wanting to look at the individual results in more detail.

Since the UK left the EU, we report the results for samples collected in GB separately from those collected in NI. Surveys have been titled throughout the report as either GB or NI to make clear where the samples were collected. Samples collected in GB are subject to GB MRLs. GB MRLs are set by inclusion in a [GB MRL statutory Register](#), implemented and updated by means of a database. For samples collected in NI, certain aspects of EU food law, including compliance with EU set MRLs, continue to apply under the terms of the Windsor Framework and the Northern Ireland Retail Movement Scheme. In the detailed data files HSE is, for 2025 results, still separating out EU from non-EU origin foods in the results.

HSE asked suppliers and the authorities of the exporting countries for an explanation of our findings. Any responses they have received specifically for publication are available in the sample details section of sample details and supplier responses.

If you have any feedback or comments on the monitoring programme or the reports produced, send them to HSE at PesticideResiduesTeam@hse.gov.uk.

This was the last meeting of PRiF. There is more information on the rationale for closure in our Annual Report.

I would like to thank all those involved in achieving so much progress in the approach to and communication of pesticide residues in food monitoring, especially my fellow members Debbie Winstanley, John Points, Ian Finlayson, and Jonathan Blackman, and our colleagues at HSE.

Ann Davison

Chair of the Expert Committee on Pesticide Residues in Food

Consumer risk summary

HSE screens each residue detected for any consumer health issues to identify which need to be considered in more detail. The approach that HSE applies to do this work, including follow up risk assessments where they are needed, is explained in [HSE risk assessment methodology](#). We comment on any risks HSE considered in detail in our full report, and HSE's [detailed risk assessments](#) are also published.

HSE liaises with the Food Standards Agency (FSA) on consumer risk assessment, and the FSA also takes part in our meetings.

Table 1a: Overview of the survey results for Q4 Great Britain

GB surveys that have an asterisk (*) are a requirement of the [Multi-annual GB control plan for pesticide residues](#).

Survey title (where samples collected)	Number of pesticides sought	Samples tested	Detailed risk assessment presented?	MRL exceedances (samples)
Apples (GB) *	416	27	No	0
Barley (GB) *	417	24	No	0
Beans with pods (GB)	411	27	Yes	5
Bread (gluten free) (GB)	415	17	No	0
Bread (ordinary) (GB)	415	48	No	0
Cabbage (GB) *	389	30	No	0
Celery (GB)	412	18	No	0
Fish (tinned) (GB)	118	24	No	0
Grapes (GB)	414	36	Yes	0
Lettuce (GB) *	416	25	No	0

Survey title (where samples collected)	Number of pesticides sought	Samples tested	Detailed risk assessment presented?	MRL exceedances (samples)
Mango (GB)	388	23	No	0
Milk (GB) *	123	67	No	0
Oats (GB) *	417	18	No	0
Peaches and nectarines (GB)	393	10	No	0
Plant-based chocolate (GB)	411	36	No	0
Pork (GB)	120	24	No	0
Potatoes (GB)	413	36	No	3
Pre-packed salad [Note 1] (GB)	411	18	No	4
Spinach (GB)	389	28	No	4
Strawberries (GB)	391	48	No	4
Tomatoes (GB)	420	10	No	0
Wine (GB)	417	36	No	0

Table 1b: Overview of the survey results for Q4 Northern Ireland with links to detailed information

NI surveys that have an asterisk (*) are a requirement of the EU Coordinated Programme required by [Commission Implementing Regulations 2024/989](#).

Survey title (where samples collected)	Number of pesticides sought	Samples tested	Detailed risk assessment presented?	MRL exceedances (samples)
Apples (NI) *	376	17	No	0

Survey title (where samples collected)	Number of pesticides sought	Samples tested	Detailed risk assessment presented?	MRL exceedances (samples)
Beans with pods (NI)	365	9	No	0
Bread (gluten free) (NI)	375	6	No	0
Bread (ordinary) (NI)	374	24	No	0
Cabbage (NI) *	375	6	No	0
Cheese (NI)	39	12	No	0
Figs (NI)	365	7	No	0
Fish (tinned) (NI)	39	9	No	0
Grapes (NI)	372	9	No	0
Lettuce (NI) *	376	9	No	0
Mango (NI)	365	9	No	0
Milk (NI) *	47	10	No	0
Peaches and nectarines (NI)	372	9	No	0
Plums (NI)	365	9	No	0
Pork (NI)	44	19	No	1
Potatoes (NI)	372	12	No	0
Pre-packed salad [Note 1] (NI)	376	10	No	4
Spinach (NI)	372	6	No	0
Strawberries (NI)	372	9	No	0
Tomatoes (NI)	376	9	No	0

Samples collected in GB must comply with GB set MRLs unless the goods are qualifying NI goods and are subject to unfettered access under the terms of the UK Internal Market Act 2020. For samples collected in NI, under the Windsor Framework, certain aspects of EU food law, including compliance with EU MRLs apply.

Note 1: The survey of pre-packed salad has been referred to as 'salad and baby leaf bags' in previous quarterly reports. In this report and the annual competent authority report, this survey will be referred to as pre-packed salad for GB and NI.

Other issues

Suspected unauthorised uses

Details of possible unauthorised uses from previous surveys are provided in [section 5: issues arising in this report](#).

Multiple pre-packed mixed salad samples were found to contain residues of dithiocarbamates (DTCs). The use of DTCs is not authorised for pesticide use in the UK. HSE screens for DTC using a routine method that tests for the carbon disulphide breakdown product. Therefore, this test is not able to confirm the identity of any potential dithiocarbamates pesticide used, if any. Other sulphurous compounds naturally present in some crops, for example broccoli, cabbage and rocket could be determined as carbon disulphide during analysis. Some of the prepared salad bags contained rocket. It is likely that the positive test result in these samples is from naturally occurring sulphur containing compounds in the salad leaves. Therefore, these samples were not considered to be an unauthorised use, and no further action was taken.

Organic samples with residues

The Department for Environment and Rural Affairs' (Defra's) Organic Farming branch and the organic certification organisations are responsible for follow up activity related to the presence of pesticide residues in organic samples.

HSE writes to the suppliers of samples of organic produce if they contain a pesticide residue which is not permitted under assimilated organic regulation 889/2008. HSE copies the letter to their organic certification organisation and inform Defra of the results. For Quarter 4 2025, HSE have written about the following samples:

- 2 samples of UK organic spinach (GB and NI) contained residues
 - one sample (GB) contained a residue of chlorantraniliprole
 - one sample (NI) contained a residue of chlorate
- one sample of UK organic apples (GB) contained a residue of flonicamid
- one sample of UK organic oats (GB) contained residues of chlormequat and mepiquat
- one sample of UK organic plant-based chocolate (GB) contained residues of 2,4-D (partial sum) and ethoprophos
- one sample of UK organic pre-packed salad (GB) contained a residue of dithiocarbamates
- one sample of Spanish organic lettuce (GB) contained a residue of chlorate
- one sample of Irish organic oats (GB) contained a residue of chlormequat
- 2 samples of Italian organic spinach (GB) contained a residue of chlorate
- one sample of Italian organic spinach (GB) contained residues of chlorate, fluazifop-p and lambda-cyhalothrin

- one sample of Italian organic wine (GB) contained a residue of folpet
- 2 samples of South African organic wine (GB) contained residues of fosetyl-Al and folpet
- one sample of Argentinian organic wine (GB) contained a residue of fosetyl-Al
- one sample of Argentinian organic wine (GB) contained a residue of folpet
- one sample of Italian organic wine (GB) contained a residue of fosetyl-Al
- one sample of Italian organic wine (GB) contained residues of fosetyl-Al and folpet

The country of origin listed on some of the samples may not correspond to the country in which the samples were grown in. Instead, it may refer to the location where the sample was processed or packaged, or where the brand owner is based.

HSE also writes to Defra organics if samples of organic produce contain a pesticide residue which is permitted under assimilated organic regulation 889/2008. For Quarter 4 2025, this included:

- one sample of UK organic pre-packed salad (GB) contained a residue of spinosad
- one sample of Spanish organic lettuce (GB) contained a residue of spinosad
- 3 samples of Italian organic spinach (GB) contained a residue of spinosad
- one samples of Italian organic spinach (GB) contained residues of azadirachtin and spinosad
- one sample of Spanish organic lettuce (NI) contained a residue of spinosad
- 2 samples of Italian organic spinach (NI) contained a residue of spinosad
- one sample of UK organic spinach (NI) contained a residue of spinosad

Further information

You can find further information on the individual sample details in an accessible format by looking at the [Pesticide Residues in Food quarterly data](#).

This includes:

- brand name, sampling point and origin information
- pesticides sought and residues found
- HSE detailed risk assessments

Introduction to the work of the Expert Committee on Pesticide Residues in Food (PRiF)

The UK Expert Committee on Pesticide Residues in Food (the PRiF) is established to provide independent scientific advice to:

- Department for Environment, Food and Rural Affairs (Defra)
- Health and Safety Executive (HSE) (accountable to the Department of Work and Pensions)
- Department of Agriculture, Environment and Rural Affairs for Northern Ireland (DAERA)
- Food Standards Agency (FSA)
- Scottish Government
- Welsh Government

Read the [PRiF Terms of Reference and Code of Practice](#).

In relation to the published reports this includes advice on:

- the government's presentation of findings resulting from monitoring programmes of pesticide residues in food in GB and NI – in particular to ensure that results can be readily and appropriately understood by the public
- planned and ad-hoc government programmes to monitor pesticide residues in foodstuffs in particular on foods to be surveyed (taking account of changing diets), availability of produce, location and frequency of sampling and pesticides to be sought
- the determination of likely causes of adverse findings detected in government (and where relevant other national and international) monitoring programmes for pesticide residues in food

PRiF was established in 2011. Members have a broad range of expertise relating to the food supply industry. Previously this work was carried out by the Pesticide Residues Committee.

The chair, Ann Davison, has worked in consumer affairs for most of her career, running consumer organisations and networks. The committee also includes members with expertise in food science, public interest and food production and supply.

Information on the membership of the committee can be found on GOV.UK: [Expert Committee on Pesticide Residues in Food \(PRiF\)](#)

UK National Monitoring Programmes

The HSE, working under Defra, and the Scottish and Welsh governments authority has official responsibility to organise a monitoring programme of GB food for pesticide residues. Similarly, HSE working under Defra's authority has official responsibility to organise a monitoring programme of NI food for pesticide residues, including participating in the EU multi-annual control programme.

The programmes are made up of a risk-based rolling programme of surveys and statutory programmes required by GB or EU law. It is a surveillance programme, which is designed based upon evidence gathered in the previous years, including previous results, PRiF advice and border control information. For efficiency reasons, the NI programme may differ in that some lower priority (primarily imported) foods or processed foods are not included. If the GB survey identifies issues in these foods, then they would be included in future testing in NI.

These surveys are not an enforcement programme, and the survey design is generally not adjusted during the year. HSE are responsible for considering the safety of people who eat the food (in co-operation with the FSA if necessary) and for following up adverse or unexpected results. HSE are also responsible for determining whether food is compliant with the law, specifically, whether any pesticide residue found is within the MRL.

MRL's reflect levels of pesticides that could occur in food which has been treated in accordance with good agricultural practice (GAP). Where pesticides do not give rise to readily detectable residues, or are not authorised for use on commodities, MRLs are set at the lowest level which can be identified in routine laboratory analysis. This provides a mechanism for statutory controls on pesticides in food which is put into circulation and for monitoring the correct use of these chemicals.

Table 2: 2025 Survey design

GB surveys that have an asterisk (*) are a requirement of the [Multi-annual Great Britain control plan for pesticide residues](#).

NI surveys that have an asterisk (*) are a requirement of the EU Coordinated Programme required by [Commission Implementing Regulations 2024/989](#).

Table 2a: Fruit and vegetables

Food	Sampling points	Sampled during	Reporting
Apples (GB) *	Retail outlets	Quarterly	Quarterly
Apples (NI) *	Retail outlets	Quarterly	Quarterly
Asparagus (GB)	Retail outlets	Quarters 2 and 3	Quarters 2 and 3
Asparagus (NI)	Retail outlets	Quarters 2 and 3	Quarters 2 and 3
Beans with pods (GB)	Retail outlets and supply chain	Quarterly	Quarterly
Beans with pods (NI)	Retail outlets	Quarterly	Quarterly
Cabbage (GB) *	Retail outlets and supply chain	Quarterly	Quarterly
Cabbage (NI) *	Retail outlets	Quarterly	Quarterly
Celery (GB)	Retail outlets	Quarters 3 and 4	Quarters 3 and 4
Figs (GB)	Retail outlets and supply chain	Quarterly	Quarterly
Figs (NI)	Retail outlets	Quarters 3 and 4	Quarters 3 and 4
Grapes (GB)	Retail outlets and supply chain	Quarterly	Quarterly
Grapes (NI)	Retail outlets	Quarterly	Quarters 2, 3 and 4
Lettuce (GB) *	Retail outlets and supply chain	Quarters 2, 3 and 4	Quarters 2, 3 and 4

Food	Sampling points	Sampled during	Reporting
Lettuce (NI) *	Retail outlets	Quarters 3 and 4	Quarters 3 and 4
Mango (GB)	Retail outlets and supply chain	Quarterly	Quarterly
Mango (NI)	Retail outlets	Quarterly	Quarterly
Peaches and nectarines (GB) *	Retail outlets and supply chain	Quarterly	Quarterly
Peaches and nectarines (NI) *	Retail outlets	Quarterly	Quarterly
Plums (GB)	Retail outlets	Quarters 2 and 3	Quarters 2 and 3
Plums (NI)	Retail outlets	Quarters 2, 3 and 4	Quarters 2, 3 and 4
Potatoes (GB)	Supply chain	Quarterly	Quarterly
Potatoes (NI)	Retail outlets	Quarterly	Quarterly
Pre-packed salad [Note 1] (GB)	Retail outlets	Quarterly	Quarterly
Pre-packed salad [Note 1] (NI)	Retail outlets	Quarters 2, 3 and 4	Quarters 2, 3 and 4
Spinach (GB) *	Retail outlets and supply chain	Quarterly	Quarterly
Spinach (NI) *	Retail outlets	Quarterly	Quarterly
Strawberries (GB) *	Retail outlets and supply chain	Quarterly	Quarterly
Strawberries (NI) *	Retail outlets	Quarterly	Quarterly
Tomatoes (GB) *	Retail outlets and supply chain	Quarterly	Quarterly
Tomatoes (NI) *	Retail outlets	Quarterly	Quarterly

Note 1: The survey of pre-packed salad[^] has been referred to as ‘salad and baby leaf bags’ in previous quarterly reports. In this report and the annual competent authority report, this survey will be referred to as pre-packed salad in GB and NI.

Table 2b: Animal products

Food	Sampling points	Sampled during	Reporting
Cheese (NI)	Retail outlets	Quarterly	Quarterly
Fish (tinned) (GB)	Retail outlets	Quarterly	Quarterly
Fish (tinned) (NI)	Retail outlets	Quarterly	Quarterly
Milk (GB) *	Retail outlets	Quarterly	Quarterly
Milk (NI) *	Retail outlets	Quarterly	Quarters 2, 3 and 4
Pork (GB) *	Retail outlets	Quarterly	Quarterly
Pork (NI) *	Retail outlets	Quarterly	Quarterly

Table 2c: Cereal products

Food	Sampling points	Sampled during	Reporting
Barley (GB) *	Retail outlets	Quarterly	Quarterly
Barley (NI) *	Retail outlets	Quarters 2 and 3	Quarters 2 and 3
Bread (gluten free) (GB)	Retail outlets	Quarters 2, 3 and 4	Quarters 3 and 4
Bread (gluten free) (NI)	Retail outlets	Quarters 3 and 4	Quarters 3 and 4
Bread (ordinary) (GB)	Retail outlets	Quarters 2, 3 and 4	Quarters 3 and 4
Bread (ordinary) (NI)	Retail outlets	Quarters 3 and 4	Quarters 3 and 4
Oats (GB) *	Retail outlets	Quarterly	Quarterly

Food	Sampling points	Sampled during	Reporting
Oats (NI) *	Retail outlets	Quarters 2 and 3	Quarters 2 and 3
Rice (GB)	Retail outlets	Quarters 1 and 2	Quarters 1 and 2

Table 2d: Miscellaneous products

Food	Sampling points	Sampled during	Reporting
Apple juice (GB)	Retail outlets	Quarters 1 and 3	Quarters 1 and 3
Infant food (animal) (GB) *	Retail outlets	Quarter 3	Quarter 3
Infant food (cereal) (NI)*	Retail outlets	Quarter 3	Quarter 3
Mango juice (GB)	Retail outlets	Quarter 3	Quarter 3
Plant-based chocolate (GB)	Retail outlets	Quarter 4	Quarter 4
Plant-based protein (GB)	Retail outlets	Quarter 3	Quarter 3
Spices (cumin and turmeric) (GB)	Retail outlets	Quarters 2 and 3	Quarter 3
Tomatoes (processed) (GB)	Retail outlets	Quarter 1	Quarter 1
Wine (GB) *	Retail outlets	Quarterly	Quarters 2 and 4
Wine (NI) *	Retail outlets	Quarters 2 and 3	Quarters 2 and 3

Sampling points

Retail outlets - samples bought by market research contractor shoppers.

Supply chain - samples taken by inspectors from the Animal and Plant Health Agency (APHA) from a range of points in the supply chain (wholesalers, retail depots, ports and import points).

Reporting

Results for certain higher-priority foods are produced, followed up and published more frequently in the [Pesticide Residues in Food data and results](#).

All results are published in the quarterly report. Some surveys are included in every quarter, some are every other quarter and some in just one quarter.

The place of origin listed for the samples tested in this report is in the following categories:

- were imported from outside the EU. In this report this means outside of the EU and outside of the UK
- came from the UK
- came from the EU

Table 3a: Summary of results for Q4 Great Britain

GB surveys that have an asterisk (*) are a requirement of the [Multi-annual Great Britain control plan for pesticide residues](#).

Food	Analysed	With residues at or below the MRL	With residues above the MRL	With residues of non-approved pesticides (UK only)	With multiple residues	Organic samples tested	Organic samples with residues
Apples (GB) *	27	19	0	0	18	8	1
Barley (GB) *	24	23	0	0	23	0	0
Beans with pods (GB)	27	11	5	0	9	2	0
Bread (gluten free) (GB)	17	1	0	0	0	0	0
Bread (ordinary) (GB)	48	48	0	0	17	0	0
Cabbage (GB) *	30	21	0	0	12	4	0
Celery (GB)	18	8	0	0	4	5	0
Fish (tinned) (GB)	24	2	0	0	0	0	0
Grapes (GB)	36	34	0	0	33	2	0

Food	Analysed	With residues at or below the MRL	With residues above the MRL	With residues of non-approved pesticides (UK only)	With multiple residues	Organic samples tested	Organic samples with residues
Lettuce (GB) *	25	18	0	0	15	7	1
Mango (GB)	23	20	0	0	20	1	0
Milk (GB) *	67	0	0	0	0	30	0
Oats (GB) *	18	12	0	0	11	8	2
Peaches and nectarines (GB) *	10	10	0	0	10	0	0
Plant-based chocolate (GB)	36	5	0	0	2	5	1
Pork (GB) *	24	0	0	0	0	0	0
Potatoes (GB)	36	24	3	0	13	0	0
Pre-packed salad (GB)	18	11	4	0	14	1	1
Spinach (GB) *	28	21	4	0	18	8	6
Strawberries (GB) *	48	44	4	1	46	0	0

Food	Analysed	With residues at or below the MRL	With residues above the MRL	With residues of non-approved pesticides (UK only)	With multiple residues	Organic samples tested	Organic samples with residues
Tomatoes (GB) *	10	8	0	0	6	0	0
Wine (GB) *	36	26	0	1	12	14	7

Table 3b: Summary of results for Q4 Northern Ireland

NI surveys that have an asterisk (*) are a requirement of the EU Coordinated Programme required by [Commission Implementing Regulations 2024/989](#).

Food	Analysed	With residues at or below the MRL	With residues above the MRL	With residues of non-approved pesticides (UK only)	With multiple residues	Organic samples tested	Organic samples with residues
Apples (NI) *	17	12	0	0	8	3	0
Beans with pods (NI)	9	4	0	0	2	0	0
Bread (gluten free) (NI)	6	1	0	0	0	0	0
Bread (ordinary) (NI)	24	21	0	0	6	0	0

Food	Analysed	With residues at or below the MRL	With residues above the MRL	With residues of non-approved pesticides (UK only)	With multiple residues	Organic samples tested	Organic samples with residues
Cabbage (NI) *	6	1	0	0	0	0	0
Cheese (NI)	12	0	0	0	0	2	0
Figs (NI)	7	0	0	0	0	0	0
Fish (tinned) (NI)	9	1	0	0	0	0	0
Grapes (NI)	9	7	0	0	6	2	0
Lettuce (NI) *	9	7	0	0	5	2	1
Mango (NI)	9	9	0	0	8	0	0
Milk (NI) *	10	0	0	0	0	6	0
Peaches and nectarines (NI)	9	8	0	0	5	0	0
Plums (NI)	9	6	0	0	4	1	0
Pork (NI)	19	0	1	0	0	0	0

Food	Analysed	With residues at or below the MRL	With residues above the MRL	With residues of non-approved pesticides (UK only)	With multiple residues	Organic samples tested	Organic samples with residues
Potatoes (NI)	12	2	0	0	0	4	0
Pre-packed salad [Note 1] (NI)	10	6	4	0	9	0	0
Spinach (NI)	6	5	0	0	3	3	3
Strawberries (NI)	9	9	0	0	9	0	0
Tomatoes (NI)	9	4	0	0	4	3	0

Note 1: The survey of pre-packed salad has been referred to as ‘salad and baby leaf bags’ in previous quarterly reports. In this report and the annual competent authority report, this survey will be referred to as pre-packed salad in GB and NI.

Table 4a: Summary of MRL Exceedances for Q4 Great Britain

Some shorthand has been used in this table. The asterisk symbol “*” means MRLs set at the limit of determination (LOD MRL). These MRLs are set at a default level, for example, at the LOD where analytical methods can reasonably detect the presence of the pesticide. Either insufficient trials data are available on which to set an MRL, or there may be no use of the pesticide on that crop permitted. However, they may be permitted elsewhere.

Where processed goods have been tested, the MRL may be adjusted to take account of processing – see [section 5: issues arising in this report](#).

Measurement uncertainty is explained in [quarterly reports on the pesticide residues monitoring programme: methodology, background and references](#).

Beans with pods (GB)

Sample ID	Food type	Country of origin	Pesticide detected	Residue detected (mg per kg)	MRL (mg per kg)	MRL exceedance after allowing for measurement uncertainty	Sent to FSA for consideration
5867/2025	Fine beans	Rwanda	BAC (partial sum)	1.9	0.1	Yes	No
5869/2025	Fine beans	Rwanda	Chlorfenapyr	0.03	0.01*	Yes	No
5039/2025	Yard long beans	Thailand	Chlorfenapyr	0.02	0.01*	Yes	No
5414/2025	Yard long beans	Thailand	DDAC (sum)	2.2	0.1	Yes	No

Sample ID	Food type	Country of origin	Pesticide detected	Residue detected (mg per kg)	MRL (mg per kg)	MRL exceedance after allowing for measurement uncertainty	Sent to FSA for consideration
5414/2025	Yard long beans	Thailand	Propiconazole	0.02	0.01*	No	No
5414/2025	Yard long beans	Thailand	Triazophos	0.09	0.01*	Yes	No
5910/2025	Yard long beans	India	Permethrin (sum)	0.6	0.05*	Yes	No
5910/2025	Yard long beans	India	Quinalphos	0.2	0.01*	Yes	No

Potatoes (GB)

Sample ID	Food type	Country of origin	Pesticide detected	Residue detected (mg per kg)	MRL (mg per kg)	MRL exceedance after allowing for measurement uncertainty	Sent to FSA for consideration
5401/2025	Sagitta potatoes	UK	Flonicamid (sum)	0.1	0.09	No	No
5920/2025	Miranda potatoes	UK	Flonicamid (sum)	0.2	0.09	Yes	No
5921/2025	Sagitta potatoes	UK	Flonicamid (sum)	0.1	0.09	No	No

Pre-packed salad (GB)

Sample ID	Food type	Country of origin	Pesticide detected	Residue detected (mg per kg)	MRL (mg per kg)	MRL exceedance after allowing for measurement uncertainty	Sent to FSA for consideration
0389/2025	Rocket and baby leaf salad	UK	Chlorate	1.6	0.7	Yes	No
0405/2025	Delicate and peppery baby leaf	UK	Chlorate	0.9	0.7	No	No
1774/2025	Crispy salad	UK	Chlorate	4.6	0.7	Yes	No
4452/2025	Rocket and baby leaves	UK	Chlorate	1.8	0.7	Yes	No

Spinach (GB)

Sample ID	Food type	Country of origin	Pesticide detected	Residue detected (mg per kg)	MRL (mg per kg)	MRL exceedance after allowing for measurement uncertainty	Sent to FSA for consideration
1981/2025	Baby spinach	UK	Chlorate	1	0.7	No	No
2126/2025	Organic young spinach	Italy	Fluazifop-p (sum)	0.09	0.02	Yes	No
2143/2025	Baby spinach	UK	Chlorate	1	0.7	No	No
3767/2025	Spinach	UK	Deltamethrin	0.07	0.01*	Yes	No

Strawberries (GB)

Sample ID	Food type	Country of origin	Pesticide detected	Residue detected (mg per kg)	MRL (mg per kg)	MRL exceedance after allowing for measurement uncertainty	Sent to FSA for consideration
1972/2025	Monterey strawberries	Jordan	Flonicamid (sum)	0.3	0.03*	Yes	No
5852/2025	Elsanta strawberries	Belgium	Flonicamid (sum)	0.09	0.03*	Yes	No
5853/2025	Monterey strawberries	Jordan	Flonicamid (sum)	0.3	0.03*	Yes	No
5943/2025	Elsanta strawberries	Belgium	Flonicamid (sum)	0.06	0.03*	No	No

Samples collected in GB must comply with GB set MRLs unless the goods are qualifying Northern Ireland goods and are subject to unfettered access under the terms of the UK Internal Market Act for 2020. For samples collected in Northern Ireland, under the Windsor Framework, certain aspects of EU food law, including compliance with EU set MRLs, continue to apply.

Table 4b: Summary of MRL Exceedances for Q4 Northern Ireland

Where processed goods have been tested, the MRL may be adjusted to take account of processing – see [section 5: issues arising in this report](#).

Measurement uncertainty is explained in [quarterly reports on the pesticide residues monitoring programme: methodology, background and references](#).

Pre-packed salad (NI)

Sample ID	Food type	Country of origin	Pesticide detected	Residue detected (mg per kg)	MRL (mg per kg)	MRL exceedance after allowing for measurement uncertainty	Sent to FSA for consideration
1848/2025	Butterhead salad	UK	Chlorate	0.95	0.7	No	No
1865/2025	Mixed leaf salad	UK	Chlorate	1.2	0.7	No	No
2174/2025	Radicchio, lambs lettuce, frisee	UK	Chlorate	3.9	0.7	Yes	No
4640/2025	Baby leaf bags	UK	Chlorate	1.6	0.7	Yes	No

Pork (NI)

Sample ID	Food type	Country of origin	Pesticide detected	Residue detected (mg per kg)	MRL (mg per kg)	MRL exceedance after allowing for measurement uncertainty	Sent to FSA for consideration
1828/2025	Pork fillet	UK	BAC (sum)	0.19	0.1	No	No

Samples collected in GB must comply with GB set MRLs unless the goods are qualifying Northern Ireland goods and are subject to unfettered access under the terms of the UK Internal Market Act for 2020. For samples collected in Northern Ireland, under the Windsor Framework, certain aspects of EU food law, including compliance with EU set MRLs, continue to apply.

Action taken by HSE

HSE wrote to:

- the suppliers of all samples containing residues above the MRL
- the authorities of the exporting countries of all samples containing residues above the MRL
- the suppliers of GB and NI samples that contained residues of actives which do not have a plant protection product authorised for the crop they were detected in
- the Organics branch of Defra about samples that were labelled as organic and contained any residues of pesticides which is not permitted under retained organic regulation Commission Regulation (EC) No 889/2008

Recipients of the letters are given 4 weeks to provide a statement for inclusion in the report. The Expert Committee on Pesticide Residues in Food reviews any replies received.

Supplier responses

Sample ID: 5920/2025

Sample: Miranda potatoes

Country of origin: UK

Residue: Flonicamid (sum) 0.2 (MRL = 0.09)

Sampling date: 04 November 2025

Sampling point: D Pain & Sons

Further to your letter of 19 January 2026, we would like the following to be considered a statement to be included in the Quarterly report.

In your letter of 19 January 2026, you informed us that you found an MRL exceedance of flonicamid in our Miranda potatoes. We are surprised at the level found, and even more surprised that what you recorded in our Miranda was twice that in our Sagitta potatoes (0.1 mg/kg), which you also sampled at the same time. Both crops were sprayed with the same sprayer load more-or-less consecutively with the same sprayer settings, including rate per hectare applied (Teppeki 160 g/ha). It is perhaps possible that the relatively high levels found are the result of concentration, in that both crops were unirrigated, and in the severe drought experienced in 2025, the Miranda yielded only approximately 20 t/ha, and the Sagitta 25 t/ha. (In a normal growing season, we would expect the Miranda to yield around 45 t/ha, and the Sagitta at least 55 t/ha). Also, the crop canopy size in both varieties was smaller than normal as a result of the drought, especially so in the Miranda, which would perhaps explain higher residues than anticipated in the tubers, because the total biomass of foliage plus tubers was much smaller than normal. Nevertheless, taking both factors into account does not explain a two-fold difference in residue between the 2 samples. It is worth noting that we very rarely use this or any other aphicide on our potatoes, and it was only used in 2025 due to a severe infestation, most likely triggered by the extreme hot and

dry weather of that year. We are very pleased to note that the HSE does not think eating these potatoes would have any short-term effect on consumers, not least because we ourselves are consumers of potatoes we grow! Although not relevant to this case in terms of providing an explanation for the exceedance, or the difference in flonicamid levels recorded between the 2 varieties, we note that the UK MRL for flonicamid in potatoes remains at 0.09 mg/kg, whereas that in the EU was increased from 0.09 to 0.2 mg/kg as of October 2024, so there would be no MRL exceedance in this Miranda in the EU.

HSE response

In the case of the crops in question, it has been noted that the crops were unirrigated, and severe drought was experienced in 2025 which resulted in much lower yields than typically expected for these crops. This could potentially lead to some unexpected results if these extreme conditions are outside of the conditions experienced in the trials used to set the MRL, and if the crop has had its growth impeded. Furthermore, it has been indicated that the crop canopy was smaller for the Miranda crop (5920/2025) and this could mean that there was a greater opportunity for the pesticide spray to get through to the soil in which the tubers are grown. The volume of the foliage in the crop canopy will impact the degree of interception of the spray. Whilst pesticide in the tubers could be arise from pesticide translocated from foliage to the roots, there could potentially be pesticide from the spray hitting the soil reaching the tubers.

There are many factors which can influence the final level of residue in a harvested crop, and different results can be obtained, even if the same sprayer parameters and application rate treatments were applied to adjacent crops.

As we have noted it is the MRL that is exceeded, and not the 'safety levels'. The consumer risk assessment does not give cause for concern as the highest estimated dietary intakes are below the short-term toxicological reference value, the acute reference dose (ARfD). In many cases, residues of pesticides at the MRL result in dietary intakes that are well below the ARfD. In this case (either at a level of 0.2, the level of the EU MRL, or 0.09 mg/kg, the level of the GB MRL) the highest dietary intakes are below the ARfD (18.5 to 41% of the ARfD for flonicamid of 0.075 mg/kg bw/day (GB, 2024)).

HSE has noted that this appears to be an unexpected result, potentially due drought conditions, in potatoes treated in accordance with the authorisation for use and good agricultural practice. HSE will take this into account in considering further findings and future regulatory considerations. As there is no cause for concern for consumers no action is being taken at this time.

HSE is grateful for the helpful detail in the grower's response, which enabled detailed scrutiny of this finding.

2. Findings by food in Great Britain (GB) and the UK and risk assessments

Summary

For more information on the results, read the:

- [summary table of results in this report](#)
- [survey design in this report](#)
- [glossary in this report](#)
- [Risk Assessment - dietary intake assessments](#)
- [HSE risk assessment methodology](#)
- [detailed pesticide residues in food quarterly data](#), which includes brand name, sampling point and origin information, pesticides sought, and residues found

Apples (GB)

Samples tested

27 samples were tested for up to 416 pesticide residues.

Cooking

- 6 samples came from the UK

Eating

- 5 samples came from the UK
- 7 samples were imported from outside the EU
- 9 samples came from the EU

Pesticide residues detected of those sought

- 8 samples contained no residues of those sought
- 19 samples contained residues above the reporting limit
- none of the samples contained residues above the Maximum Residue Level (MRL)
- 8 samples were labelled as organic – one contained a residue from those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that the Health and Safety Executive (HSE) considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Barley (GB)

Samples tested

24 samples were tested for up to 417 pesticide residues.

Pearl barley

- 24 samples came from the UK

The country of origin for the barley samples may not correspond to the country in which the barley is grown. Instead, it may refer to the location where the barley is packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- one sample contained no residues of those sought
- 23 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL (the MRL may have been adjusted, if the barley were processed, to allow for the effect of processing) – further information can be found in [Table 7a: Processing factors and MRLs used for barley \(GB\)](#)
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. Two of these residues are from pesticides which belong to the same chemical group and may have similar toxicological effects. So, the risk assessors needed to consider their possible impacts on human health, both on their own and in combination.

HSE carried out a combined risk assessment of the relevant samples. We would not expect this combination of pesticides in these samples to have an effect on health.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Beans with pods (GB)

Samples tested

27 samples were tested for up to 411 pesticide residues.

Dwarf beans

- one sample was imported from outside the EU

Fine beans

- 12 samples were imported from outside the EU

Green beans

- 2 samples came from the UK
- 4 samples were imported from outside the EU

Runner beans

- one sample came from the UK

Speciality beans

- 7 samples were imported from outside the EU

Pesticide residues detected of those sought

- 11 samples contained no residues of those sought
- 16 samples contained residues above the reporting limit
- 5 samples contained residues above the MRL
- 2 samples were labelled as organic – none contained residues of those sought

Risk assessments

One sample of beans with pods contained a residue of omethoate at a level of 0.008 per kg below the level of the MRL at 0.01* mg per kg where we wanted to assess whether there would be an effect on health. Omethoate is the main metabolite of dimethoate; dimethoate itself was sought but not found in this sample.

Both dimethoate and omethoate are not approved in the EU and pesticide products containing dimethoate were withdrawn in the UK and EU 2020. The underlying [European Food Safety Authority \(EFSA\) Conclusion \(2018\)](#) for dimethoate has indicated that no toxicological reference values could be determined for dimethoate and its metabolite

omethoate, due to a lack of a fully supporting toxicological database. However, EFSA did propose a hypothetical short term reference value.

Taking account of this conclusion and other earlier evaluations, HSE concludes that a short-term effect on health is unlikely after eating large portions (97.5th percentile consumption) of yard long beans containing the levels found in this report.

We conclude that on a precautionary basis any findings of omethoate are undesirable due to the uncertainty regarding genotoxicity at low doses. However, we consider any risks of adverse health effects are low due to the limited levels of exposure anticipated based on the omethoate residues found in this sample.

Details of HSE's risk assessment are in [section 4: Risk assessment – dietary intake assessments](#).

Other risk assessment screening work undertaken did not indicate any other expectation of effects on health.

For further information refer to [HSE risk assessment methodology](#).

Combined risk assessments

Some samples contained residues of more than one pesticide. One of these samples contains residues that are from pesticides which belong to similar chemical groups and may have similar toxicological effects. So, the risk assessors needed to consider their possible impacts on human health, both on their own and in combination.

HSE carried out a combined risk assessment of the relevant sample. We would not expect this combination of pesticides in the sample to have an effect on health.

Further information of how HSE consider combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

The results from this survey have already been published and have been followed up either earlier in the year or at the conclusion of 2025 as part of the rolling reports.

One sample contained a residue of BAC, and one sample contained a residue of DDAC. These substances are widely used as biocides (disinfectants) during food preparation and processing. This is the most likely source of these residues. Further information on DDAC/BAC residues can be found in [section 5: issues arising in this report](#).

Regarding the finding of omethoate, based on the analytical data HSE note that it is likely that this finding comes from application of dimethoate. We needed to consider the potential genotoxic health effects of omethoate in the yard long beans sample. These

pesticides are not authorised in the UK but can on occasion be found in some imported food. We concluded that on a precautionary basis any findings of omethoate are undesirable due to the uncertainty regarding genotoxicity and risks of an adverse effect on health due to genotoxicity are low.

Residues measured above the MRL

The laboratory detected 8 residues above the MRL in beans with pods. Details are available in [Table 4a: Summary of MRL Exceedances for Q4 Great Britain](#).

Bread (gluten free) (GB)

Samples tested

17 samples were tested for up to 415 pesticide residues.

17 samples came from the UK.

The country of origin for the bread (gluten free) samples may not correspond to the country in which the bread is produced. Instead, it may refer to the location where the products were packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- 16 samples contained no residues of those sought
- one sample contained a residue above the reporting limit
- no MRLs were applied to gluten free bread because they contained varying and multiple non-cereal ingredients
- none of the samples were labelled as organic

Risk assessments

The residue detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

None of the samples contained more than one residue, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Bread (ordinary) (GB)

Samples tested

48 samples were tested for up to 415 pesticide residues.

Ordinary bread: other

- 6 samples came from the UK

Ordinary bread: white

- 31 samples came from the UK

Ordinary bread: wholemeal

- 11 samples came from the UK

The country of origin for the bread (ordinary) samples may not correspond to the country in which the bread is produced. Instead, it may refer to the location where the products were packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- all samples contained residues
- none of the samples contained residues above the MRL (the MRL may have been adjusted, if the bread (ordinary) were processed, to allow for the effect of processing) – further information can be found in [Table 7b: Processing factors and MRLs used for bread \(ordinary\)](#)
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Cabbage (GB)

Samples tested

30 samples were tested for up to 389 pesticide residues.

- 25 samples came from the UK
- 5 samples came from the EU

Pesticide residues detected of those sought

- 9 samples contained no residues of those sought
- 21 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- 4 samples were labelled as organic – none contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. One of the samples contains residues that are from pesticides which belong to the same chemical group and may have similar toxicological effects. So, the risk assessors needed to consider their possible impacts on human health, both on their own and in combination.

HSE carried out a combined risk assessment of the relevant sample. We would not expect this combination of pesticides in this sample to have an effect on health.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results in detail and felt it did not need to make any additional comments.

Celery (GB)

Samples tested

18 samples were tested for up to 412 pesticide residues.

- 11 samples came from the UK
- 7 samples came from the EU

Pesticide residues detected of those sought

- 10 samples contained no residues of those sought
- 8 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- 5 samples were labelled as organic – none contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Fish (tinned) (GB)

Samples tested

24 samples were tested for up to 118 pesticide residues.

Crab

- one sample was imported from outside the EU

Mackerel

- 4 samples were imported from outside the EU

Salmon

- 4 samples were imported from outside the EU

Sardines

- 2 samples were imported from outside the EU

Tuna

- 13 samples were imported from outside the EU

Where no sea area information is available, the country of origin on the packaging does not necessarily indicate where the fish (tinned) was caught or farmed. It could be where it was landed or processed or where it was packed for retail sale.

Pesticide residues detected of those sought

- 22 samples contained no residues of those sought
- 2 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

None of the samples contained more than one residue, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

One sample contained a residue of DDT in the form of DDE which indicates presence in the environment from historical use. See [section 5: issues arising in this report](#).

The tinned fish may be stored in brine, oil or water; therefore, the presence of some pesticide residues may be due to the storage media. Read more information on this in the [MRL section in the glossary of this report](#).

Grapes (GB)

Samples tested

36 samples were tested for up to 414 pesticide residues.

- 12 samples were imported from outside the EU
- 24 samples came from the EU

Pesticide residues detected of those sought

- 2 samples contained no residues of those sought
- 34 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- 2 samples were labelled as organic – none contained residues of those sought

Risk assessments

Two samples of grapes contained a residue of lambda-cyhalothrin at a level where we wanted to assess whether there would be a short-term effect on health. The highest level detected was 0.06 mg per kg and the other sample contained 0.05 mg per kg.

Residues of lambda-cyhalothrin are indistinguishable analytically from gamma-cyhalothrin, and the residue could have arisen from application of either gamma-cyhalothrin or lambda-cyhalothrin.

The sample that contains the highest residue of 0.06 mg per kg is expected to be from use of lambda-cyhalothrin and on this basis the Acute Reference Dose (ARfD) for lambda-cyhalothrin would not be exceeded and an effect on health would not be expected.

As we do not know the source of the residue for the sample containing a residue of 0.05 mg per kg, HSE has presented a range covering a least worst case and a worst case form of assessment for this residue since these pesticides have different toxicological potencies, resulting in different ARfDs for these substances.

For the sample containing a residue of 0.05 mg per kg, HSE concludes that a short-term effect on health would not be expected if the source of the residue is lambda-cyhalothrin and a short-term effect on health is unlikely if the source of the residue is gamma-cyhalothrin. Details of HSE's risk assessment for this sample are in [section 4: Risk assessment – dietary intake assessments](#).

Other risk assessment screening work undertaken did not indicate any other expectation of effects on health.

For further details refer to [HSE risk assessment methodology](#).

Combined risk assessments

Some samples contained residues of more than one pesticide. Some of these residues are from pesticides which belong to similar chemical groups and may have similar toxicological effects. So, the risk assessors needed to consider their possible impacts on human health, both on their own and in combination.

HSE carried out a combined risk assessment of the relevant samples. We would not expect any of these combinations of pesticides in these samples to have an effect on health.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

HSE discussed their detailed risk assessments with PRiF following the detection of lambda-cyhalothrin residues in 2 grape samples, with the highest residue detected being 0.06 mg per kg. The laboratory analysis does not distinguish between lambda-cyhalothrin and gamma-cyhalothrin. Whilst the latter is a more toxic form, HSE would not expect any of these pesticide residues to have an effect on health.

Lettuce (GB)

Samples tested

25 samples were tested for up to 416 pesticide residues.

Gem hearts

- one sample came from the UK
- 5 samples came from the EU

Iceberg

- 2 samples came from the UK
- one sample came from the EU

Little gem

- 2 samples came from the UK
- 5 samples came from the EU

Lollo rosso

- one sample came from the EU

Romaine

- 6 samples came from the UK
- one sample came from the EU

Round

- one sample came from the UK

Pesticide residues detected of those sought

- 7 samples contained no residues of those sought
- 18 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- 7 samples were labelled as organic – one contained residue of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Mango (GB)

Samples tested

23 samples were tested for up to 388 pesticide residues.

Fresh

- 21 samples were imported from outside the EU
- 2 samples came from the EU

Pesticide residues detected of those sought

- 3 samples contained no residues of those sought
- 20 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- one sample was labelled as organic – it did not contain any residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Milk (GB)

Samples tested

67 samples were tested for up to 123 pesticide residues.

Cows' milk

- 65 samples came from the UK

Goats' milk

- 2 samples came from the UK

Pesticide residues detected of those sought

- 67 samples contained no residues of those sought
- none of the samples contained residues above the MRL
- 30 samples were labelled as organic – none contained residues of those sought

Risk assessments

The laboratory did not detect any residues, so we did not carry out a risk assessment.

Combined risk assessments

None of the samples contained residues, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

PRiF has no comments as no residues were found.

Oats (GB)

Samples tested

18 samples were tested for up to 417 pesticide residues.

- 16 samples came from the UK
- 2 samples came from the EU

The country of origin for the oat samples may not correspond to the country in which the oats are grown. Instead, it may refer to the location where the oats are packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- 6 samples contained no residues of those sought
- 12 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL (the MRL may have been adjusted, if the oats were processed, to allow for the effect of processing) – further information can be found in [Table 7c: Processing factors and MRLs used for oats \(GB\)](#)
- 8 samples were labelled as organic – 2 contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. Two of these residues are from pesticides which belong to the same chemical group and may have similar toxicological effects. So, the risk assessors needed to consider their possible impacts on human health, both on their own and in combination.

HSE carried out a combined risk assessment of the relevant samples. We would not expect this combination of pesticides in these samples to have an effect on health.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results in detail and felt it did not need to make any additional comments.

Peaches and nectarines (GB)

Samples tested

10 samples were tested for up to 393 pesticide residues.

Nectarines

- one sample was imported from outside the EU
- 4 samples came from the EU

Peaches

- one sample was imported from outside the EU
- 4 samples came from the EU

Pesticide residues detected of those sought

- all samples contained residues
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

All samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Plant-based chocolate (GB)

Samples tested

36 samples were tested for up to 411 pesticide residues.

- 32 samples came from the UK
- one sample was imported from outside the EU
- 3 samples came from the EU

The country of origin for the plant-based chocolate samples may not correspond to the country in which the plant-based chocolate is produced. Instead, it may refer to the location where the plant-based chocolate is packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- 31 samples contained no residues of those sought
- 5 samples contained residues above the reporting limit
- no MRLs were applied to plant-based chocolate because they contained varying and multiple ingredients
- 5 samples were labelled as organic – one contained residue of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Two samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results in detail and felt it did not need to make any additional comments.

Pork (GB)

Samples tested

24 samples were tested for up to 120 pesticide residues.

- 18 samples came from the UK
- 6 samples came from the EU

Pesticide residues detected of those sought

- 24 samples contained no residues of those sought
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The laboratory did not detect any residues, so we did not carry out a risk assessment.

Combined risk assessments

None of the samples contained a residue, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

PRiF has no comments as no residues were found.

Potatoes (GB)

Samples tested

36 samples were tested for up to 413 pesticide residues.

36 samples came from the UK.

Pesticide residues detected of those sought

- 9 samples contained no residues of those sought
- 27 samples contained residues above the reporting limit
- 3 samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

The results from this survey have already been published and followed up earlier in the year as part of the rolling reports.

PRiF considered these results in detail and felt it did not need to make any additional comments.

Residues measured above the MRL

The laboratory detected 3 residues above the MRL in potatoes. Details are available in [Table 4a: Summary of MRL Exceedances for Q4 Great Britain](#).

Pre-packed salad (GB)

Samples tested

18 samples were tested for up to 411 pesticide residues.

Mixed Leaf

- 16 samples came from the UK

Rocket

- 2 samples came from the EU

The country of origin for the pre-packed salad samples may not correspond to the country in which the salad leaves are grown. Instead, it may refer to the location where the salad leaves are packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- 3 samples contained no residues of those sought
- 15 samples contained residues above the reporting limit
- 4 samples contained residues above the MRL
- one sample was labelled as organic – one contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

Further information on chlorate residues can be found in [section 5: issues arising in this report](#).

For further information about dithiocarbamates, refer to [HSE risk assessment methodology](#). Under routine testing, dithiocarbamates are analysed as carbon disulphide. Some salad crops, such as rocket, are known to contain natural sulphurous substances that could also be determined as carbon disulphide during analysis in the laboratory.

Residues measured above the MRL

The laboratory detected 4 residues above the MRL in pre-packed salad. Details are available in [Table 4a: Summary of MRL Exceedances for Q4 Great Britain](#).

Spinach (GB)

Samples tested

28 samples were tested for up to 389 pesticide residues.

Baby leaf (fresh)

- 9 samples came from the UK
- 7 samples came from the EU

Spinach (fresh)

- 8 samples came from the UK
- 4 samples came from the EU

Pesticide residues detected of those sought

- 3 samples contained no residues of those sought
- 25 samples contained residues above the reporting limit
- 4 samples contained residues above the MRL
- 8 samples were labelled as organic – 6 contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

Further information on the samples containing chlorate residues can be found in [section 5: issues arising in this report](#)

Residues measured above the MRL

The laboratory detected 4 residues above the MRL in spinach. Details are available in [Table 4a: Summary of MRL Exceedances for Q4 Great Britain](#).

Strawberries (GB)

Samples tested

48 samples were tested for up to 391 pesticide residues.

Fresh

- 27 samples came from the UK
- 3 samples were imported from outside the EU
- 18 samples came from the EU

Pesticide residues detected of those sought

- all samples contained residues
- 4 samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. Some of these residues are from pesticides which belong to similar chemical groups and may have similar toxicological effects. So, the risk assessors needed to consider their possible impacts on human health, both on their own and in combination.

HSE carried out a combined risk assessment of the relevant samples. We would not expect any of these combinations of pesticides in these samples to have an effect on health.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results in detail and felt it did not need to make any additional comments.

Residues measured above the MRL

The laboratory detected 4 residues above the MRL in strawberries. Details are available in [Table 4a: Summary of MRL Exceedances for Q4 Great Britain](#).

Tomatoes (GB)

Samples tested

10 samples were tested for up to 420 pesticide residues.

Cocktail

- one sample came from the UK

Plum

- 2 samples were imported from outside the EU

Salad

- one sample came from the UK
- one sample was imported from outside the EU
- 2 samples came from the EU

Vine

- 2 samples came from the UK
- one sample came from the EU

Pesticide residues detected of those sought

- 2 samples contained no residues of those sought
- 8 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Wine (GB)

Samples tested

36 samples were tested for up to 417 pesticide residues.

Red

- 10 samples were imported from outside the EU
- 6 samples came from the EU

Rose

- 2 samples were imported from outside the EU
- one sample came from the EU

Sparkling

- 2 samples came from the EU

White

- one sample came from the UK
- 10 samples were imported from outside the EU
- 4 samples came from the EU

The country of origin for the wine samples may not correspond to the country in which the wine grapes are grown. Instead, it may refer to the location where the wine is packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- 10 samples contained no residues of those sought
- 26 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL (the MRL may have been adjusted, if the wine was processed, to allow for the effect of processing) – further information can be found in [Table 7d: Processing factors and MRLs used for wine \(GB\)](#)
- 14 samples were labelled as organic – 7 contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

Folpet (sum) was detected in 6 samples. The full residue definition for folpet is “sum of folpet and phthalimide, expressed as folpet”. In these 6 samples, only phthalimide was detected. Further information on folpet and phthalimide residues can be found in [section 5: issues arising in this report](#).

3. Findings by food in Northern Ireland (NI) and risk assessments

Summary

For more information on the results, read the:

- [summary table of results in this report](#)
- [survey design in this report](#)
- [glossary in this report](#)
- [Risk Assessment - dietary intake assessments](#)
- [HSE risk assessment methodology](#)
- [detailed pesticide residues in food quarterly data](#), which includes brand name, sampling point and origin information, pesticides sought, and residues found

Apples (NI)

Samples tested

17 samples were tested for up to 376 pesticide residues.

Cooking

- 3 samples came from the UK
- 2 samples came from the EU

Eating

- one sample came from the UK
- 2 samples were imported from outside the EU
- 9 samples came from the EU

Pesticide residues detected of those sought

- 5 samples contained no residues of those sought
- 12 samples contained residues above the reporting limit
- none of the samples contained residues above the Maximum Residue Level (MRL)
- 3 samples were labelled as organic – none contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that the Health and Safety Executive (HSE) considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Beans with pods (NI)

Samples tested

9 samples were tested for up to 365 pesticide residues.

Fine Beans

- 2 samples were imported from outside the EU

Green Beans

- 5 samples were imported from outside the EU

Runner Beans

- 2 samples were imported from outside the EU

Pesticide residues detected of those sought

- 5 samples contained no residues of those sought
- 4 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Two samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Bread (gluten free) (NI)

Samples tested

6 samples were tested for up to 375 pesticide residues.

- 2 samples came from the UK
- 4 samples came from the EU

The country of origin for the bread (gluten free) samples may not correspond to the country in which the bread is produced. Instead, it may refer to the location where the products were packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- 5 samples contained no residues of those sought
- one sample contained residues above the reporting limit
- no MRLs were applied to gluten free bread because they contained varying and multiple non-cereal ingredients
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

None of the samples contained more than one residue, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Bread (ordinary) (NI)

Samples tested

24 samples were tested for up to 374 pesticide residues.

Ordinary Bread: Brown

- one sample came from the UK
- one sample came from the EU

Ordinary Bread: Granary

- 2 samples came from the UK

Ordinary Bread: White

- 8 samples came from the UK
- 3 samples came from the EU

Ordinary Bread: Wholemeal

- 7 samples came from the UK
- 2 samples came from the EU

The country of origin for the bread (ordinary) samples may not correspond to the country in which the bread is produced. Instead, it may refer to the location where the products were packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- 3 samples contained no residues of those sought
- 21 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL (the MRL may have been adjusted, if the bread (ordinary) were processed, to allow for the effect of processing) – further information can be found in [Table 7b: Processing factors and MRLs used for bread \(ordinary\)](#)
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Cabbage (NI)

Samples tested

6 samples were tested for up to 375 pesticide residues.

6 samples came from the UK.

Pesticide residues detected of those sought

- 5 samples contained no residues of those sought
- one sample contained residues above the reporting limit
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

None of the samples contained more than one residue, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Cheese (NI)

Samples tested

12 samples were tested for up to 39 pesticide residues.

Cheddar

- 3 samples came from the UK

Edam

- one sample came from the EU

Gouda

- one sample came from the EU

Hard Cheese

- 2 samples came from the EU

Parmigiano-Reggiano

- 3 samples came from the EU

Red Leicester

- one sample came from the UK
- one sample came from the EU

The country of origin of samples may not be the same as the country where the hard cheese was produced. It may be where the hard cheese was processed, where it was packed for consumer purchase or the address of the brand owner.

Pesticide residues detected of those sought

- 12 samples contained no residues of those sought
- none of the samples contained residues above the MRL
- 2 samples were labelled as organic – neither contained residues of those sought

Risk assessments

The laboratory did not detect any residues, so we did not carry out a risk assessment.

Combined risk assessments

None of the samples contained residues, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

PRiF has no comments as no residues were found.

Figs (NI)

Samples tested

7 samples were tested for up to 365 pesticide residues.

7 samples were imported from outside the EU.

Pesticide residues detected of those sought

- 7 samples contained no residues of those sought
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The laboratory did not detect any residues, so we did not carry out a risk assessment.

Combined risk assessments

None of the samples contained residues, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

PRiF has no comments as no residues were found.

Fish (tinned) (NI)

Samples tested

9 samples were tested for up to 39 pesticide residues.

Mackerel

- 2 samples were imported from outside the EU

Salmon

- 2 samples were imported from outside the EU

Sardines

- 2 samples were imported from outside the EU

Tuna

- 3 samples were imported from outside the EU

Where no sea area information is available, the country of origin on the packaging does not necessarily indicate where the fish (tinned) was caught or farmed. It could be where it was landed or processed or where it was packed for retail sale.

Pesticide residues detected of those sought

- 8 samples contained no residues of those sought
- one sample contained residues above the reporting limit
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

None of the samples contained more than one residue, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

The tinned fish may be stored in brine, oil or water; therefore, the presence of some pesticide residues may be due to the storage media. Read more information on this in the [MRL section in the glossary of this report](#).

Grapes (NI)

Samples tested

9 samples were tested for up to 372 pesticide residues.

Table grapes

- 4 samples were imported from outside the EU
- 5 samples came from the EU

Pesticide residues detected of those sought

- 2 samples contained no residues of those sought
- 7 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- 2 samples were labelled as organic – neither contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Lettuce (NI)

Samples tested

9 samples were tested for up to 376 pesticide residues.

Gem Hearts

- one sample came from the UK
- 2 samples came from the EU

Iceberg

- one sample came from the UK

Little Gem

- 3 samples came from the EU

Other

- one sample came from the UK

Round

- one sample came from the UK

Pesticide residues detected of those sought

- 2 samples contained no residues of those sought
- 7 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- 2 samples were labelled as organic – one contained a residue of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Mango (NI)

Samples tested

9 samples were tested for up to 365 pesticide residues.

Fresh

- 9 samples were imported from outside the EU

Pesticide residues detected of those sought

- all samples contained residues
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Milk (NI)

Samples tested

10 samples were tested for up to 47 pesticide residues.

Cows' milk

- 8 samples came from the UK
- one sample came from the EU

Goats' milk

- one sample came from the UK

Pesticide residues detected of those sought

- 10 samples contained no residues of those sought
- none of the samples contained residues above the MRL
- 6 samples were labelled as organic – none contained residues of those sought

Risk assessments

The laboratory did not detect any residues, so we did not carry out a risk assessment.

Combined risk assessments

None of the samples contained more than one residue, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

PRiF has no comments as no residues were found.

Peaches and nectarines (NI)

Samples tested

9 samples were tested for up to 372 pesticide residues.

Nectarines

- 4 samples were imported from outside the EU

Peaches

- 5 samples were imported from outside the EU

Pesticide residues detected of those sought

- one sample contained no residues of those sought
- 8 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Plums (NI)

Samples tested

9 samples were tested for up to 365 pesticide residues.

9 samples came from the EU.

Pesticide residues detected of those sought

- 3 samples contained no residues of those sought
- 6 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- one sample was labelled as organic - it didn't contain any residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Pork (NI)

Samples tested

19 samples were tested for up to 44 pesticide residues.

- 15 samples came from the UK
- 4 samples came from the EU

Pesticide residues detected of those sought

- 18 samples contained no residues of those sought
- one sample contained residues above the MRL
- none of the samples were labelled as organic

The country of origin of samples may not be the same as the country where the pork was produced. It may be where the pork was processed, where it was packed for consumer purchase or the address of the brand owner.

Risk assessments

The residue detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

None of the samples contained more than one residue, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

One sample contained a residue of BAC. This substance is widely used as a biocide (disinfectant) during food preparation and processing. This is the most likely source of the residue. Further information on DDAC/BAC residues can be found in [section 5: issues arising in this report](#).

Residues measured above the MRL

The laboratory detected one residue above the MRL in pork. Details are available in [Table 4b: Summary of MRL Exceedances for Q4 Northern Ireland](#).

Potatoes (NI)

Samples tested

12 samples were tested for up to 372 pesticide residues.

- 8 samples came from the UK
- 4 samples came from the EU

Pesticide residues detected of those sought

- 10 samples contained no residues of those sought
- 2 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- 4 samples were labelled as organic – none contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

None of the samples contained more than one residue, so we did not carry out a combined risk assessment.

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Pre-packed salad (NI)

Samples tested

10 samples were tested for up to 376 pesticide residues.

10 samples came from the UK.

The country of origin for the pre-packed salad samples may not correspond to the country in which the salad leaves are grown. Instead, it may refer to the location where the salad leaves are packaged for consumer sale or the address of the brand owner.

Pesticide residues detected of those sought

- all samples contained residues
- 4 samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

Further information on the samples containing chlorate residues can be found in [section 5: issues arising in this report](#).

For further information about dithiocarbamates, refer to [HSE risk assessment methodology](#). Under routine testing, dithiocarbamates are analysed as carbon disulphide. Some salad crops, such as rocket are known to contain natural sulphurous substances that could also be determined as carbon disulphide during analysis in the laboratory.

Residues measured above the MRL

The laboratory detected 4 residues above the MRL in pre-packed salad. Details are available in [Table 4b: Summary of MRL Exceedances for Q4 Northern Ireland](#).

Spinach (NI)

Samples tested

6 samples were tested for up to 372 pesticide residues.

Baby Leaf (Fresh)

- 3 samples came from the EU

Spinach (Fresh)

- one sample came from the UK
- 2 samples came from the EU

Pesticide residues detected of those sought

- one sample contained no residues of those sought
- 5 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- 3 samples were labelled as organic – all 3 contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Strawberries (NI)

Samples tested

9 samples were tested for up to 372 pesticide residues.

Fresh

- 2 samples came from the UK
- 7 samples came from the EU

Pesticide residues detected of those sought

- all samples contained residues
- none of the samples contained residues above the MRL
- none of the samples were labelled as organic

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

All samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

Tomatoes (NI)

Samples tested

9 samples were tested for up to 376 pesticide residues.

Cherry

- one sample was imported from outside the EU
- one sample came from the EU

Plum

- 2 samples came from the EU

Salad

- one sample was imported from outside the EU
- 2 samples came from the EU

Vine

- one sample came from the UK
- one sample came from the EU

Pesticide residues detected of those sought

- 5 samples contained no residues of those sought
- 4 samples contained residues above the reporting limit
- none of the samples contained residues above the MRL
- 3 samples were labelled as organic – none contained residues of those sought

Risk assessments

The residues detected by the laboratory would not be expected to have an effect on health.

Combined risk assessments

Some samples contained residues of more than one pesticide. We do not expect these residues to have an effect on health, either separately or in combination. The pesticide residues found in each sample do not include more than one of the pesticides from the groups that HSE considers for combined risk assessment.

Further information of how HSE considers combined risk assessments is in [HSE risk assessment methodology](#).

Additional comments by the PRiF

PRiF considered these results and felt it did not need to make any additional comments.

4. Risk assessment – dietary intake assessments

Screening assessments have been done for all pesticides to check that predicted intakes are within the relevant health-based reference values. A short term (acute) exposure assessment is not done for pesticides which are not acutely toxic where it has been established that an Acute Reference Dose (ARfD) is not required. Read the [GB toxicological reference values database](#). EU toxicological endpoints can be found in the [EU Pesticides database](#).

Toxicological reference values set by the JMPR - The Joint Food and Agriculture Organisation (FAO) and World Health Organization (WHO) Meeting on Pesticide Residues - can be found in individual pesticide evaluations at [JMPR Evaluations](#) (an up to date index to pesticide evaluations is available in the latest report).

The screening assessment uses the internationally agreed approach to long term (chronic) and short term (acute) consumer exposure assessment with UK food consumption data as detailed within the UK NEDI and NESTI models which are available on the [HSE website](#).

For the Q4 2025 assessments, the following approaches have been taken to refine these assessments according to case-by-case issues and to ensure that appropriate consumption values are used for less frequently consumed commodities where available food consumption data may be limited. These approaches are outlined below:

- data on barley were used for all forms of barley, including pearl barley
- data on beans with pods were used for all forms of green beans, including speciality beans
- data on bread were used for all types of bread, including gluten free bread
- data on fish were used for all forms of tinned fish
- data on lettuce were used for all forms of lettuce; a variability factor of 7 instead of 5 was used for smaller varieties such as little gem which typically have a unit weights of <250 g
- data on mango were used despite a low number of consumers in several of the sub-groups. However, use of these consumption data was considered reasonable after comparison with alternative data
- data on oats were used for all forms of oats, including oat flakes, porridge and rolled oats
- data on peaches were used for peaches and nectarines
- data on chocolate were used for plant-based chocolate
- data on meat (excluding poultry and offal) were used for pork

- for salad leaves (in pre-prepared bags) lettuce data without a variability factor were used. The constituent salad leaves are small, and a whole product consideration which takes account of unit to unit variability is not considered relevant
- data on tomato, with a variability factor of 7 and a unit weight of 85 g, were used for all fresh tomato samples including plum, salad and vine. This is considered a suitable screening assessment for residues found in all these forms of tomatoes
- data on wine were used for all types of wine

Short-term dietary risk assessment – single substance assessments where exceedance of the ARfD has been identified during screening (tables 5a to 5b)

Table 5a: Beans with pods (GB)

In this table, 'critical group intake' means the highest intake of all 10 consumer groups, or intakes for all consumer groups that exceed the ARfD.

Pesticide	Highest residue (mg per kg)	Adult intake (mg per kg bw per day)	Critical group intake (mg per kg bw per day)	ARfD (mg per kg bw)	Source
Omethoate	0.008	0.000018	0.000040 (infants) 0.000040 (toddlers) 0.000030 (4 to 6 year olds) 0.000022 (vegetarian) 0.000022 (15 to 18 year olds) 0.000018 (adult) 0.000017 (elderly own home) 0.000016 (7 to 10 year olds) 0.000016 (11 to 14 year olds) 0.000009 (elderly residential)	No toxicological reference values established	EU, 2019

Comment on risk assessment

The [EFSA Conclusion \(2018\)](#) for dimethoate has indicated that no toxicological reference values could be determined for dimethoate and its metabolite omethoate, due to a lack of a fully supporting toxicological database. Both dimethoate and omethoate are not approved in the EU and pesticide products containing dimethoate were withdrawn in the EU and UK in 2020. Omethoate is the main metabolite of dimethoate; dimethoate itself was sought but not found in this sample.

For dimethoate, [EFSA \(2018\)](#) proposed a hypothetical toxicological reference value for short-term exposure of 0.0001 mg per kg bw. Whilst the estimated dietary intakes of omethoate do not

exceed this reference value for any consumer group, as omethoate possesses a higher toxicity than dimethoate we expect that the reference value would be exceeded if this difference is factored into this assessment.

This hypothetical toxicological reference value is a precautionary value intended to protect the nervous system in the developing foetus and child, which has been set well below intakes which caused no observed effects in animal studies. The JMPR established an ARfD for dimethoate of 0.02 mg per kg bw in 2019 ([JMPR Report 2019](#)) and established an ARfD for omethoate of 0.002 mg per kg bw in 2022 ([JMPR Report 2022](#)); this supports the view that the proposed hypothetical short-term reference value from the EFSA Conclusion is precautionary.

Both the JMPR, [EFSA \(2018\)](#) and the previous EU evaluations observe that omethoate is more toxicologically potent than dimethoate. The estimated exposures are low and are not expected to inhibit the enzyme acetylcholinesterase (see [glossary](#)), the basis of previous evaluations of the safety of dimethoate and omethoate. Based on this assessment, HSE concludes that a short-term effect on health is unlikely after eating large portions (97.5th percentile consumption) of Yard Long beans (beans with pods) containing the levels found in this report.

Read the [Substances that might be genotoxic section of this report](#) for HSE's conclusions regarding potential genotoxicity.

Table 5B: Grapes (GB)

In this table, 'critical group intake' means the highest intake of all 10 consumer groups, or intakes for all consumer groups that exceed the ARfD.

Pesticide	Highest residue (mg per kg)	Adult intake (mg per kg bw per day)	Critical group intake (mg per kg bw per day)	ARfD (mg per kg bw)	Source
Lambda-cyhalothrin or gamma-cyhalothrin	0.05	0.00099	0.0031 (toddlers)	0.005 (lambda-cyhalothrin)	EU, 2016 (lambda-cyhalothrin)
				0.0025 (gamma-cyhalothrin)	EU, 2014 (gamma-cyhalothrin)

Comment on risk assessment

Residues of lambda-cyhalothrin are indistinguishable analytically from gamma-cyhalothrin, and the residue could have arisen from application of either gamma-cyhalothrin or lambda-cyhalothrin.

As we do not know the source of the residue for the sample containing a residue of 0.05 mg per kg, HSE is presenting below a range covering a least worst case and a worst case form of assessment for this residue since these pesticides have different toxicological potencies, resulting in different ARfDs for these substances. The sample that contains a higher residue of 0.06 mg per kg is expected to be from use of lambda-cyhalothrin and on this basis the ARfD for lambda-cyhalothrin would not be exceeded and an effect on health would not be expected. Therefore, the risk assessment presented below is for the sample containing 0.05 mg per kg.

Least worst case: lambda-cyhalothrin

If the residue arises from lambda-cyhalothrin there are no exceedances of the ARfD, and an effect on health would not be expected.

Worst case: gamma-cyhalothrin

The intakes for toddlers exceeded the ARfD.

If toddlers ate or drank large portions of grapes containing gamma-cyhalothrin at 0.05 mg per kg, their intake could be 122 percent of the ARfD. This intake is 161 times lower than a dose which caused no observed adverse effect in a one year oral toxicity study in dogs with lambda-cyhalothrin. The European Food Safety Authority used this study as the basis of the ARfD.

Toxicologists usually apply a factor of 100 to this dose to take into account uncertainties caused by using animal data and possible differences in susceptibility between people. The factor used for gamma-cyhalothrin was twofold greater (200) to reflect the greater toxicity of gamma-cyhalothrin compared to lambda-cyhalothrin. We consider the reduced factor of 161 still enough to make an effect on health unlikely.

Short-term dietary risk assessment – multiple assessments needed following screening assessment of samples

Samples which contain more than one pesticide from the groups we consider, and where a more detailed assessment was needed following screening:

- triazoles
- organophosphates and, or carbamates
- captan and folpet
- DDAC and BAC
- chlormequat and mepiquat

None.

Long-term dietary risk assessments needed following screening assessment of samples

As noted in [section 4 of this report 'dietary intake assessments'](#), total long-term dietary assessments across all commodities are not performed for these quarterly assessments. The issue is more fully considered in regulatory contexts pre-authorisation and at the time of MRL review. Then the issue is considered across all commodities (so more precautionary) by pesticide levels determined in Good Agricultural Practice (GAP) compliant trials, intended to address highest likely residues that might arise following pesticide use according to label recommendations.

However, for the HSE quarterly assessments, HSE do perform a screening exercise for all of the residues found for an individual commodity to see if the long-term intakes (commodity by commodity) show any indication of exceedance of the Acceptable Daily Intake (ADI). If an exceedance was observed then HSE would consider further and we would present a more detailed risk assessment.

In HSE's long-term exposure screening assessment for this report NI and GB samples were combined.

None of the individual commodity long-term exposure screening assessments performed in this quarter (for each of the pesticides found in this report) indicated potential for adverse long-term health effects. HSE assessed the dietary intakes to be below the ADI or other established long-term health based reference value.

Substances that might be genotoxic

Read an explanation of genotoxicity in the section on [HSE's assessment of risk](#).

During regulatory assessment, careful consideration is given to any pesticides that may exhibit any potential to be genotoxic (able to damage genetic material) in live animals, so we need to consider the significance to the consumer when these residues are found. There are a small number of examples of older pesticides that might be genotoxic, where modern data to investigate the true genotoxic potential is not expected to be made available. It is likely that these will only be found in

imported foods. For many of these old pesticides, the toxicological reference doses are low and HSE uses low reporting limits to ensure that these residues are found even at very low levels, as HSE know they are of particular interest to consumers. The evaluation of possible health implications for these findings is complex as tests for genotoxicity are commonly performed at higher doses (orders of magnitude higher) than the dietary exposure levels that are assessed in HSE reports. As such it is difficult to conclude specifically, and to extrapolate the findings in the laboratory to the context of findings in the HSE monitoring and the presence of residues at low levels in foods. Where relevant some reassurance that any risks are likely to be small can be gained if increased cancer incidence, which may be due to gene mutations, does not occur in long term animal feeding studies, designed to detect such observations. Where relevant we will indicate this. Due to the uncertainty about the potential for genetic damage (genotoxicity) at low doses, HSE will always conclude that on a precautionary basis any findings of genotoxic substances in food are undesirable.

Assessment of genotoxicity (Q4 2025) and conclusions:

Substances that might be genotoxic

Residues found in this report that have genotoxic potential (concluded from laboratory studies on animals): none.

Residues found in this report where toxicological data are suggestive of genotoxicity but not certain: omethoate.

It is unclear whether these pesticides can damage genetic material (are genotoxic).

There is some evidence from studies performed in vitro and in vivo, that omethoate may be genotoxic.

For omethoate, the necessary follow up studies clarifying the genotoxic potential were not available to EFSA. The JMPR ([JMPR Report 2022](#)) assessed newer more modern in vivo genotoxicity test data for omethoate, that provided the necessary follow up to the earlier positive genotoxicity studies. Based on all the available data, the JMPR concluded that omethoate is unlikely to be genotoxic in vivo and unlikely to pose a carcinogenic risk to humans at levels occurring in the diet. HSE notes the different conclusions from EFSA and JMPR on the genotoxic potential of omethoate. This difference appears to be based on the new data evaluated by JMPR but not available to EFSA at the time of their assessment. HSE has not had the opportunity to evaluate the new genotoxicity data on omethoate but notes the JMPR's conclusion that omethoate is unlikely to be genotoxic.

There is some reassurance that risks of developing ill health effects following single or repeat exposures are likely to be low, since omethoate did not cause cancer in cancer or other long-term studies with repeat daily doses in animals over their lifespan. The doses used in these studies were orders of magnitude higher than the exposures estimated in this assessment. It is not known if lower doses which are not toxic also have this effect.

Conclusions

Overall, HSE concludes that on a precautionary basis any residue finding of omethoate is undesirable due to the uncertainty regarding genotoxicity at low doses. However, HSE considers

any risks of adverse health effects are low after eating large portions (97.5th percentile consumption) of the foods containing the level of omethoate found in this report.

5. Issues arising in this report, follow-up from previous reports and plans for the quarter 1 2026 report

Chlorate

We have been testing a limited number of foods for chlorate since 2016. The pesticide sodium chlorate is a residual broad action weed killer that is not authorised for use in the EU or UK. However, we are confident that the residues we are detecting come from use of chlorine-based disinfectants used to maintain microbiological safety (control microorganisms that cause food poisoning). Because these residues are unavoidable, and important for the maintaining of microbiological control vital for food safety, we are not treating these results as breaches of the Maximum Residue Level (MRL). We are not advising that food companies change their existing practices because of our findings, but they should be aware about the ongoing discussion in this area.

We are only part of the work going on across government and beyond to consider what to do about chlorate residues in food and water.

How chlorate MRLs take account of use of biocides

The footnote included in the chlorate MRLs allow for chlorate residues incurred during the processing of food (from treated water or processing aids, such as biocides). The footnote exceptionally specifies that for considering compliance with chlorate MRLs, simple types of processing, such as packing, washing, chopping and freezing can be considered. Chlorate in irrigation water is allowed for in the MRLs as set and no further adjustment can be considered.

The responsibility for providing evidence showing that residues from processing can be considered, lies with the food business operator, and so we will be interested to see such evidence where appropriate. The Health and Safety Executive (HSE) will decide whether the footnote can be applied and if so, this will be reflected in our reports.

The Food and Biocides Industry Group have produced more detailed information and guidance on this topic which is available on the [Chilled Food Association's website](#).

Infant food

Infant food MRLs are set under separate legislation managed by UK health departments. The footnote that applies to other foods cannot be used for infant foods, although residues occur for the same reasons. UK health departments are working with HSE and FSA to resolve this.

Sanitisers

The presence of low-level residues of chlorate in food results from measures taken by the food and water industries to protect food safety by reducing microbiological contamination of food and drink (including drinking water, which is a significant source of chlorate in food). Chlorate itself is not used as a disinfectant, but chlorine-based sanitisers contain small amounts of chlorate. The Food Standards Agency (FSA) has worked with industry who promote best practice and guidance for use of sanitisers.

Drinking water

In national legislation throughout the UK, it is already a requirement to keep disinfection by-products as low as possible. This is usually achieved through management of disinfectant dosing and storage.

Microbiological safety of food

The HSE is working with the Advisory Committee on the Microbiological Safety of Food to understand how changes to pesticide MRLs affect biocide use, microbiological food safety, and any change to the overall risk to consumers to allow for both chemical and microbiological safety.

Dietary intakes

Since 2018 the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) has been considering chlorate as part of its on-going work looking at the chemicals in the diet of infants and young children (up to 5 years). The [European Food Safety Authority's 2015 opinion on chlorate](#) establishes appropriate health-based guidance values for chlorate exposure to protect against acute and chronic risks to health.

Fosetyl-Al (sum)

The full residue definition is “fosetyl-Al (sum of fosetyl, phosphonic acid and their salts, expressed as fosetyl)”. Throughout this report that definition is reflected as fosetyl (sum) All the residues reported as fosetyl (sum) in this report were detected as phosphonic acid.

Fosetyl-Al breaks down to phosphonic acid, but phosphoric acid can also be a residue left by use of pesticides containing disodium phosphonate or potassium phosphonates. Additionally, products sold as fertilizers also can contain or break down to phosphonic acid. And finally, phosphonic acid also occurs naturally in the environment. The presence of phosphonic acid does not necessarily mean that a pesticide was used. Those producing food need to be aware that the use of products that contain phosphonic acid or break down to phosphonic acid may lead to produce which breaches the MRL.

This pesticide can only be detected using a single residue method technique.

Dichlorodiphenyltrichloroethane (DDT)

The use of DDT is banned or heavily restricted in many countries. It is not allowed for use on food crops anymore, but it is still used in some countries outside the EU as a public health insecticide. Residues of DDT take a long time to break down in the environment and can accumulate in fatty tissue which is a major reason that it has been banned in the EU and many other countries.

Due to the bans and restrictions on use the levels in food have decreased substantially since the 1960s and 1970s. Even so, because it takes a long time to breakdown we do expect, and do see, occasional DDT residues in our monitoring results. Overall, the incidence and the size of residues have fallen steadily over time, which is what we would expect. In recent years none of our findings were unusual, unexpected or of concern. We can tell from the chemical form that we detect whether the residues we have found are from historic use (which is what we usually find). Historic use is indicated by the detection of dichlorodiphenyldichloroethylene (DDE), which is a break down product of DDT. We explain this every time we publish DDT results to try to make it as clear as we can that the results show food producers are not using DDT today. However, there are occasional media stories about DDT and various links and associations, which do not make this distinction.

The residues we find nowadays are at levels that would not be expected to have any effect on health, either in the short term or in the long term, when checked against today's understanding of the effect of DDT on health. As a committee, we take care to ensure we look thoroughly at this, and the FSA also actively involved in our considerations.

Folpet and Phthalimide

The full residue definition for folpet is “sum of folpet and phthalimide, expressed as folpet”. You can read more about multi-component residue definitions in [methodology, background and references](#). Folpet is a widely used fungicide. Phthalimide is included in the residue definition for folpet based on evidence (see [2014 EFSA assessment](#)) phthalimide can form as a metabolite after folpet is used. However, chemical analysis cannot distinguish between any phthalimide we found formed in this way or from other non-pesticide sources of phthalimide. Phthalimide is present in many chemical products including medicines, dyes and the sweetener saccharine and also occurs naturally. Where we do not find folpet in the same sample, we think it's at least possible that the residue is from a source other than folpet use.

Processing factors

As the surveillance programme monitors residues in all types of food, from raw commodities (for example potatoes) to processed (for example wine), dried (for example dried fruit) and composite foods (for example fruit bread), consumer risk assessments are

specifically tailored to address processed and mixed food products. MRLs are generally set for raw commodities, although when MRLs are established the assessment of dietary intakes allow for the potential for residues to remain in processed foods produced from the raw agricultural commodities. MRLs have been set for processed infant foods, and in future may be extended to other processed food products.

MRLs apply to all traded foods, including foods used as ingredients. The law specifies the level to apply to foods as they are traded. For almost all foods that means their raw, unprocessed form. But MRLs also apply to prepared and processed foods in which case the effect of processing needs to be allowed for.

In nearly all cases the MRL is set for the food in its raw, unprocessed form (the form of each food to which MRLs apply is listed in Annex I of Regulation 396/2005). These MRLs can be applied to processed foods using appropriate processing factors. Processing factors take account of the effect of processing on the food as traded. Different forms of processing may remove, concentrate, or dilute residues, and the effect may vary depending on the food and the pesticide concerned. Multiplying the processing factor by the original MRL gives a calculated MRL that can indicate the food was made with an ingredient or ingredients which had residues over the original MRL.

Calculating the MRLs for processed goods is dependent on the information available. HSE will contact the supplier if residues exceed the calculated MRL to give them an opportunity to provide relevant information to support the calculation.

Processing factors for barley, bread (ordinary), oats and wine were taken from a published compilation of factors. Unless indicated otherwise.

HSE uses the general principle that if no specific processing factor is available, a default factor of 1 may be applied. Further information can be found at the links below.

In this report, we have applied processing factors mostly from the European database of processing factors for pesticide residues in food [European database of processing factors for pesticides residues in food version 5 May 2025](#)

Table 7a: Processing factors and MRLs used for barley (GB)

Food type	Pesticide	Processing factor	MRL for unprocessed grain (mg per kg)	Pearl barley MRL (mg per kg)
Pearl barley	Chlormequat	0.38	7	2.66
Pearl barley	Fluxapyroxad	0.15	2	0.3

Food type	Pesticide	Processing factor	MRL for unprocessed grain (mg per kg)	Pearl barley MRL (mg per kg)
Pearl barley	Mepiquat	0.81	4	3.24

Table 7b: Processing factors and MRLs used for bread (ordinary)

Food type	Pesticide	Processing factor	MRL for unprocessed grain (mg per kg)	Bread MRL (mg per kg)
Wheat (Wholemeal)	Chlormequat	1.1	7	7.7
Wheat (White/other)	Chlormequat	0.3	7	2.1
Wheat (Wholemeal)	Deltamethrin	0.86	1	0.86
Wheat (White/other)	Deltamethrin	0.27	1	0.27
Wheat (White/other)	Fosetyl aluminium	0.93	150	139.5
Wheat (Wholemeal)	Glyphosate	1.2	10	12
Wheat (White/other)	Glyphosate	0.12	10	1.2

Table 7c: Processing factors and MRLs used for oats (GB)

Food type	Pesticide	Processing factor	MRL for unprocessed grain (mg per kg)	Rolled (porridge) oats MRL (mg per kg)
Oats	Chlormequat	0.87	15	13.05
Oats	Glyphosate	0.17	20	3.4

Table 7d: Processing factors and MRLs used for wine (GB)

Food type	Pesticide	Processing factor	MRL for unprocessed wine grapes (mg per kg)	Wine MRL (mg per kg)
Grape (Red wine)	Boscalid	0.19	5	0.95
Grape (White wine)	Boscalid	0.41	5	2.05
Grape (Rose wine)	Dimethomorph	0.29	3	0.87
Grape (White wine)	Dimethomorph	0.63	3	1.89
Grape (White wine)	Fenhexamid	0.41	15	6.15
Grape (Red wine)	Fluopyram	0.2	1.5	0.3
Grape (Red wine)	Fosetyl aluminium	1.1	100	110
Grape (Rose wine)	Fosetyl aluminium	0.93	100	93

Food type	Pesticide	Processing factor	MRL for unprocessed wine grapes (mg per kg)	Wine MRL (mg per kg)
Grape (White wine)	Fosetyl aluminium	0.93	100	93
Grape (Red wine)	Folpet	1.3	20	26
Grape (White wine)	Folpet	0.55	20	11
Grape (White wine)	Glufosinate	0.99	0.15	0.149
Grape (White wine)	Metalaxyl	0.48	1	0.48
Grape (Red wine)	Methoxyfenozide	0.33	1	0.33
Grape (White wine)	Methoxyfenozide	0.33	1	0.33
Grape (White wine)	Pyrimethanil	0.68	5	3.4
Grape (Red wine)	Spirotetramat	0.49	2	0.98

Follow-up from previous reports

HSE enforcement investigation has been completed for the possible unauthorised uses from last quarter in the following sample:

- 0667/2025 Baby Potatoes containing glufosinate 0.24 mg/kg (MRL = 0.3mg/kg) - HSE reported this sample to DAERA as the sample was grown in NI.

In HSE's Quarter 1 2026 report

Samples collected in Great Britain

In quarter 1 of 2026 HSE will look at results from samples collected in GB for:

- beans (dried)
- beans with pods
- carrots
- cauliflower
- courgettes
- dried fruits (grapes)
- grapes
- kiwi fruit
- leeks
- liver
- milk
- onions
- orange juice
- oranges
- parsnips
- pasta
- pears
- potatoes
- poultry meat
- rice
- rye flour
- speciality fruit
- spring onions

Samples collected in Northern Ireland

In quarter 1 of 2026 HSE will look at results from samples collected in NI for:

- beans with pods
- beans (dried)
- carrots
- cauliflower
- cherry
- courgettes
- fish (sea)
- grapes (table)
- lamb
- leeks
- onions
- parsnips
- potatoes
- spring onions

Glossary

This is a 'standard' glossary which defines the key terms used in the Expert Committee on Pesticide Residues in Food (PRiF) reports. Not all the terms listed here are used in every report.

97.5th percentile consumer

See [High level consumer in this report](#).

Acceptable daily intake (ADI)

This is the amount of a chemical which can be consumed every day for a lifetime in the practical certainty, based on all known facts, that no harm will result. It is expressed in milligrams of the chemical per kilogram of body weight of the consumer. The starting point for the derivation of the ADI is usually the 'no observed adverse effect level' (NOAEL) that has been observed in animal studies for toxicity. This is then divided by an uncertainty factor (most often 100) to allow for the possibility that animals may be less sensitive than humans and to account for possible variation in sensitivity between individuals. The studies from which NOAELs and hence ADIs are derived to allow for any impurities in the pesticide active substance as manufactured, and any toxic breakdown products of the pesticide.

Acetylcholine

Acetylcholine is a neurotransmitter, a chemical that carries signals through the nervous system. See [cholinergic in this report](#).

Acetylcholinesterase

This is an enzyme which degrades acetylcholine and is involved in the regulation of nerve impulses. Inhibition of this enzyme can interfere with this nerve transmission function. This is a short-term effect of concern with organophosphate and carbamate pesticides at levels above the Acute Reference Dose (ARfD).

Acute reference dose (ARfD)

The definition of the ARfD is similar to that of the ADI, but it relates to the amount of a chemical that can be taken in at one meal or on one day without appreciable health risk to the consumer. It is normally derived by applying an appropriate uncertainty factor to the lowest NOAEL in studies that assess acute toxicity or developmental toxicity.

As a matter of policy, the EU does not use NOAELs from tests that involve deliberate administration of pesticides to humans to determine ADIs and ARfDs. However, where such data have been ethically and scientifically derived some authorities, for example, the World Health Organization, do consider such data. Where human data are used there is usually less uncertainty in the resulting reference value compared to extrapolating from animal tests to humans, and a lower uncertainty factor (most often 10) is used to account for the variation in sensitivity between individuals.

The initial risk assessments in PRiF reports use the agreed EU reference values. However, where intakes are above the EU value and a reference value based on acceptable human data is available a refined assessment, which is a more appropriate indicator of the risk, is also reported.

Analyte

This is the name for the substance that the PRiF surveys look for and measure if present; it could be a pesticide itself or a product from a pesticide when it is degraded, or metabolised.

Cocktail effect

View [multiple residues](#) in this report.

Codex

The Codex Committee on Pesticide Residues (CCPR) is responsible for establishing Codex maximum residue levels (MRLs) for pesticide residues in specific food items or in groups of food. These Codex MRL (CXLs) are internationally agreed food standards.

COLEACP (Europe-Africa-Caribbean-Pacific Liaison Committee)

It aims to promote the competitive export of fresh fruit, vegetables, flowers and ornamental plants from the ACP. Its specialised information and advisory services are open to all ACP companies in the horticultural export sector and are financed by the European Commission. It has 2 overriding objectives to enable ACP companies to comply with European food safety and traceability requirements and to consolidate the position of small-scale producers in the ACP horticultural export sector.

Cholinergic

In relation to the animal nervous system, processes and structures are cholinergic if they release or use acetylcholine.

Cryogenic milling

Processing of commodities at very low temperatures can be achieved by milling or grinding pre-frozen samples in the presence of dry ice, a procedure known as 'cryogenic milling'.

Extensions of authorisations for minor use (EAMUs)

Users and authorisation holders of agricultural Plant Protection Products (PPP) may apply to have the authorisation of specific PPP's extended to cover uses additional to those authorised and shown on the manufacturer's product label. For many reasons, label recommendations of authorised pesticides do not cover the control of every problem which may arise. This is particularly true for crops that are grown on a comparatively small scale in the UK as well as for pests and diseases that occur less often, or which are new to the UK. As part of the process evidence on residues that would arise from the use is required, and consumer safety is evaluated and if necessary, a specific MRL set. EAMU is pronounced "emu" these types of authorisations are also informally called "off labels".

EFSA Pesticides Peer review Co-Ordination (EPCO)

EU meetings involving EFSA and member state experts.

Genotoxicity

Genotoxicity is the effect of substances (called genotoxins) which can alter or damage the genetic material (DNA, RNA, or chromosomes) within a cell. Cells have the capacity to protect themselves from genotoxic effects by many repair processes and therefore many genotoxic events do not become evident as mutations. Where mutations occur, this can lead to cancer or effects that can be passed to unborn children (for example, birth defects, inherited diseases).

Good agricultural practice in the use of pesticides (GAP)

The nationally authorised safe uses of pesticides under conditions necessary for effective and reliable pest control (the way products should be used according to the statutory conditions of authorisation which are stated on the label). GAP encompasses a range of pesticide applications up to the highest authorised rates of use, applied in a manner which leaves a residue which is the smallest practicable. Authorised safe uses are determined at the national level and include nationally registered recommended uses, which allow for public and occupational health and environmental safety considerations. Actual conditions include any stage in the production, storage, transport, distribution and processing of food commodities and animal feed.

High-level consumer

A term used in UK risk assessment calculations to describe the amount of food consumed by a person. In line with internationally agreed approaches, the PRiF uses the 97.5th percentile value, which is generally about three times the average amount consumed. This takes account of different eating patterns that may occur throughout the population.

Human data

See [Acute Reference Dose](#) in this report.

In vitro

A test performed in vitro “in the glass” means that it is performed outside of a living organism and usually involves isolated tissues, organs or cells.

In vivo

Live animal studies.

Import tolerance

An MRL set for imported products where the use of the active substance in a plant protection product on a commodity is not authorised in the European Community (EC) or an existing EC MRL is not sufficient to meet the needs of international trade. All import tolerances are assessed for consumer safety.

Imported

The tables in the reports record whether the sample was of UK origin or imported. This can mean different things depending on the commodity. See also [Origin](#) in this report. The PRiF report the country from where the produce has been imported only if this is clear from the packaging or labelling.

INFOSAN (International Food Safety Authority network)

Since the end of the EU transition period, in Great Britain, notifications are submitted via FAO/WHO's International Food Safety Authority network INFOSAN of which UK is a member. Non compliances that do not present a food safety risk are not communicated by Great Britain to other countries and there is an expectation that non-compliance notifications will be communicated by the importer or exporter or both in liaison with the LA.

NI continues to be part of the EU Rapid Alert System for Food and Feed (RASFF) (see [RASFF](#) in this report) network under the terms of the Windsor Framework so where appropriate will email notifications via the RASFF network, including for non-compliances under Administrative Assistance and Cooperation Network (AAC) procedures.

JMPR

Joint FAO and WHO Meeting on Pesticide Residues, which conducts scientific evaluations of pesticide residues in food.

Limit of determination (LOD) and LOD MRLs

The LOD is the lowest concentration of a pesticide residue or contaminant that can be routinely identified and quantitatively measured in a specified food, agricultural commodity or animal feed with an acceptable degree of certainty by the method of analysis. Note, exceptionally we test at levels lower than the LOD MRL to determine incidence of certain pesticides of specific interest.

LOD MRL (maximum residue levels set at the LOD)

These are marked by an asterisk (*). For some pesticides and commodities insufficient trials data are available on which to set a MRL or there may be no use of the pesticide on that crop. In these cases, the MRL may be set at a default level for example, at the LOD where analytical methods can reasonably detect the presence of the pesticide. These MRLs are not based on GAP. Also, see under [Reporting limit](#) in this report.

Lowest observed adverse effect level (LOAEL)

The lowest concentration or amount of a substance, found by experiment or observation, which causes detectable adverse alteration of morphology, functional capacity, growth, development or life span of the target organism under defined conditions of exposure.

Off label

See [Extensions of Authorisations for Minor Use \(EAMUs\)](#) in this report.

Maximum residue level (MRL)

A MRL is the maximum concentration of a pesticide residue expressed in mg/kg in or on food or feed of plant and animal origin that is legally tolerated when a plant protection product (PPP) is applied correctly (following good agricultural practice).

MRLs apply to most food commodities, although they are not currently applied to fish and produce grown exclusively for animal feed. They are not set specifically for processed

commodities. Instead, the MRLs for the raw agricultural commodities apply, with processing factors applied to determine the compliance of processed goods.

An import tolerance is an MRL set on imported food or feed to meet the needs of international trade.

MRLs are intended primarily as a check that GAP is being followed and to assist international trade in produce treated with pesticides. MRLs are not in themselves 'safety limits', and exposure to residues greater than the MRL does not automatically imply a hazard to health.

MRLs reflect levels of pesticides that could occur in produce, which has been treated in accordance with good agricultural practice. Where pesticides do not give rise to readily detectable residues, or are not authorised for use on commodities, MRLs are set at the lowest level which can be identified in routine laboratory analysis. Thus, they provide a mechanism for statutory controls on pesticides in produce which is put into circulation and for monitoring correct use of these chemicals.

If no use of a pesticide on a crop is identified when MRLs are set the tolerance for that pesticide and crop combination is set at the limit of determination (effectively zero). Limit of determination MRLs are marked by a '*'.

MRLs are regulated in Northern Ireland under Regulation 396/2005.

MRLs are regulated in Great Britain under Retained Regulation (EC) No 396/2005.

Maximum residue levels set at the LOD (LOD MRL)

See [LOD MRL](#) in this report. For some pesticides and commodities, insufficient trials data are available on which to set a maximum residue level, or there may be no use of the pesticide on that crop. In these cases, the MRL may be set at a default level, for example, at the LOD where analytical methods can reasonably detect the presence of the pesticide. These MRLs are not based on GAP.

MRL exceedances

When a residue is found at a level higher than that set for the MRL.

MRL exceedances and relationship with the acceptable daily intake (ADI)

Before permitting any use of a pesticide, a detailed assessment is made to ensure that residues in foods derived from commodities comply with MRLs and will not give rise to unacceptable risks to consumers. MRLs do take account of consumer safety aspects and, in effect, are set at levels below safety limits. However, MRLs must not be confused with

safety limits, which are expressed in terms of the ADI of a particular pesticide residue from all sources. The ADI (expressed as mg per kg bw per day) is the amount of chemical that can be consumed every day of an individual's entire lifetime in the practical certainty, based on all known facts, that no harm will result. See [ADI](#) in this report for further information.

Whenever unexpectedly high or unusual residues occur during monitoring, the risk to consumers, from exposure to residues at the highest levels found, is assessed by comparison of predicted intakes with the ADI or ARfD as appropriate.

No MRL

For certain pesticides an MRL may not have been set.

Metabolite

A degradation or conversion product from a pesticide when it is metabolised.

Multiple residues

In this report this term is used to describe when more than one pesticide is found in an individual food sample. It may have arisen because the crop was treated at different times with pesticides applied singularly, or when pesticides are applied as mixtures (several pesticides mixed in the spray tank at the same time) or the marketed pesticide product contains more than one pesticide or any combination of these 3 situations. Mixtures may be used in response to specific pest pressures and also as part of strategies to minimise pesticide resistance building up on pest populations. We consider the possible implications to health of more than one pesticide being found in samples (sometimes called the 'cocktail effect'). Refer to 'Multiple residues' under [HSE risk assessment methodology](#) for further details.

National estimate of daily intake (NEDI)

An estimate of intake of pesticide in the diet over the long-term to compare to the ADI. The NEDI is based on median or mean residue levels and a high-level consumption (97.5th percentile value) for the daily amounts of the food item consumed over the long-term. For further details on the calculation of NEDIs, refer to the [Consumer Exposure section of the Data Requirements Handbook on the HSE Pesticide website](#). Here you will find information and further links.

National estimate of short-term intake (NESTI)

An estimate of peak intake of pesticide in the diet to compare to the ARfD. The NESTI is based on the highest residue found multiplied by a [variability factor](#) and a high level

consumption (97.5th percentile value) for the amount of the food item consumed over a single day. View [variability factors](#) in this report. For further details on the calculation of NESTIs, refer to the [Consumer Exposure section of the Data Requirements Handbook on the HSE Pesticide website](#). Here you will find information and further links.

Neurotoxicity

Neurotoxicity is the effect of substances (called neurotoxins) which alter the normal working of an animal's nervous systems and can damage the nervous tissue.

No observed adverse effect level (NOAEL)

The greatest concentration or amount of a substance, found by experiment or observation, which causes no detectable adverse alteration of morphology, functional capacity, growth, development or life span of the target organism under defined conditions of exposure.

Off label

See [Extensions of Authorisations for Minor Use \(EAMUs\)](#) in this report.

Origin

The brand name annex reports the origins of the samples tested. This can mean different things depending on the commodity. For example, butter is often labelled as 'UK origin'; however, many of it comes in bulk from New Zealand and is split into smaller blocks and packaged in the UK. Lettuce is a fresh produce and 'UK origin' usually means that it has been grown and packaged in the UK. Processed commodities such as cereal bars often contain multiple raw ingredients, each of which may come from a different source/origin. Therefore, the origin of the produce usually reflects the place where it was manufactured. The PRiF report the origin as stated on the packaging or labelling of the commodity concerned, unless other more accurate information is available to indicate that the origin is from elsewhere. Some products are listed as 'unknown origin' because the labelling does not give this information.

Parent

The chemical form of a pesticide as applied to plants, as opposed to metabolites and breakdown products.

Percentile

A percentile is a value that divides a sample of measurements at a specific point when they are listed in ascending order of magnitude. For example, the 97.5th percentile from a food consumption survey is a value that is equal to or more than 97.5% of the

measurements and equal to or less than 2.5% of the measurements. So, in a sample of 40 daily food consumption values, the 97.5th percentile is equal to or more than 39 of the measurements. Such high percentile estimates of food consumption are used in risk assessments as they are more protective than using average consumption levels.

Permitted level (PL)

The permitted levels (expressed as mg per kg), in specific commodities, of some substances which can be classified as pesticides but are controlled under the Miscellaneous Food Additives Regulations 1995 (S.I. 1995 No. 3187).

Pesticide

A pesticide is any substance, preparation or organism prepared or used for destroying any pest. Most pesticides sought by the PRiF in its monitoring are those used to control pests in agricultural crops, although non-agricultural products may be included where there is a specific reason for doing so, for example, where there are implications in terms of possible intakes of residues.

Probabilistic modelling

The usual estimates of consumer exposure use single high values for both consumption amounts and residue levels. Whilst these are based on realistic UK dietary survey data and residue levels, they tend to overestimate most representative intakes. This is because they do not allow for actual variations in both amounts consumed and residue levels. Probabilistic modelling is a technique that considers all the possible different combinations of consumption and residue levels. This provides information on the probability of intakes occurring.

Rapid Alert System for Food and Feed (RASFF)

The European Commission's Rapid Alert System for Food and Feed (RASFF) allows member authorities (EU and EFTA member States) to quickly exchange information about measures taken when responding to risks detected in food or feed. This exchange of information helps authorities in countries inside the European single market to act more rapidly and in a coordinated way in response to a possible health threat caused by food or feed.

RASFFs notifications about pesticide residues are sent when a residue is over the MRL, allowing for measurement uncertainty and a potential consumer risk has been identified. For pesticide residues in food traded in the single market this means when a risk assessment has identified that risk to people eating the food cannot be ruled out.

More information is available on the European Commission website at [RASFF - Food and Feed Safety Alerts](#).

Relationship between GAP and MRLs

The MRL can be defined as the maximum concentration of a pesticide residue (expressed as mg per kg) likely to occur in or on food commodities and animal feeds, after the use of the pesticide according to the GAP.

Reporting limit

The reporting limit is the lowest level at which residues will be reported by a laboratory for a survey, as agreed in advance with the laboratory. It can be equal to or higher than the limit of quantification (sometimes also referred to as the limit of determination). The limit of quantification is the lowest concentration that has been validated to meet strict acceptance criteria and may vary slightly from laboratory to laboratory depending on the equipment available and operating procedures used. The reporting limit should be at or below the MRL. For a small number of pesticides for example, monocrotophos, we are looking for the pesticide below the LOD MRL because we are specifically interested in prevalence in food due to the nature of the pesticide. In such cases, tests are performed in the laboratory to support the lower reporting limits by validating the method at lower limits. 'None were detected above the set RL': This term is used in the Brand Name Annex, where no residues were found above their reporting limit.

Residue

Residues may be present in vegetable and animal products following the application of pesticides. They may not only include the pesticide that was applied but other degradation or reaction products and metabolites that may be of toxicological significance. The levels or amounts of residues present are expressed in milligrams of the chemical in a kilogram of crop, food, or commodity (mg per kg), or parts per million.

Risk assessment

A risk assessment is carried out when residues are found in foods to determine whether, at the levels found, they present a concern for consumer health or not. Consumer risk assessments are routinely conducted as part of the approval process for pesticides and are based on residue trials. Approval of a pesticide is only recommended when the consumer risk is acceptable.

Safety factor

Values used in extrapolation from experimental studies in animals (usually 100) or humans (usually 10) to the population: for PRiF assessments this represents a value by which the

NOAEL is divided to derive an ADI or ARfD. The value depends on the nature of the effect, the dose-response relationship, and the quality of the toxicological information available. The use of such a factor, accounts for possible differences in susceptibility between the animal species tested and humans, and for variation between different individuals in the population. The terms 'uncertainty factor' and 'assessment factor' are also sometimes used for this factor; HSE uses 'safety factor'.

Sample

The nature of all samples is as designated in the EC's 'sampling' Directive 2002/63/EC. For examples a sample of apples must be made up of at least 10 apples and weigh at least 1kg in total. And a sample of grapes must be made up of at least 5 bunches and weigh at least 2kg in total.

Variability factor

A value that describes the variation in residue levels between the highest unit level and the average level in samples made up of many units. Internationally this is agreed to be the 97.5th percentile unit residue level divided by the average of the sum. The variability factor multiplied by the measured residue level from a composite sample (for example, a sample made up by mixing several units before analysis) gives an estimate of the likely higher residue levels that may have occurred in individual units. These estimated higher levels are used in short-term risk assessments involving fruit and vegetables where consumers eat only a portion of a single item, for example, melon, or a small number of units for example, apples and potatoes.